




## 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>	Tunki Small Scale Hydro Power Programme of Activities (UNFCCC reference number: 6198) <sup>1</sup>		
<b>Version number of the validation report</b>	01		
<b>Completion date of the validation report</b>	26/11/2020		
<b>Version numbers of PoA-DD to which this report applies</b>	7		
<b>Title and UNFCCC reference number of each CPA for renewal</b>	CPA Ref. no.	<b>Title</b>	
	CPA # 1	Coelvihidro 1 Hydro Power Plant, Quipico- Tunki PoA	
<b>Sectoral scopes for each CPA</b>	CPA Ref. no.	<b>Sectoral scopes (indicate mandatory and conditional sectoral scopes)</b>	
	CPA # 1	01	
<b>Applied methodologies and standardized baselines for each CPA</b>	CPA Ref. no.	<b>Applied methodologies and standardized baselines</b>	
	CPA # 1	AMS-I.D. ver. 18 – Grid connected renewable electricity generation Standardized Baseline: Not Applicable	
<b>Number and duration of the next crediting period (CP)</b>	CPA Ref. no.	<b>No. of CP</b>	<b>Duration of the CP</b>
	CPA # 1	2 <sup>nd</sup>	19/09/2020 – 18/09/2027
<b>Coordinating/managing entity (CME)</b>	Carbonbay GmbH & Co. KG.		
<b>Host Parties</b>	Peru		
<b>Estimated amount of annual average greenhouse gas (GHG) emission reductions or GHG removals by sinks in the next crediting period (Tco<sub>2e</sub>), per CPA</b>	CPA Ref. no.	<b>Annual emission reductions or removals (Tco<sub>2e</sub>)</b>	
	CPA # 1	9,279 tCO <sub>2e</sub>	
<b>Name and UNFCCC reference number of the DOE</b>	LGA Technological Center, S.A. ( Applus + Certifications)- E-0032		
<b>Name, position and signature of the approver of the validation report</b>	Mr. Juan Sendín Caballero <i>Applus+ Certification Business Unit Managing Director</i>		
	Signature: 		

<sup>1</sup> [https://cdm.unfccc.int/ProgrammeOfActivities/cpa\\_db/F05ERU9W4GVPJ8QSKBCYO2XA16NTDZ/view](https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/F05ERU9W4GVPJ8QSKBCYO2XA16NTDZ/view)

## SECTION A. Executive summary

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The CPA involves commercial operation of small scale run of the river power plant with an installed capacity of 1.68 MW connected to the National Peruvian electricity grid (SEIN) and is being supplied to users (which signed agreement with COELVISAC) through SEIN grid network. The project envisages horizontal Francis turbine for a net height of 28 m and 7m<sup>3</sup>/s water flow. The power produce 13,171 MWh per year using water flow from an irrigation channel (Quipico Channel) with an expected operational life time of 40 years. The CPA intends to displace expensive generation fuelled by heavy fuel oil, diesel, coal or natural gas while reducing GHG emissions and increasing the amount of energy available on the grid. Carbonbay GmbH & Co.KG ((Referred later on as Carbonbay or the coordinating/managing entity – CME) as the coordinating and managing entity (CME) for the PoA will work closely with the developers of the hydropower plants (CPA owners) and other organizations active in the hydropower sector in the host country to facilitate the development of new power plants and their inclusion in the registered PoA. It will lead to reduction in fuel consumption in the host country. Thus the CPA will reduce a significant amount of emissions that would have been generated in the baseline scenario

The CME of the PoA is Carbonbay GmbH & Co. KG. (Referred later on as Carbonbay or the coordinating/managing entity – CME). Carbonbay GmbH- the implementor of the CPA) is also involved as the project participant in the PoA who is the sole beneficiary of carbon credits from this PoA.

### Scope of Validation

The scope of services provided by LGAI Technological Center, S.A. accredited DOE E-0032 (hereinafter referred to as Applus+ Certification or just the DOE) is to perform renewal crediting period validation of CPA. The scope of renewal validation is to assess the claims and assumptions made in the CPA DD against the UNFCCC criteria, including but not limited to , CDM PS for PoA<sup>05/</sup>, Version 2.0, CDM VVS for PoA, VERSION 2.0<sup>06/</sup>, applied methodology AMS-I.D,version 18<sup>12/</sup>, PoA DD and other relevant rules and requirements established for CDM project activities.

### Validation process

This report summarizes the findings of the validation of the project, performed on the basis of UNFCCC criteria for CDM requirements as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to the Kyoto Protocol, the CDM rules and modalities as agreed in the Bonn Agreement, the Marrakech Accords and the CDM Executive Board"s decisions.

The review of the CPA-DD and the subsequent follow-up interviews have provided Applus+Certifications with sufficient evidence to determine the project's fulfillment of all the stated criteria. In our opinion, the project meets all applicable UNFCCC requirements for the CDM.

The validation team has, based on the recommendations in the CDMValidation and Verification Standard for PoA version 2.0<sup>6/</sup> and employed a risk based approach in the verification, focusing on the identification of significant risks and reliability of project, monitoring plan and generations of CERs. The validation is not meant to provide any consulting towards the client. However, stated request for clarifications and/or corrective actions may provide input for improvement of the project design.

### Conclusion

The review of the CPA-DD,supporting documentation and subsequent follow up actions (on site visit and interviews) has provided Applus with sufficient evidence to determine the fulfilment of stated criteria. Applus is of the opinion that the CPA **"Coelvihidro 1 Hydro Power Plant, Quipico – Tunki PoA CPA # 1"** in Peru as described in the final CPA-DD, version 7.0, dated 29/10/2020 meets all relevant requirements of CDM, meets host country criteria and has correctly applied the methodology AMS-I D – Small scale methodology: Grid connected renewable electricity

generation, version 18.0/12/. Therefore, the project is being recommended to CDM EB for renewal request for inclusion.

## 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.	Lead Auditor / Technical Expert	OR	Kumar	Pankaj	True Quality Certifications Private Limited- Outsourced entity	YES	N/A	YES	YES

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

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	EI	Shen	Simon	Applus+ Certification
2.	Approver	IR	Sendín Caballero	Juan	Applus+ Certification

## SECTION C. Means of validation

### C.1. Desk/document review

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As a first step, the validation team reviewed the initial CPA-DD and additional background documents submitted by PP. As a result of these findings, PP has submitted the final CPA-DD<sup>1/</sup> (hereinafter referred to as CPA-DD) addressing the issues.

### C.2. On-site inspection

As per the requirement of sec. 7.1.3 and para 183 of CDM validation and verification standard for Programme of activities, version 02 , Para 183, assessment team did not conducted a site visit for 2<sup>nd</sup> renewal of crediting period of CPA 0001 “**Coelvihidro 1 Hydro Power Plant, Quipico – Tunki PoA CPA # 1**”<sup>2</sup>. To validate the CPA design, eligibility criteria of CPA to be included, monitoring & management practices as mentioned in the PoA-DD; assessment team has conducted telephonic interviews with CME/ PO. After telephonic interviews with concerned CME/ PO person; assessment team concluded that the design of CPA is same as envisaged in 1<sup>st</sup> CPA registered crediting period. There is no change in the

<sup>2</sup> [https://cdm.unfccc.int/ProgrammeOfActivities/cpa\\_db/F05ERU9W4GVPJ8QSKBCYO2XA16NTDZ/view](https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/F05ERU9W4GVPJ8QSKBCYO2XA16NTDZ/view)

eligibility of CPA design or operation and monitoring practices as mentioned in the registered CPA of 1<sup>st</sup> crediting period which can alter the applicability or additionality of the project activity/methodology applied i.e. AMS.I.D version 18. Assessment team therefore of the opinion that project is implemented as described in the registered CPA- DD for 1<sup>st</sup> crediting period and no change is envisaged for the proposed 2<sup>nd</sup> CPA renewal.

