



**Validation report form for renewal of crediting period for
CDM project activities
(Version 03.0)**

BASIC INFORMATION

Title and UNFCCC reference number of the project activity	2.2 MW hydropower plant in Birsinghpur, Madhya Pradesh of Ascent Hydro Projects Limited (AHPL) UNFCCC ref.No- 1280
Number and duration of the next crediting period	03 25/11/2021 to 24/11/2028
Version number of the validation report	01
Completion date of the validation report	22/11/2022
Version number of PDD to which this report applies	07.0
Project participants	▪ Ascent Hydro Projects Ltd (AHPL) ▪ WeAct Pty Ltd. ▪ Statkraft Markets GmbH
Host Party	India
Applied methodologies and standardized baselines	AMS-I.D. Version 18 "Grid connected renewable electricity generation" Selected standardized baseline: N/A
Mandatory sectoral scopes	Sectoral scope : 1- Energy industries (renewable - / non-renewable sources
Conditional sectoral scopes, if applicable	NA
Estimated amount of annual average GHG emission reductions or GHG removals by sinks in the next crediting period	12,980 tCO ₂ e per annum
Name and UNFCCC reference number of the DOE	LGAI Technological Center, S.A. (Applus+ Certification) UNFCCC Ref. No.: E-0032
Name, position and signature of the approver of the validation report	Mr. Agustin Calle de Miguel Applus+ Certification CDM Technical Manager Signature: 

SECTION A. Executive summary

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LGAI Technological Center, S.A. (hereafter referred to as Applus+ Certification) has been contracted by M/s Ascent Hydro Projects Ltd. to perform a validation of renewal of crediting period of the “2.2 MW hydropower plant in Birsinghpur, Madhya Pradesh of Ascent Hydro Projects Limited (AHPL)” (UNFCCC Ref. No. 1280), hereafter referred to as “the project activity”).

The assessment was performed in accordance with the CDM VVS for PAs version 03.0 and the CDM PS for PAs version 03.0 including an assessment of:

- An 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;
- 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 for the applicable crediting period.

The main objective of validation of renewal of crediting period as provides an independent third party assessment of validity of the updated sections of the PDD of project that has opted for a renewal of the crediting period. The validation assessment of the baseline of project activity, estimated GHG emission reductions or net anthropogenic GHG removals, the monitoring plan and the crediting period using the valid version of the approved baseline and monitoring methodology. The assessment team has, based on the instructions in the VVS for PAs version 03.0^{2.1/} employed a risk-based and step-wise approach when conducting the validation, focusing on the identification of significant risks for project implementation and the generation of CERs.

The validation is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design. The validation has been performed the identification whether the PP has updated sections of the PDD relating to the baseline, estimated GHG emission reductions or net anthropogenic GHG removals, the monitoring plan and the crediting period using the valid version(s) of the approved baseline and monitoring methodology.

Therefore, the validation report is based on the assessment of the project design document undertaken through project stakeholder consultations, application of standard auditing techniques. The validation process consisted of the following three phases:

1. Desk review of the project design and baseline and monitoring plan;
2. Follow-up interview (telephonic) with project stakeholders;
3. Resolution of outstanding issues and the issuance of the final validation report and opinion.

In the course of the validation, 03 Corrective Action Request (CAR) and 01 Clarification Request (CL) and 00 Forward Action Request (FAR), was raised in relation to all relevant CDM requirements. Until issuance of this version of validation report, the raised CAR and CL were successfully closed.

Based on the review of the revised PDD and additional background documents, the subsequent follow up interviews, together with the review of comments by Parties and Stakeholders, have provided, Applus+ Certification with sufficient evidence to confirm that the project has satisfied the stated criteria.

The validation covered all project components and issues that need to be validated for the renewal of crediting period as a CDM project. Applus+ Certification hereby confirms that the project correctly applied the

baseline and monitoring methodology AMS-I.D. (Version 18.0)^{2.4/} and meets the relevant UNFCCC requirements for the renewal of the crediting period.

Applus+ Certification hereby requests the renewal of crediting period of the project. Provided that the project is implemented and maintained as designed, the project is expected to achieve annual average emission reduction of 25,740 tCO₂e within the 3rd crediting period (7years, 25/11/2021 to 24/11/2028).

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	Interview(s)	Validation findings
1.	Lead Auditor / Technical Expert	EI	Ahirwar	Vikvek Kumar	Applus+ Certification	Y	N	Y	Y

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

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical Reviewer	EI	Shen	Simon	Applus+ Certification
2.	Approver	IR	Calle de Miguel	Agustín	Applus+ Certification

SECTION C. Means of validation

C.1. Desk/document review

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The Project Design Document submitted by the Project Participant was reviewed against the approved methodology and other relevant criteria to verify the correctness, credibility, and interpretation of the presented information. Furthermore, a cross-check between information provided and information from other sources has been done. A complete list of documents reviewed or referenced is available in Appendix 3 of this report.

C.2. On-site inspection

The DOE has not conducted the on-site inspection for the validation of renewal of crediting period of this project activity, which is in line with the VVS for PAs Version 3.0 §§ 30 and §§ 31. According to the VVS for PAs Version 3.0 §§ 30, the following conditions are mandatory for on-site inspection.

VVS for PAs Version 3.0 §§ 30	Applicability for this Project Activity:
<i>"It is mandatory for the DOE to conduct an on-site inspection at validation for the proposed CDM project activity if:</i> <i>(a) Its estimated annual average of greenhouse gas (GHG) emission reductions or net anthropogenic GHG removals is more than 100,000 t CO₂ eq; or</i>	(a) The estimated annual average (GHG) emission reductions or net anthropogenic GHG removals is 12,980 tCO₂e
<i>(b) There is pre-project information that is relevant to the requirements for registration of the project activity and may not be traceable after the registration."</i>	(b) There is no pre-project information, which is not traceable after the registration.

The DOE has conducted Skype interview interviews to discuss with the client regarding the data and documents pertaining to renewal of crediting period. The interviews and discussions were conducted successfully with all concerned staff and stakeholders and it is sufficient for the DOE to verify and prepare the report, in line with the VVS for PAs Version 3.0 §§ 31. Moreover, the DOE has used standard auditing techniques as per section 7.1.3 and 9.1.3 of VVS for PAs Version 3.0 to conduct the remote assessment of the PA with the help of web meetings and video conferencing.

The source documents/alternative means of validation referred by the assessment team to validate the particular aspect of RCP validation are as follows.

1. The project activity is registered under CDM (UNFCCC ref.No- 1280) on 25/11/2007. The total installed capacity of the project is of 2.2 MW, consisting of 2x1.1 MW hydropower generating units make, located within the premises of Sanjay Gandhi Thermal Power Station (SGTPS) owned and operated by Madhya Pradesh Power Generating Company Ltd (MPPGCL). There is no verification performance was conducted for this project.
2. In order to confirm the project implementation, the assessment team has verified the, JMRs, commissioning certificates and power purchase agreement signed by the PP with state utility for the project activity and concluded that the capacity of project (including capacity of individual generator), lifetime, location, monitoring system, data recording and calibration responsibility is consistent with the same mentioned in the revised PDD.
3. Skype interview of project participant representative is done and the latest photographs/videos of the equipments installed at project site(indicating the name plate details) are checked by the assesmsnet team and the details found consistent with the updated PDD.

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

Duration of on-site inspection: NA				
No.	Activity performed on-site	Site location	Date	Team member
1.	Not applicable	-	-	-
...	-	-	-	-

C.3. Interviews

The site visit for the project location is not conducted by the assessment team, however skype interview was conducted and the following stakeholders were interviewed.