Duration of on-site inspection: NA				
No.	Activity performed on-site	Site location	Date	Team member
NA	NA	NA	NA	NA

### C.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Fernandez	Alonso Rodrigo Manco	Head, Business Development	26/10/2020	On the Project Implementation, operation, Monitoring team, QA/QC procedure, etc.,	Mr. Pankaj Kumar
2.	Ancco Pecchuilla	Antonio Abrahan	Head of Quipico Plant			
3.	Chiara Sinche	Gustavo Enrique	Commercial Analyst			
4.	Florian Reyes	Edgardo Rafael	Head of Andahuasi Region			
5.	Bruckner	Wolfgang	MD – Carbonbay			
6.	Mitra	Souvik	Consultant			

### C.4. Sampling approach

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The assessment team did not apply any sampling approach for the CPA-DD assessment.

### 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	1	
Application and selection of methodologies and standardized baselines	1		
Validity of original baseline or its update			
Demonstration of eligibility of the CPAs		1	
Estimated emission reductions or net anthropogenic removals		1	
Validity of monitoring plan			
Crediting period		1	
CME and project participants			
Post-registration changes			
Others (please specify)			
<b>Total</b>	<b>02</b>	<b>04</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
Coelvihidro 1 Hydro Power Plant, Quipico – Tunki PoA CPA # 1	Ver. 7.0	Peru	Coelvihidro 1 Hydro Power Plant, Quipico – Tunki PoA CPA # 1	Version 7

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

<b>Means of validation</b>	The Specific case CPA DD <sup>01/</sup> has been prepared using the latest version of CDM-CPA-DD Form, i.e. version 09.0 <sup>08/</sup> . It has been checked from the UN website that the form used is the latest form applicable for the CPA and each section has been filled as per the guidelines.
<b>Findings</b>	No finding was raised during the validation process
<b>Conclusion</b>	The CPA DD <sup>01/</sup> is found to be in compliance with the latest applicable form with all the sections filled in line with the form guidelines.

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

<b>Means of validation</b>	<p>The CPA applies AMS I D version 18 – “– Grid connected renewable electricity generation<sup>3</sup>”, where project is involved in installation and operation small scale run of the river hydro power plant to claim emission reduction by reduction in consumption of fossil fuels.</p> <p>The assessment team has validated the documentation referred to in the revised CPA-DD for renewable of crediting period and verified the documentation content for verifying the justification of the applicability of the methodology AMS-I.D version 18 and confirmed that the documentation referred to in the CPA-DD is correctly quoted and interpreted.</p> <p>The applicability of the methodology AMS ID Version 18 has been assessed as described below:</p>		
	S.N.	Applicability Conditions of AMS-ID, Ver. 18	DOE Assessment
	1.	<p>Applicability of methodologies and standardized baselines. The applicability criteria of AMS I.D. version 18 are the following:</p> <p>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</p>	<p>Methodology AMS I.D. version 18 is applicable to an generic CPA under the proposed PoA because:</p> <p>Assessment team checked that a CPA consists of a renewable energy generation unit (hydro) that supplies electricity and displaces electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit (thermal power plants</p>

<sup>3</sup> <https://cdm.unfccc.int/methodologies/DB/W3TINZ7KKWCK7L8WTXFQQOFQQH4SBK>

			connected to the national grid).
	2.	Illustration of respective situations under which each of the methodology (i.e. "AMSI.D.: Grid connected renewable electricity generation", "AMS-I.F.: Renewable electricity generation for captive use and mini-grid" and "AMS-I.A.: Electricity generation by the user) applies is included in the appendix.	CPA installs a new power plant, therefore the methodology AMSI.D is applicable as per the same.
	3.	This methodology is applicable to project activities that (a) install a (Greenfield plant); (b) involve a capacity addition; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s).	A new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity. However, the CPAs fall under options (a),
	4.	<p>a) Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology: The project activity is implemented in an existing reservoir with no change in the volume of reservoir;</p> <p>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>;</p> <p>c) C) The project activity results in new reservoirs and the power density of the power plant, as per definition given in the Project Emission section, is greater than 4 W/m<sup>2</sup>.</p>	This CPAs for the Tunki PoA comply with conditions (a), In case of the existence of reservoirs the power density is greater than 4 W/m <sup>2</sup> .
	5.	If the unit added has both renewable and non- renewable components (e.g. a wind/diesel unit), the eligibility limit of 15MW for a small scale CDM project activity applies only to the renewable component. If the unit added co-fires fossil fuel <sup>4</sup> the capacity of the entire unit shall not exceed the limit of 15MW.	Each CPA does only have renewable components and the capacity of the unit shall not exceed the limit of 15 MW.
	6.	Combined heat and power (co-	Not applicable, the proposed

		generation) systems are not eligible under this category.	CPA does not include combined heat and power systems.
	7.	In the case of project activities that involve the addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units.	In the case of CPAs including capacity additions, added units represent no more than 15 MW of power generation capacity and are physically distinct from the existing units.
	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 plant/unit shall not exceed the limit of 15 MW	In the case of CPAs including retrofits or modifications, the total installed capacity of each CPA does not exceed the limit of 15 MW.
	9.	In the specific case of biomass project activities the applicability of the methodology is limited to either project activities that use biomass residues only or biomass from dedicated plantations complying with the applicability conditions of AM0042.	Not applicable because the proposed CPA is limited to hydropower plants.
	10.	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 because the proposed CPA is limited to hydropower plants.
	11.	In case biomass is sourced from dedicated plantations, the applicability criteria in the tool "Project emissions from cultivation of biomass" shall apply. The scrapping of replaced equipment should be documented and independently verified.	Not applicable because the proposed CPA is limited to hydropower plants.
<b>Findings</b>		CL 01 was raised during the validation process and closed successfully.	
<b>Conclusion</b>		The CPA has 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 registration. For each of the applicability condition listed in the methodology AMS-ID. Version 18, the steps taken to assess the relevant information contained in the CPA-DD has been clearly described.	