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Borah	Deepjyoti	Consultant	22/09/2022	Project implementation, applicability of methodology, calculation of EF, Monitoring and calibration procedure	Vivek Kumar Ahirwar
2.	Vishwakarma	C.P.	Senior Engineer, AHPL	22/09/2022	Project implementation, applicability of methodology, calculation of EF, Monitoring and calibration procedure	Vivek Kumar Ahirwar

C.4. Sampling approach

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Not Applicable

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

Area of validation findings	No. of CL	No. of CAR	No. of FAR
Compliance with PDD form	-	CAR#2	-
Application and selection of methodologies and standardized baselines	-	-	-
Validity of original baseline or its update	-	CAR#3	-
Estimated emission reductions or net anthropogenic removals		CAR#1	FAR#1
Validity of monitoring plan	-	-	-
Crediting period		-	-
Project participants	-	-	-
Post-registration changes	-	-	-
Others (please specify)	CL #1 (Declaration)	-	-
Total	01	03	01

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

Means of validation	The project participants used a later version of the PDD form ^{2.5/} for the revised PDD than the version of the PDD form of the registered PDD. By means of checking updated PDD with the latest applicable and available PDD template form, version 12.0, the DOE can confirm that the information transferred to the later version of the PDD form is materially the same as that in the registered PDD besides those changes highlighted and assessed under this report.	
Findings	CL#1 & CAR#2 were raised during the validation process and closed successfully. Please refer Appendix 4 for the detail closure of the CARs.	
Conclusion	The latest version of the PDD template (CDM-PDD-FORM – version 10.1) available at the UNFCCC website has been used. The issues found were all addressed. It has been filled out in accordance with the instructions. The purpose of the project activity is to generate electricity using renewable hydro power project. Baragran HEP has installation of 2.2 MW small hydroelectric project at Birsinghpur in Madhya Pradesh. <u>Salient features of turbine:</u>	
	Type	Full horizontal Kaplan
	Number	2
	Rated output @ rated head of 8.1 m @ rated discharge of 16.5 m ³ /s@ best efficiency i.e 92.3%	1208 kW
	Rated output @ rated head of 8.1 m @ rated discharge of 16.075 m ³ /s @best efficiency i.e 92.3%	1179 kW
	Rated head	8.1 m
	Minimum operating head	8.10 m
	Maximum operating head ³	8.92 m
	Rated discharge for each unit	16.52 m ³ /sec
	Minimum discharge	7.99 m ³ /sec
	Maximum discharge	16.50 m ³ /sec
	Runner diameter	1860mm
	Specific Speed	665.88RPM
	Rated Speed	265RPM
	Turbine Setting	(-) 0.46 m
	Make	Boving Fouress Limited
	Minimum discharge	7.99 m ³ /sec
	Maximum discharge	16.50 m ³ /sec
	<u>Specification of generators at Birsinghpur</u>	
	Type	Synchronous
	Number	2
	Rated Output	1.5 MVA, 3 phase, 50 Hz i.e 1.2 MW or 1200 kW
	Net Output ⁴ (termed as plant Output)	1102KW
	Voltage	3.3 kV
	Power Factor	0.8 (lag)
	Insulation	Class F

Excitation system less	Brush	
Make	Crompton Greaves Limited	

Specification of Transformer

Transformer capacity	3.3/33 kV, 2.25 MVA Ynd11, 3 phase, ONAN
Connection on	3.3kV side 6.6 kV grade 185 square mm single core XLPE cable
Connection on	33 kV side 33 kV bus bar
Connection point	Plant switchyard
Protection System	50/51 (GT) over current and E/F relays and Buchholz relay, WTI, OT
Control & monitoring	Computer based c/w interface for remote operation
Circuit Breakers	SF6

Assessment team has found that , There has been no change in project design and capacity.

Assessment team also checked the commissioning certificates and found the commissioning dates & locations of the hydro power project are correct. The actual commissioning dates are checked from the commissioning certificates which are issued by 3rd party Government agency i.e. State Utilities and found to be accurate.

The Unit 1 of the project activity has started commercial operation from 24/10/2006 whereas the Unit II of the project activity has started commercial operation from 06/02/2007. The plant has synchronized with the grid in July 2006.

Project Investor	Capacity (MW)	Commissioning Dates
-M/s M/s Ascent Hydro Projects Ltd.	2.2 MW	24/10/2006
		06/02/2007
Total	2.2 MW	

The technical details of the project activity for the revision of crediting period were checked by the assessment team from the details available from the manufacturers and also during the interviews with PP. Same are mentioned in the section A.3 of the revised PDD and found correct.

Assessment team checked the geographical coordinate of the project activity with the latitude and longitude as mentioned in the registered PDD for 1st crediting period and found correct.