	<p>The validation team checked the technical specification of hydro power plant and by discussion with the CME/PP during remote audit confirms that the proposed CDM CPA will only involve installation of small scale hydro power plant which are connected to grid. As the proposed CDM CPA falls under the small scale projects category and the project description of CPA-DD justifies the applicability criteria of the applied methodology AMS-I.D version 18 satisfactorily and in line with para 97 – 104 of CDM VVS of PoA, version 02/06/.</p>
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#### D.4. Validity of original baseline or its update

<b>Means of validation</b>	The baseline scenario as depicted in the CPA-DD version 7.0 is checked during telecon with PP representative and also during the interview with the consultants.
<b>Findings</b>	No finding was raised during the validation process
<b>Conclusion</b>	<p>Assessment team referred “Methodological tool (EB 66, Annex 47) “Assessment of the validity of the original / current baseline and update of the baseline at the renewal of the crediting period.” (Version 03.0.1)” and CDM validation and verification standard for program of activities, version 02” to check the originality of the baseline. Following are the observation of the assessment team regarding selected baseline for the project activity in this present 2<sup>nd</sup> renewable period:</p> <p><b>Step 1.1 (EB 66, Annex 47): Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies</b></p> <p>The baseline scenario identified at the validation of the CPA was the electricity delivered to the grid by the CPA, would have otherwise been generated by the operation of grid connected power plants and by the addition of new generation sources into the grid. Thus this CPA was a voluntary investment which intends to replace equivalent amount of electricity at grid from renewable source. The CME was not bound to incur this investment; hence absence of project activity (i.e. the investment) does not lead to any continued baseline practice for CME within their scope whereas the continued operation of the project activity would continue to replace equivalent amount of electricity at grid. Hence, the same baseline as identified in the previous crediting period is still valid for the project. Therefore, the assessment of the changes in market characteristics is not required for the renewal of the project’s crediting period under CDM. Notwithstanding the impressive growth of Peruvian electricity sector, there are enormous scope of further improvements in projects those lead to GHGs emission reductions. As per International Renewable Energy Agency (IRENA), the Peruvian electricity mix is diversified, clean and of low cost. It consists of 54% renewable energy and 46% conventional energy<sup>4</sup>. The current policies promote social inclusion, which has led to 92% of access to electricity and the current policy goal is to reach 99% of connectivity in 2019, by implementing a program to install 500.000 solar panel systems in rural areas. Peru aims to continue developing towards a low carbon energy mix, therefore for 2025 it has determined a new objective of 60% renewable energy and 40% gas in the electricity mix, securing access to electricity for the whole population. Hence, there exists scope for reducing the CO2 emissions in the country by increased use of renewable energy sources including hydroelectric energy. Furthermore, the CME has considered latest available data (2018) of the Committee on Economic Operation of the Electric System (COES) regarding annually public information of plants/ units generation and fossil fuel consumption in the Peruvian National Inter-connected Grid (SEIN) at the time of requesting renewal of the crediting period for establishing the baseline emission factor, which itself considered all the new circumstances.</p> <p><b>Step 1.2 (EB 66, Annex 47) : Assess the impact of circumstances</b></p> <p>There are no new circumstances that can impact the original baseline. The baseline emission factor value is however updated based on the current data</p>

<sup>4</sup> www.irena.org



available for the grid.

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

Assessment team confirm that this CPA was a voluntary investment which intends to replace equivalent amount of electricity at grid from renewable source. The CME was not bound to incur this investment; hence absence of project activity (i.e. the investment) does not lead to any continued baseline practice for CME within their scope whereas the continued operation of the project activity would continue to replace equivalent amount of electricity at grid. Hence, the same baseline as identified in the previous crediting period is still valid for the project. Therefore, the assessment of the changes in market characteristics is not required for the renewal of the project's crediting period under CDM.

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

This step stipulates that "Where emission factors, values or emission benchmarks are used and determined only once for the crediting period, they should be updated, except if the emission factors, values or emission benchmarks are based on the historical situation at the site of the project activity prior to the implementation of the project and cannot be updated because the historical situation does not exist anymore as a result of the CPA." The project chosen ex-post value of operating margin and combined margin emission factor

As per the Guidance given in Tool the emission factor is updated as follows:

1. The operating margin is calculated as per the latest version of Tool to calculate emission factor version 07 available to the project participant. The operating margin calculation method based on data provided by Peruvian interconnected grid (SEIN) is checked by the assessment team and found correct.
2. The build margin is calculated from "Tool to calculate the emission factor for electricity system" version 07. The value considered is checked by the assessment team and found correct
3. The Combined margin calculation is carried out as per "Tool to calculate the emission factor for electricity system" version 07. The combined margin emission factor calculation method based on data provided by Peruvian interconnected grid (SEIN) and ex ante build margin factor is checked by the assessment team and found correct.

There is no change in ex ante data and parameters since 1<sup>st</sup> CPA crediting period. Build margin emission factor calculated and fixed ex ante for 2<sup>nd</sup> crediting period based on official data provided by the administrator of the grid or the relevant national authority (COES) publicly available in its web site.

**Application of Steps 1.1, 1.2, 1.3 and 1.4 confirmed that the current baseline is valid for the Second CPA period.**

**Step 2.1: Update the current baseline**

As evident from the explanation provided above the baseline scenario remains unchanged. Updated the baseline emissions based on the latest approved version of the methodology applicable to the project activity for the subsequent crediting period, without reassessing the baseline scenario.

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

The updated Data and/or parameter are followed for estimating the baseline emissions. Hence as per AMS-I.D version 18 (latest Methodology), the baseline of the project is as follows: "The baseline scenario is that the electricity delivered to

	the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid." The above selected baseline is correct and thus applicable to the project activity and in line with approved methodology for the applied renewable of crediting period.
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#### D.5. Demonstration of eligibility of the CPAs

Means of validation	The eligibility criteria have been developed to meet the references in line with para 124 of CDM Project standard for Programme of Activities, Ver. 2.0			
Findings	CAR 03 was raised during the validation process and closed successfully			
Conclusion	A CPA to be included and/or renewed in the present PoA fulfils the following conditions:			
	No.	Eligibility criterion – Category	Eligibility criterion – Required condition	Justification of Supporting evidence for inclusion
	1	Inclusion criteria	Each CPA will involve one or several hydro power projects located in Peru. In aggregate, the hydro power plants will comply with the SSC threshold (see eligibility criteria number 2)	Based on interview with CME representative and by referring Unique GPS coordinates CPA DD 1 as mentioned on UNFCCC website, validation team confirmed that CPA is located in Peru and geo coordinates of CPA is same as mentioned in previous crediting period.  <a href="https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/F05ERU9W4GVPJ8QSKBCYO2XA16NTDZ/view">https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/F05ERU9W4GVPJ8QSKBCYO2XA16NTDZ/view</a>
2	Fulfilling the methodology	Fulfill the SSC methodology AMS I.D “Grid connected renewable electricity generation” version 18.0 as listed in section I.1 of the present PoA – DD and calculate the emission reductions as stated in section I.6. As a resume, a hydro power project could be implemented under this program if: 1. Will supply electricity and displaces electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit (thermal power plants connected to the national grid). 2. Will be a new run-of-river hydropower plant up to 15 MW; 2. Will be a new power plant up to 15 MW developed	Applicability conditions of AMS-I.D. (Version.18.0) Section B of CPA-DD. Validation team also checked Quipico Project Study made by <i>Hidroequipos Consultoria y Obras SRL</i> which confirms that this CPA is greenfield grid connected run of the river hydro power plant with capacity less than 15 MW.	

			<p>with an existing reservoir with no change in the volume of the reservoir; or where the volume of the reservoir is increased considering a final power density greater than 4 W/m<sup>2</sup>;</p> <p>3. Will be a new power plant up to 15 MW developed with a new reservoir (e.g. upstream regulatory dam or natural lagoons typical for Peruvian hydrological planning) where the power density of the power plant is greater than 4 W/m<sup>2</sup>.</p> <p>4. Will be a capacity addition over an existing hydropower plant, to increase in the installed power generation capacity keeping the total power capacity below 15 MW, by means of: (i) the installation of a new power plant besides the existing power plant/units, or (ii) the installation of new power plant/units, additional to the existing power plant/units. The existing power plant/units continue to operate after the implementation of the project activity.</p> <p>5. Will be a retrofit (or Rehabilitation or Refurbishment) over an existing hydropower power plant that involves an investment to repair or modify an existing power plant/unit to resume the operation of closed power plants. Retrofits shall only include measures that involve capital investments and not regular maintenance or housekeeping measures to increase the power generation capacity keeping the total installed power capacity of the facility below 15 MW.</p> <p>6. Will be a replacement of one or several existing unit(s) at an existing power plant that involves investment to increase in the installed power</p>	
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			generation capacity keeping the total installed power capacity of the facility below 15 MW.	
	3.	Transfer of energy equipment	No energy generating equipment is transferred from another activity, located in a non-annex 1 party and no existing equipment is transferred from the project to another activity.	Validation team checked Quipico Project Study made by <i>Hidroequipos Consultoria y Obras SRL</i> and confirmed that there will be no transfer of energy generating equipment from any activity located in non annex 1 country. The project acquired only new equipment .
	4.	No double counting	To avoid double counting of emission reductions each CPA-DD shall be uniquely identified and defined in an unambiguous manner. Then each CPA owner will submit to the CME specific geographic information (region, department, district and the coordinates of the water intake, water discharge and power house). In addition the CME will set in the CPA-DD and internal documentation a unique CPA identification name and number and the complete name and contacts of the CPA owner, installed capacity.	Validation team checked declaration of double counting dated 05/11/2020 which confirms unique GPS coordinate for this CPA.
	5.	Start date	Do not have a start date (as defined by the UNFCCC Glossary of Terms) before July 7 <sup>th</sup> , 2011. . Since the start date can be defined by different project milestone, the CPA owner shall provide formal documentary evidence to the CME for its evaluation when the start date has already occurred (e.g. contracts for supplying wind turbines, contract for civil works, payments set in PPAs, contracts with the entity financing the project, among others according to the project characteristics).	Contracts for supplying turbines, contract for civil works, payments set in PPAs, contracts with the entity financing the project, among others according to the project characteristics, or licenses, among others. Validation team checked land contract signed on 23/08/2011 which is after 07/07/2011. Hence start date of CPA confirmed to be in line with UNFCCC guidelines

	6.	Demonstration of additionality	<p>The CPA shall be able to demonstrate additionality with one of the options listed in section C of the present PoA – DD, taking into consideration that approach 1 is only for projects up to 5 MW of installed capacity (list of technologies additional by default or CPA placed in an underdeveloped area). Any project over 5 MW shall demonstrate a financial additionality</p>	<p>Validation team confirmed that CME has opted approach 1 (b – to demonstrate additionality in accordance with sec. C. of registered PoA-DD. The capacity of CPA is less than 5 MW and project is located in special underdeveloped zone of the Peru. Validation team checked Information of the Household Targeting System and Policy for Organization and Operation (Sistema de Focalizacion de Hogares y Directiva de Organizacion y Funcionamiento – SISFOH) and Ministerial Resolution No 399-2004-PCM which confirms that CPA is located in a geographical area that is classified as poor or in extreme poverty by SISFOH<sup>5</sup></p> <p>SISFOH is part of the Ministry of Economy and Finance and the data base is from 2009. Therefore validation team conclude that CPA fulfils both the eligibility criteria of option b of approach 1 in line with PoA-DD.</p>
	7.	Stakeholder consultation	<p>The CPA owner shall develop a local stakeholder consultation process before its inclusion in the PoA as stated in Section D of the present PoA – DD.</p>	<p>Validation team checked all supporting documents of LSC conducted like invitations evidences (letters, posters, photos, video), attendance list, agreement records, among others and confirm the same as appropriate</p>

<sup>5</sup> Information of the Household Targeting System and Policy for Organization and Operation (Sistema de Focalizacion de Hogares y Directiva de Organizacion y Funcionamiento – SISFOH)

	8.	Environmental impacts	The CPA owner shall describe any potential environmental impacts of the hydro project in the CPA-DD. At the moment of submitting the PoA for registration, the Peruvian regulation does not require Environmental Impact Assessments (EIAs) for hydro projects under 20 MW as stated in section C of the present PoA – DD. The potential impacts of the transmission line shall be described according to the applicable environmental assessment report, if applicable (EIA or Environmental Impact Declaration). If the transmission line is part of the hydro project to be included, and if it is applicable, the CPA owner shall have the EIA or DIA approved in order to be included in the PoA.	Validation team checked energy regulation (Energy Concession Law 25844 <sup>6</sup> ) which does not require the development of an environmental assessment for the power plant or the transmission line.
	9.	Funding	The CPA owner will sign a formal document affirming that funding from Annex I parties, if any, do not result in a diversion of official development assistance.	Affidavit on No Public Funding from Annex 1 party

<sup>6</sup> Web link: <http://www.minem.gob.pe/minem/archivos/file/Electricidad/normatividad/dl25844.pdf> (Law 25844 updated with the current modifications). Download at July 2011.

	10.	Connection to the grid	<p>During the operation phase, the power plant will be connected to the Peruvian National Electricity Grid (SEIN), and will follow all national regulations established for the development and approval of hydro power plants under 20 MW<sup>7</sup>. Particularly, the project to be evaluated as a new CPA shall have the study of water use ("Estudio de Aprovechamiento Hidrico") approved by the National Water Authority<sup>8</sup> (ANA). This study will ensure a social and environmental analysis required by the Peruvian government. For more details of the Peruvian Electric Market please see Annex 3.</p>	<p>The project will be connected to the SEIN in order to sell its electricity and power production and has the hydrological study approved by ANA as confirmed with Quipico Project Study made by <i>Hidroequipos Consultoria y Obras SRL</i></p>
	11.	Small-scale threshold	<p>Every CPA owner will sign a formal document affirming that the CPA, in aggregate shall meet the small-scale thresholds (up to 15 MW of installed capacity) throughout the crediting period of the CPA. Micro-scale projects using approach 1 in the additionality assessment (of section E.5) shall sign a formal document affirming that the CPA, in aggregate remain below the micro-scale threshold (5 MW of installed capacity) throughout the crediting period of the CPA.</p>	<p>Sworn declaration based on format developed by the CME</p>
	12.	Debundling	<p>The CPA owner shall not be a de-bundled SSC or micro scale project. The CME will develop a previous de-bundling analysis based on the "Guidelines on Assessment of de bundling</p>	<p>Sworn declaration based on format developed by the CME</p>

<sup>7</sup> Energy Concession Law. Web link: <http://www.minem.gob.pe/minem/archivos/file/Electricidad/normatividad/dl25844.pdf> (Law 25844 updated with the current modifications). Download at July 2011.

<sup>8</sup> Institutions, licences and studies may change its names in the future. In that case the equivalent (or upgraded) approval shall be adopted for the CPA.

			for SSC Project Activities”, (version 03) and the CPA owner will sign it as sign of conformity with the content and results.	
	13.	Participation in other carbon market mechanism	The CPA under the PoA is neither registered as an individual CDM project activity nor included as a CPA in another registered CDM PoA. The CPA owner shall sign a formal document stating that the project is not or will not participate in other carbon market mechanism.	Declaration of double counting check, Unique GPS coordinate
Validation team confirms that CPA fulfils all eligibility criteria for renewal of crediting period in line with approved PoA DD and applied methodology.				