No post registration changes are envisaged for the third CP as the project is implemented as per the registered PDD of 1st CP and in continuous operation apart from scheduled maintenance (as per manufacturer specification) and thus there is no scenario observed which can alter the requirement of the methodology. Same was verified from the JMRs/invoices and interviews with PP.

The project activity complies with the applicability criteria of the small scale CDM Project activity category. The capacity of the project is 2.2 MW, which is less than the maximum qualifying Type I capacity of 15 MW. Thus the project qualifies as small scale project. The project activity complies with the applicability criteria of the small scale CDM Project activity category. There is no change in installed capacity of the project as mentioned in registered PDD for 1st CP. The same is checked by the assessment team during telephonic interviews of onsite personnels, document review and found correct.

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

Means of validation	Through document review and onsite interview, the assessment team reassessed the applicability of baseline, monitoring methodology and standardized baseline in
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the methodology based on the knowledge of the project from the initial validation, subsequent verifications and the confirmation from the PP.

The project was originally registered based on methodology AMS-I.D. version 11.0. The updated PDD applies methodology AMS-I.D. version 18.0.

This is appropriate because the methodology AMS-I.D. version 18.0 is of its latest approved version of methodology applied in the original PDD and is valid at the time of submission of the revised PDD for the renewal of the crediting period; hence the guidance provided under the PS for Pas Version 02 §§ 279(a) is followed.

Following tools referred to by the methodology are also applied:

- Tool to calculate the emission factor for an electricity system – Version 07.0.0, EB100 annex 4^{/2.7/}
- Methodological Tool “Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period.” Version 03.0.1, EB 66 annex 47^{/2.6/}

The methodology and the applied tools are valid as of the finalization of the validation report. The title, reference as well as version number is correctly provided in revised PDD^{/1.3/} for the renewal of the crediting period. The applicability of the baseline and monitoring methodology is justified in the revised PDD for the renewal of the crediting period. All applicability conditions are completely and correctly included in the revised PDD and the same are demonstrated below :

Criteria-1.

This category comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, hydro power , geothermal and renewable biomass:

(a) Supplying electricity to a national or a regional grid.

(b) Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling.

Validation assessment:

The project activity is a Renewable Energy Project i.e. hydroelectric power project which falls under applicability criteria option 1 (a) i.e., “Supplying electricity to a national or a regional grid. This is verified thorough the Power Purchase Agreement^{/3.2/} and commissioning certificate^{/3.1/}. Thus the criterion (a) is fulfilled by the proposed project activity.

Criteria-2:

Illustration of respective situations under which each of the methodology (i.e. AMS-I.D, AMS-I.F and AMS-I.A2) applies is included in Table 2

Validation assessment:

Project activity is generation of electricity through hydroelectric Power which is renewable energy power plant. Hence the project activity satisfies 1st option of Table 2 of AMS I.D, Version 18, EB 81 is applicable.

Criteria-3 :

This methodology is applicable to project activities that (a) install a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity (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).

Validation assessment:

Project activity is Greenfield hydro power power project, supplying electricity to national grid. This is verified thorough the Power Purchase Agreement^{t/3.2/} and commissioning certificate^{3.1/}. Thus the criterion (a) is fulfilled by the proposed project activity

Criteria-4:

Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology:

- The project activity is implemented in an existing reservoir with no change in the volume of reservoir;
- The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m²;

The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the Project Emissions section, is greater than 4 W/m².

Validation assessment:

This criteria are relevant to hydro power projects. Since the project activity is hydro power power plant, hence not applicable.

Criteria-5:

If the new unit has both renewable and non-renewable components (e.g., a hydro power /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.

Validation assessment:

The project activity involves generation of electricity using hydroelectric Power only and there is no non-renewable components or no new unit addition to existing registered project activity. Thus the criterion is not applicable for the project activity.

Criteria-6:

Combined heat and power (co-generation) systems are not eligible under this category.

Validation assessment:

This criteria are relevant to Combined heat and power (co-generation) systems. Since the project activity is hydro power power plant, hence not applicable.

Criteria-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.

Validation assessment:

The project activity involves generation of electricity using hydroelectric Power only and there is no new unit addition to existing registered project activity. Thus the criterion is not applicable for the project activity.