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

<b>Means of validation</b>	The emission reduction sheet updated based on most recent data available from Peruvian Interconnected grid (SEIN) and data of COES (Economic operation of Electrical System). Tool to calculate the emission factor, ver. 07, Grid emission factor sheet, version 01 dated 04/12/2019 and CPA-DD, ver. 7.0 checked by the assessment team
<b>Findings</b>	CAR 04 was raised during the validation process and closed successfully.
<b>Conclusion</b>	<p>This CPA uses the AMS I.D. “Grid connected renewable electricity generation” version 18 as methodology for the emission reduction calculation. In accordance with the methodology, the baseline scenario is the electricity delivered to the grid by the project activity that otherwise would have been generated by the operation of grid-connected power plants and by the addition of new generation sources. In order to calculate the grid emission factor, required by the methodology, the “Tool to calculate the emission factor for an electricity system” version 7.0 is used. The grid emission factor is updated by the coordinating/managing entity every year to consider the electricity system variations. This updated grid emission factor is available for CPA owner in order to estimate their periodical emission reductions</p> <p><b>Project emissions (PEy) :</b> According to the methodology, project emissions are related to the operation of geothermal power plants, water reservoirs or on-site consumption of fossil fuels. Since this CPA is not geothermal power plant or consumes fossil fuels. This CPA consist of greenfield run of the river hydro power plant with no reservoir, hence project emission is considered zero.</p> <p><b>PEy = 0</b></p> <p><b>Baseline emissions:</b></p> <p>The following equation is used to calculate baseline emissions from electricity generation for a CPA implementing a new power plant:</p> <p><b>BEy = EG BL,y * EFCO2,grid,y</b> Where: BEy : Baseline emissions from electricity generation in year y (Tco2) EG BL,y : Quantity of net electricity supplied to the grid as a result of the</p>



	<p>implementation of the CDM project activity in year y (MWh)  <math>EFCO2_{grid,y}</math> : CO2 emission factor of the grid in year y (Tco2/MWh)  <b>BE<sub>y</sub> = 13,172 MWh * 0.7045 = 9,279 tCO<sub>2</sub>e</b></p> <p><b>LEAKAGE (LE<sub>y</sub>)</b></p> <p>According to the applicable methodology, leakage calculation is considered if the energy generating equipment is transferred from another activity. Since the CPA acquire new equipment, leakage is zero.</p> <p><b>LE<sub>y</sub> = 0.</b></p> <p><b>Calculation of emission reductions</b></p> <p><math>ER_y = (BE_y - PE_y) - LE_y</math>  Where,  <math>ER_y</math> – Emission reductions in year y (t CO<sub>2</sub>e)  <math>BE_y</math> – Baseline emissions in year y (t CO<sub>2</sub>e)  <math>PE_y</math> – Project emissions in year y (t CO<sub>2</sub>e)  <math>LE_y</math> – Leakage emissions in year y (t CO<sub>2</sub>e)</p> <p>The estimation emission reduction for the renewal crediting period is calculated as below:</p> <p><b>Baseline emission:</b> Project Capacity (MW): 1.68 MW  Reference/Source: CPA-DD</p> <p><b>Project Load Factor (%)</b>: 89.5%  Reference/Source: In accordance with the estimated ER calculation sheet of CPA #1 please refer to:  <a href="https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/F05ERU9W4GVPJ8QSKBCY O2XA16NTDZ/view">https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/F05ERU9W4GVPJ8QSKBCY O2XA16NTDZ/view</a></p> <p><b>Annual Generation (MWh)</b>: 13,172 MWh</p> <p><b>Baseline emission</b>= 9,279 ( Please refer the Estimated ER sheet. The baseline emission is calculated as Net generation * grid emission factor. Net generation is 13,172*0.7045= 9,279 tCO<sub>2</sub>e annually)</p> <p><b>Project and leakage emissions are = 0</b></p> <p><b>Emission reductions = 9,279 tCO<sub>2</sub>e</b></p>
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#### D.7. Validity of monitoring plan

<b>Means of validation</b>	Assessment team checked the monitoring practice of CPA and also checked the requirement of AMS-I.D version 18 and procedure mentioned in the registered PoA-DD of 2 <sup>nd</sup> Period.
<b>Findings</b>	No finding was raised for the section
<b>Conclusion</b>	<p>Following monitoring parameters are included in CPA-DD and the same is as per the requirement of approved methodology:</p> <p><b>EGBL<sub>y</sub> / EGPJ<sub>y</sub>, facility<sub>y</sub></b> : Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y / Quantity of net electricity supplied to the grid by the project plant/unit in year y. The primary source of data for the parameter is electricity meter(s) to be specified in CPA and or COES information. The net electricity supplied to the grid is measured continuously and recorded at least each hour according to COES requirements.</p>

A high level of accuracy of the measurements is achieved due to the use high precision equipment calibrated and tested.

Every CPA defines in detail the specific conditions to measure the electricity if imported from the grid. The following cases, among others, may occur for this CPA

- The net electricity is calculated by subtracting the electricity exported with the electricity imported by the CPA, both measured with calibrated meters. – The net electricity is calculated by subtracting electricity consumptions arriving not by the power plant transmission line (e.g. external lighting) listed in commercial invoices.

Measuring energy equipment complies with updated national or IEC standards (at the moment of submitting the PoA-DD, energy meters shall be at least with a precision class of 0.2 according to COES regulation), and calibrated according to the national standards and reference points or IEC standards and recalibrated at appropriate intervals according to manufacturer specifications, but at least once every three years.

The meter readings may be cross-check with available internal and/or external information as electricity invoices or COES information.

Since COES reports official information of the SEIN operation, in case of troubles with the energy readings or meter operation, COEs information prevails.

Energy meters are property of the CPA owner unless it is justified otherwise due to technical conditions, regulatory framework, among others. Data is kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whatever occurs later.

**Efgrid,CM,y** : Emission factor for the Peruvian interconnected grid (SEIN). The baseline emission factor (Efgrid,CM,y) is calculated as a combined margin (CM), consisting of the combination of operating margin (EFgrid,OM,y) and build margin (EFgrid,BM,y) (BM is fixed ex-ante) factors. The value is monitored however for the 2<sup>nd</sup> renewal the CM value calculated as per the tool to calculate the emission factor version 07 as 20190.7045.

**Efgrid,OM-DD,y**: The Dispatch Data Analysis OM emission factor. The dispatch data analysis operating margin emission factor (EFOM- DD,y = EFgrid,OM,y in tCO<sub>2</sub>e/MWh) is a method which involves the power unit that are actually dispatched at the margin during each hour h, where the power unit are separated in power unit in the top of the dispatch n and other power unit. The value is monitored however for the 2<sup>nd</sup> renewal the OM value calculated for the purpose of estimating the ERs for the 2<sup>nd</sup> crediting period as per the tool to calculate the emission factor version 07 as 2019: 0.6532

**EGPJ,h** : Electricity displaced by the project activity in hour h of year y. The primary source of data is Project records and/or COES. The parameter is Directly measured and/or based on the information provided by COES. The proportion of data to be monitored is 100% and the data is archived electronically.

The CPA specifies the value and measurements used (same value as EGBL,y / EGPJ,facility,y for new power plants and only the incremental electricity in the case on retrofitting, replacement and capacity additions).

**EGPJ,y**: Total electricity displaced by the project activity in year y. The primary source of data is Project records and/or COES. The proportion of data to be monitored is 100% and the data is archived electronically.

**EFEL,DD,h** : CO<sub>2</sub> emission factor of power unit in the top of the dispatch order in hour h in year y. The primary source of data for the parameter is Input data provided by COES. To calculate EFEL,DD,h the second option is chosen because for the power units data on fuel consumption and electricity generation is available.

	<p>The proportion of data to be monitored is 100% and the data is archived electronically.</p> <p><b>EG<sub>n,h</sub></b> : Electricity generated and delivered to the grid by power units n in hour h. The primary source of data for the parameter Data provided by COES. Data used is presented in the spreadsheet for Grid Emission Factor calculation. The proportion of data to be monitored is 100% and the data is archived electronically.</p> <p><b>EF<sub>EL,n,y</sub></b> : CO2 emission factor of power unit n in year y. The EF<sub>EL,n,y</sub> is determined for method the simple operating margin option A.2. Data used is presented in the spreadsheet for Grid Emission Factor calculation. The proportion of data to be monitored is 100% and the data is archived electronically.</p> <p><b><math>\eta_{m,y}</math></b>: Average net energy conversion efficiency of power unit n in year y (ratio). The primary source of data for the parameter is Data provided by COES. Each year this data is checked with the last available annual report of COES. Data used is presented in the spreadsheet for Grid Emission Factor calculation.</p> <p>The proportion of data to be monitored is 100% and the data is archived electronically. If the data used is significantly lower than the default value of the applicable technology, CPA owner should assess the reliability of the values, and provide appropriate justification if deemed reliable. Otherwise, the default values above shall be used.</p> <p><b>FCO2,m,i,y</b>: Average CO2 emission factor of fuel type i used in power unit n in year y. The primary source of data is IPCC default values at the lower limit of the uncertainty at a 95% confidence interval as provided in Table 1.4 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories. The value applied for 2<sup>nd</sup> CP is Diesel Oil = 72,600, Residual Fuel Oil = 75,500, Natural Gas = 54,300 Coal = 87,300. The parameter is subjected to monitoring and hence Every update of IPCC reports is taken into account.</p> <p><b>W<sub>OM</sub></b> : Weighting of operating margin emissions factor. The first crediting period, WOM = 0.5 and for The second and third crediting period, WOM = 0.25 as per the requirement of the tool to calculate the emission factor version 07.</p> <p><b>W<sub>BM</sub></b> : Weighting of operating margin emissions factor. The first crediting period, WBM = 0.5 and for The second and third crediting period, WBM = 0.75 as per the requirement of the tool to calculate the emission factor version 07.</p> <p><b>Merit Order</b>: The merit order in which power plants are dispatched by documented. The primary source of data for the parameter is Data provided by COES. For each year, the variable cost of thermal plants in the SEIN that are in effect in December are used. The proportion of data to be monitored is 100% and the data will be archived electronically.</p>
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#### D.8. Crediting period

<b>Means of validation</b>	The crediting period is checked as per UN home page (CPA 6198-P1-0001-CP1 : Coelvihidro 1 Hydro Power Plant, Quipico- Tunki PoA CPA#1 <sup>9</sup>
<b>Findings</b>	No finding raised during validation
<b>Conclusion</b>	This is 2 <sup>nd</sup> renewable crediting period and the duration is 7-year renewable (2 <sup>nd</sup> CP duration: 19/09/2020- 18/09/2027). As per para 390 (v) of CDM VVS for PoA, Ver. 2.0, the next crediting period of the project activity commences on the day immediately after the expiration of the current crediting period. As first crediting period ending on 18/09/2020, 2 <sup>nd</sup> crediting period starts on 19/09/2020 and lasts for 7 years.

<sup>9</sup> [https://cdm.unfccc.int/ProgrammeOfActivities/cpa\\_db/F05ERU9W4GVPJ8QSKBCYO2XA16NTDZ/view](https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/F05ERU9W4GVPJ8QSKBCYO2XA16NTDZ/view)

**D.9. CME and project participants**

<b>Means of validation</b>	The project participant names were checked from UN homepage:  <a href="https://cdm.unfccc.int/ProgrammeOfActivities/poa_db/8J56SG0WRNM7LZIUPC3D AYQXKBEFV1/view">https://cdm.unfccc.int/ProgrammeOfActivities/poa_db/8J56SG0WRNM7LZIUPC3D AYQXKBEFV1/view</a>						
<b>Findings</b>	No findings raised						
<b>Conclusion</b>	<p>Following are the details of CME (host country) and Annex 1 country. The same is correct and in line with CPA DD registered under 1<sup>st</sup> Crediting period as well as MOC obtained from UN home page. The details are true for the 2<sup>nd</sup> Crediting period as well. Name of PPs cross checked with registered CPA DD, ver. 5.7 dated 13/03/2018 which was approved on 26/06/2018 and found consistent with CPA DD.</p> <table border="1"> <thead> <tr> <th>Parties involved</th><th>Coordinating and Management Entity (CME)</th><th>Indicate if the Party involved wishes to be considered as project participant (Yes/No)</th></tr> </thead> <tbody> <tr> <td>Peru (Host)</td><td>Carbonbay GmbH &amp;Co. KG</td><td>No</td></tr> </tbody> </table>	Parties involved	Coordinating and Management Entity (CME)	Indicate if the Party involved wishes to be considered as project participant (Yes/No)	Peru (Host)	Carbonbay GmbH &Co. KG	No
Parties involved	Coordinating and Management Entity (CME)	Indicate if the Party involved wishes to be considered as project participant (Yes/No)					
Peru (Host)	Carbonbay GmbH &Co. KG	No					

**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>10</sup>	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

<sup>10</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).

## SECTION E. Internal quality control

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As final step of a validation of the final documentation including the 2<sup>nd</sup> renewable crediting CPA period validation report and the checklist have to undergo an internal quality control by the technical review committee, i.e. each report has to be finally approved either by the head of the technical review committee or the deputy. In case one of these two persons is part of the assessment team approval can only be given by the other one to avoid any conflict of Interest.

## SECTION F. Validation opinion

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Applus+ Certification has performed a validation for renewal of crediting period of the “**Coelvihidro 1 Hydro Power Plant, Quipico – Tunki PoA CPA #1**”<sup>11</sup>. The validation was performed on the basis of UNFCCC criteria and host country criteria, as well as criteria, e.g. AMS-I.D version 18, given to provide for consistent project operations, monitoring and reporting.

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

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

By displacing fossil fuel-based electricity with electricity generated from a renewable source, the project results in reductions of CO<sub>2</sub>e emissions that are real, measurable and give long-term benefits to the mitigation of climate change. An analysis of the positive list of renewable project demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is implemented as designed, the project is likely to achieve the estimated amount of annual emission reductions of 9,279 tCO<sub>2</sub>e.

In summary, it is Applus+ Certification’s opinion that the CPA titled “Coelvihidro 1 Hydro Power Plant, Quipico – Tunki PoA CPA #1” as described in the CPA-DD of 29/10/2020, meets all relevant UNFCCC requirements for a CPA under the CDM and all relevant host Party criteria and correctly applies the baseline and monitoring methodology AMS-I.D, version 18.

The validation has been performed following the requirements of the latest version of the CDM validation and verification standard for programmes of activities, version 02.0 and on the basis of the contractual agreement. The single purpose of this report is its use during the renewal process as part of the CDM/UNFCCC project cycle.

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<sup>11</sup> [https://cdm.unfccc.int/ProgrammeOfActivities/cpa\\_db/F05ERU9W4GVPJ8QSKBCYO2XA16NTDZ/view](https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/F05ERU9W4GVPJ8QSKBCYO2XA16NTDZ/view)

## Appendix 1. Abbreviations

Abbreviations	Full texts
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction(s)
CME	Co-ordinating Managing entity
CL	Clarification request
CPA	CDM Programme Activity
CP	Crediting period
CO <sub>2</sub>	Carbon dioxide
CO <sub>2</sub> e	Carbon dioxide equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
EF	Emission Factor
ER	External Resource
EIA	Environmental Impact Assessment
ER	Emission Reductions
FAR	Forward Action Request
GHG	Greenhouse gas(es)
BM	Build Margin
OM	Operating Margin
IR	Internal Resource
OR	Outside resource
CMS	Central Monitoring System
NGO	Non Governmental Organization
PP	Project Participant
ODA	Official Development Assistance
LDC	Least Developed Country
IPCC	Intergovernmental Panel on Climate Change
SEIN	Peruvian National Electricity Grid

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

Mr. Pankaj  
Kumar

**Pankaj Kumar** worked as team leader – Bihar for South Asia Climate Proofing and Growth Development(CPGD) – Climate Change Innovation Programme (CCIP) supported by DFID that seeks to mainstream climate change resilience into planning and budgeting at the national and sub-national level in India, Pakistan, Nepal, and Afghanistan. Pankaj Kumar has worked previously with IL&FS Infrastructure Development Corporation and BUIDCO(Bihar Urban Infrastructure Development Corporation), Govt. of Bihar as Environmental Specialist for WB & ADB funded projects. Prior to this, he worked with Carbon Check (UNFCCC accredited DoE), Johannesburg, RSA as Team Leader for validation, verification of around 100 GHG projects in Asia, Africa, USA, Asia Pacific & Americas. Pankaj is accredited Lead Auditor, Validator, Verifier and Technical Expert for Sectoral Scope/Technical Area – 1.1, 1.2, 3.1 & 13.1 by UNFCCC DoE (Designated Operational Entity), APPLUS, Spain. He is also member of task force on climate change & human health, Health Department, GoB and on roster of UNICEF's WASH experts.

He is an experienced, qualified and result oriented Environment Professional having more than 14 yrs. of relevant experience in Climate Change (Mitigation & Adaptation), Environmental Due Diligence, Disaster Risk Reduction, Validation and Verification of GHG project under CDM, Verified Carbon Standard, Gold Standard & Social Carbon Standard, Brazil. He provides technical support for environmental investigative, consultative and remedial projects involving air, water and soil, Waste management, EIA, Environmental Compliance, ISO 14001, OHSAS 18001, GHG accounting (ISO 14064) and Carbon foot printing

Pankaj Kumar is Masters in Environment Management from Forest Research Institute (University), I.C.F.R.E, Dehradun, which is Centre of Excellence in South East Asia for Forestry education & research and PGDEL from National Law School of India University, Bangalore (India).

Mr. Simon Shen

**Simon Shen** (Master's Degree in Thermal Energy Engineering, Bachelor's Degree in Environmental Engineering) is an Auditor appointed by Applus+ LGAI for the GHG project assessment, auditing and technical review.

He has more than 6 years of work experience in CDM/GS4GG/VCS project assessment and review with Applus+, apart from the years of experience working as GHG Auditor and ISO 9001/14001 in TUV SUD for 5 years before he joined Applus+.

Mr. Simon Shen has extensive experience also as former Applus+ Shanghai CDM Technical Manager.

### Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	CME	CPA-DD-01	Version 7.0 dated 29/10/2020	CME
2	CME	PoA DD Generic CPA DD	Version 07 Dated 27/11/2019	CME
3	CME	Grid emission factor sheet	04/12/2019	CME
4	UNFCCC	PCP for PoA	Version 2.0	Other
5	UNFCCC	PS for PoA	Version 2.0	Other
6	UNFCCC	VVS for PoA	Version 2.0	Other
7	UNFCCC	CDM Glossary terms	Version 10	Other
8	UNFCCC	CDM-CPA-DD-FORM	Version 9.0	Other
9	NA	CPA-1,2,3 and 4 for 1st PoA DD renewal.	<p>CPA-DDs of all four CPAs Please refer to CPA DD 1  <a href="https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/F05ERU9W4GVPJ8QSKBCYO2XA16NTDZ/view">https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/F05ERU9W4GVPJ8QSKBCYO2XA16NTDZ/view</a></p> <p>CPA DD 2  <a href="https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/RFPBQX5AUOS820HIE3T1M6Y4NWD9LV/view">https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/RFPBQX5AUOS820HIE3T1M6Y4NWD9LV/view</a></p> <p>CPA DD 3  <a href="https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/YJIRBA9SCO2GMDPE0NLWK431HU5X7V/view">https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/YJIRBA9SCO2GMDPE0NLWK431HU5X7V/view</a></p> <p>CPA DD 4  <a href="https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/6YZDI30FVUS5KNXHA7LMB8O9JGPQEC/view">https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/6YZDI30FVUS5KNXHA7LMB8O9JGPQEC/view</a></p>	Project participant
10	NA	Contract of the project participant with the DOE	Contract document signed between PP and DOE	Project participant
11	NA	COES (Committee on Economic Operation of the Electric System)	Govt. of Peru	
12	NA	AMS-I.D version 18	UNFCCC CDM web site	UNFCCC
13	NA	Modalities of Communication		UNFCCC
14	NA	Tools/ guidelines used in the project activity: <ul style="list-style-type: none"> <li>Methodological tool for assessment of debundling for small scale project activities, ver,</li> </ul>	UNFCCC CDM web site	UNFCCC



		<p>04, EB 83, Annex 13</p> <ul style="list-style-type: none"> <li>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).</li> <li>General guidelines for SSC CDM methodologies, ver. 23 dated 12/09/2019</li> <li>Tool to calculate the emission factor for an electricity system, ver. 07</li> <li>Tool: Demonstration of additionality of microscale project activities, ver. 09 dated 29/11/2018</li> </ul>		
16	NA	ER sheet	29/10/2020	CME
17	NA	Unique GPS coordinates	<p>CPA-DDs of all four CPAs Please refer to <b>CPA DD 1</b>  <a href="https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/F05ERU9W4GVPJ8QSKBCYO2XA16NTDZ/view">https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/F05ERU9W4GVPJ8QSKBCYO2XA16NTDZ/view</a></p> <p><b>CPA DD 2</b>  <a href="https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/RFPBQX5AUOS820HIE3T1M6Y4NWD9LV/view">https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/RFPBQX5AUOS820HIE3T1M6Y4NWD9LV/view</a></p> <p><b>CPA DD 3</b>  <a href="https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/YJIRBA9SCO2GMDPE0NLWK431HU5X7V/view">https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/YJIRBA9SCO2GMDPE0NLWK431HU5X7V/view</a></p> <p><b>CPA DD 4</b>  <a href="https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/6YZDI30FVUS5KNXHA7LMB8O9JGPQEC/view">https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/6YZDI30FVUS5KNXHA7LMB8O9JGPQEC/view</a></p>	UNFCCC

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

Table 1. CLs from this validation

CL ID	01	Section no.	A.1	Date: 28/10/2020
<b>Description of CL</b>				
1. In sec. A.1, total amount of electricity generated per year changed from 13,093 to 13,171 MWh as compared to previously approved CPA-DD (1 <sup>st</sup> CP). CME shall provide rationale for change in electricity generation value				
2. In sec. A.1, older version of CDM project standard referred.				
<b>CME response</b>				<b>Date: 29/10/2020</b>
1. In the registered CPA DD (1 <sup>st</sup> CP), the total amount of electricity generated per year was in line with installed capacity of 1.67 MW but in the process the installed capacity increased from 1.67 MW to 1.68 MW and hence the total amount of annual electricity generation also increased from 13,093 MWh to 13,171 MWh. That is why total annual electricity generation has been updated in section A.1 of CPA DD				
2. The reference to CDM project standard has been updated in section A.1 of CPA DD				
<b>Documentation provided by CME</b>				
CPA DD v7.0				
<b>DOE assessment</b>				<b>Date: 09/11/2020</b>
1. CME has clarified that in the process, the installed capacity increased from 1.67 MW to 1.68 MW. CME is requested to explain this process and whether this change in capacity approved by UNFCCC?				
2. In sec. A.1 of revised CPA-DD, ver. 7.0 dated 29/10/2020, weblink for latest project standard provided in footnote 3 is not working.				
<b>CL Open</b>				
<b>CME response</b>				<b>Date: 09/11/2020</b>
1. The Installed capacity increased from 1.67 MW to 1.68 MW has been approved by UNFCCC and same shall be checked on PoA-CPA DD page.				
2. Corrected the same in revised CPA-DD				
<b>Documentation provided by CME</b>				
CPA DD v7.0				
<b>DOE assessment</b>				<b>Date: 09/11/2020</b>
1. Marginal increase in installed capacity approved by UNFCCC which was checked by validation team on UNFCCC interface and found to be correct.				
2. CME has now referred correct version of project standard in sec. A.1 of revised CPA DD, ver. 7.0 dated 29/10/2020.				
<b>CL Closed</b>				

CL ID	02	Section no.	B.1, B.4.2	Date: 28/10/2020
<b>Description of CL</b>				
1. In sec. B.1, still older version of methodology mentioned and CME shall also refer latest version of tool to calculate emission factor				
2. In B.4.2, CME shall provide spread sheet for calculation of Build margin emission factor				
<b>CME response</b>				<b>Date: 29/10/2020</b>
1. in Section B.1 of CPA DD, the version of methodology and relevant methodological tools has been updated				
2. Spread sheet for calculation of Build Margin emission factor has been provided in support of the value of build margin emission factor mentioned in section B.4.2				
<b>Documentation provided by CME</b>				
1. CPA DD v7.0				
2. Spread sheet for calculation of build margin emission factor				
<b>DOE assessment</b>				<b>Date: 09/11/2020</b>

1. CME has now referred latest version of applied methodology and corresponding in sec. B.1 of revised CPA-DD, ver. 07 dated 29/10/2020
  2. CME has provided spread sheet for calculation Build margin and combined margin emission factor which found to be correct by validation team.
- CL Closed.**

**Table 2. CARs from this validation**

<b>CAR ID</b>	01	<b>Section No.</b>	A.6	<b>Date:</b> 28/10/2020
<b>Description of CAR</b>				
<i>PP/ CME shall provide declaration regarding ODA funding for CPA 0001</i>				
<b>CME response</b>				<b>Date:</b> 29/10/2020
PP/CME has provided declaration that there is no ODA for CPA #1				
<b>Documentation provided by CME</b>				
Declaration from PP/CME regarding ODA				
<b>DOE assessment</b>				<b>Date:</b> 09/11/2020
CME has provided no ODA declaration dated 05/11/2020. <b>CAR closed.</b>				

<b>CAR ID</b>	02	<b>Section No.</b>	C.3.2	<b>Date:</b> 28/10/2020
<b>Description of CAR</b>				
<i>In sec. C.3.2 , duration of crediting period not mentioned</i>				
<b>CME response</b>				<b>Date:</b> 29/10/2020
Section C.3.2 and C 3.3 of CPA DD has been revised with inclusion of duration of crediting period				
<b>Documentation provided by CME</b>				
CPA DD v7.0				
<b>DOE assessment</b>				<b>Date:</b> 09/11/2020
In sec. C.3.2 and C.3.3 of revised CPA-DD, ver. 07.0 dated 29/10/2020, CME has now provided start date of 2 <sup>nd</sup> crediting period. <b>CAR closed</b>				

<b>CAR ID</b>	03	<b>Section No.</b>	F	<b>Date:</b> 28/10/2020
<b>Description of CAR</b>				
<ol style="list-style-type: none"> <li>1. Under eligibility for inclusion, older version of methodology referred and corresponding justification provided. CME is requested to refer latest version of applied methodology</li> <li>2. CME shall provide an undertaking regarding no double counting of emission reduction in any other GHG mechanism</li> </ol>				
<b>CME response</b>				<b>Date:</b> 29/10/2020
<ol style="list-style-type: none"> <li>1. Section F of CPA DD has been revised – under eligibility for inclusion, version of methodology and corresponding justification has been updated</li> <li>2. CME has provided an undertaking regarding no double counting of emission reduction in any other GHG mechanism</li> </ol>				
<b>Documentation provided by CME</b>				
<ol style="list-style-type: none"> <li>1. CPA DD v7.0</li> <li>2. Undertaking from CME regarding no double counting of emission reduction in any other GHG mechanism</li> </ol>				
<b>DOE assessment</b>				<b>Date:</b> 09/11/2020
<ol style="list-style-type: none"> <li>1. CME has now provided latest version of methodology and corresponding justification to comply with eligibility criteria no. 2 in sec. F of revised CPA DD, ver 7.0 dated 29/10/2020.</li> <li>2. CME has provided an undertaking dated 05/11/2020 for no double counting</li> </ol> <b>CAR closed.</b>				

<b>CAR ID</b>	04	<b>Section No.</b>	Appendix 3	<b>Date:</b> 28/10/2020
<b>Description of CAR</b>				
<i>Appendix 3 not updated . It still shows COES data of 2010. PP shall update appendix 3 and also provide spreadsheet for calculation of emission factor based on COES data.</i>				
<b>CME response</b>				<b>Date:</b> 29/10/2020
Appendix 3 of CPA DD has been revised.Build Margin emission factor and Operating Margin emission factor for the PoA (to which the CPA belongs to )for crediting period 28/06/2019 to 27/06/2026 has been considered and hence the grid emission factor calculation sheet has been referred to this CPA				
<b>Documentation provided by CME</b>				

1. CPA DD v7.0	
2. grid emission factor calculation sheet	
<b>DOE assessment</b>	<b>Date:</b> 09/11/2020
Appendix 3 of revised CPA DD, ver. 7.0 dated 29/11/2020 updated by CME and also provided spread sheet for GEF calculation which found to be correct and in line with approved PoA-DD.	
<b>CAR closed</b>	

Table 3. FARs from this validation

FAR ID	Xx	Section No.	Date: DD/MM/YYYY
<b>Description of FAR</b>			
<b>CME response</b>			<b>Date:</b> DD/MM/YYYY
<b>Documentation provided by CME</b>			
<b>DOE assessment</b>			<b>Date:</b> DD/MM/YYYY

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## Document information

Version	Date	Description
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		