	<u>Criteria-8:</u> In the case of retrofit or replacement, to qualify as a small-scale project, the total output of the retrofitted or replacement unit shall not exceed the limit of 15 MW. <u>Validation assessment:</u> The project activity does not involve any capacity additions, retrofits or replacements of an existing facility because it is a hydroelectric power generation project activity; same has been confirmed from the commissioning certificates^{/3.1/}, CDM validation report and PPA^{/3.2/}. Thus the criterion is not applicable for the proposed project activity. Thus, it can be concluded that the applied methodology AMS-I.D., version 18.0 is applicable to the project activity. Tool to calculate the emission factor for an electricity system: The revised PDD refers and correctly applies the latest version of tool to calculate the emission factor for an electricity system, version 07.0^{/2.7/}. Also the PP has referred the CEA Baseline CO₂ Emission Database version 17 dated March 2022^{/3.5/} which was the latest available database at the time of PDD submission for RCP validation of the project activity. However the grid emission factor for third crediting period is calculated referring the CEA Baseline CO₂ Emission Database version 17 dated March 2022^{/3.5/} (available at the time signing the contract with DoE for RCP validation) because it results conservative estimation of baseline emissions. The locations of hydro power mills are in the state of Birsinghpur in Madhya Pradesh, in India. As per CEA Baseline CO₂ Emission Database^{/3.5/}, all these states of India comes under the Indian regional electricity grid in India, the geographic and system boundaries of which are clearly identified; information on the characteristics of the grid is available. Thus, the tool is applicable for the project activity. Tool for the demonstration and assessment of additionality This tool is not required to be applied during validation of renewal crediting period. The assessment team has validated the documentation referred to in the PDD and verified the documentation content for verifying the justification of the applicability of the methodology and confirmed that the documentation referred to in the PDD is correctly quoted and interpreted. The assessment team has also cross-checked the information provided in the PDD with the documentation other than from the PDD based on the local and sectoral knowledge of the assessment team. Thus all the applicability conditions of the applied methodology are confirmed in line with the VVS for PAs version 03.0 §§ 68. Based on the above discussion, the validation team confirms that the proposed project activity meets all the applicability conditions and all other stipulations of the selected methodology AMS-I.D. Version 18.0.
Findings	No finding was raised
Conclusion	Applus+ Certification confirms that the project meets each of the applicability conditions of the methodology; it also meets all the other stipulations and limitations mentioned in the other sections of the applied methodology; the continued validity of the baseline is assessed and the emissions which would be resulted from the baseline scenario are updated at the start of the 3rd crediting period, as per the requirements of AMS-I.D, version 18.0. Therefore, CDM requirements stipulated under VVS for PAs Version 03.0 §§404(b) is satisfied completely.

D.3. Validity of original baseline or its update

Means of validation	In according to VVS for PAs version 03.0 §404, The assessment team reviewed the updated PDD^{/1.3/}, and evaluated whether project participants assess and incorporate the impact of national and/or sectoral policies and circumstances existing at the time of requesting renewal of the crediting period on the current baseline GHG emissions, without reassessing the baseline scenario. Since the data and parameters used for determining the original baseline that was determined ex ante (and not monitored during the crediting period) are no longer valid, hence the assessment team has verified, whether the PP updated such data and parameters in accordance with the step 1.4 of the Methodological Tool “Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period”. Applus+ Certification confirms that there have been no changes in the relevant national and/or sectoral regulations on implementation of projects to generate electricity from hydroelectric Power and sell to Western grid and Southern grid (which is now a part of Integrated Indian grid) since the previous crediting period. On the other hand, the baseline scenario for installation of hydro power projects to generate electricity and sell to state/national grid is still valid according to methodology AMS-I.D, version 18.0 As demonstrated in the registered PDD, the baseline scenario for the Project is continuous operation of the existing power plants to meet electricity demand. As per AMS-I.D, version 18.0 §23, <i>“The emission factor shall be calculated in a transparent and conservative manner as follows:</i> <i>(a) A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the “Tool to calculate the emission factor for an electricity system”; or</i> <i>(b) The weighted average emissions (in t CO₂/MWh) of the current generation mix.</i> <i>The data of the year in which project generation occurs must be used.”</i> The baseline for the project activity will remain the same as described in the registered PDD. In the absence of project activity, the same amount of electricity would otherwise have been generated by the operation of some grid connected fossil fuel based power plants or newly added generation sources into Western and Southern grid (Now part of Indian grid). A verifiable description of the baseline scenario has been included in the final updated PDD. The information presented in the PDD has been validated by an initial document review of all data. Further confirmation has been made based on the skype interviews and a review of information from similar projects and/or technologies. The sources referenced in the updated PDD have been quoted correctly. The information was verified against credible sources, such as the following: ➤ Commissioning Certificates /3.1/ ➤ Power Purchase Agreement with state electricity board^{/3.2/} ➤ CEA guidelines (CO₂ Baseline Database for the Indian Power Sector, Version 17^{/3.5/}) The steps from the Methodological Tool “Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period” as per CDM VVS for PAs version 03.0 were applied to assess the validity of the current baseline and/or to update the baseline at the renewal of a crediting
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period:

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

In accordance with the guidance provided under the CDM PS for PAs version 03.0 §§ 284, *“The project participants shall assess and incorporate the impact of national and/or sectoral policies and circumstances, existing at the time of requesting renewal of crediting period, on the current baseline GHG emissions, without reassessing the baseline scenario”.*

The validity of the current baseline is assessed using the following Sub-steps:

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

Following relevant mandatory national & sectoral policies in Karnataka state are prevailing:

- The Electricity Act, 2003 ^{/5.2/}
- National Electricity Policy, 2005 ^{/5.3/}
- Tariff Policy, 2006 ^{/5.4/}
- Tariff orders, FY 2020-2021 ^{/5.5/}

Applus+ Certification has confirmed that the current baseline as described in the registered PDD is in compliance with the relevant mandatory national & sectoral policies as listed above, there are no national or local laws or regulations that entail the installation of hydro power project in Birsinghpur in Madhya Pradesh, states of India.

Based on the experience, there are no relevant mandatory national and/or sectoral policies for bidding equivalent electricity generated by the project activity is supplied to the Indian grid which is current baseline of the project activity. Therefore, baseline scenario remains unchanged and is in compliance with all the relevant mandatory national and/or sectoral policies.

Step 1.2: Assess the impact of circumstances

The assessment team has confirmed that the baseline scenario as identified at the time of validation of the project activity was the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid connected power plants and by the addition of new generation sources into the grid.

Thus, assessment team has confirmed that the project activity was a voluntary investment which intends to replace equivalent amount of electricity at grid from renewable source. The investment does not lead to any continued baseline practice for the PP within their scope whereas the continued operation of the project activity would continue to replace equivalent amount of electricity at grid.

Therefore, the same baseline as identified in the previous crediting period is still valid for the project.

Furthermore, the assessment of the changes in market characteristics is not required for the renewal of the project's crediting period under CDM. The assessment team has verified that the CO₂ Baseline Database version 17 published by CEA (October 2021) was available at the time of contractual agreement with DoE for validation of renewal of crediting period, and same at the time of first submission of PDD :

Action/Event	Date	Latest version of CEA CO ₂ baseline database available	Value of EF (tCO ₂ /MWh)
Contract with DOE for RCP validation	01/03/2022	Version 17	0.9502
First submission of PDD for RCP to DOE	01/03/2022	Version 17	0.9502

The PP has considered the data available through the sources (CEA database, Version 17)^{/3.5/} for establishing the baseline grid emission factor and conservative emission factor is considered to calculate the baseline emission. This approach is found to be appropriate and conservative, hence accepted.

Since the CO₂ baseline database published by Central Electricity Authority (CEA) considers all the new circumstances. Hence, the new circumstances do not have an impact on the baseline emission.

As per the requirement of the sub-step, it has been assessed that there were no impact of circumstances existing at the time of requesting renewal of the crediting period on the current baseline scenario.

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

The lifetime of Hydro for the project activity is 30 years^{/3.2/}; hence baseline equipment's (Hydro Power) continuously used for electricity generation during next crediting period without any investment. The assessment team able to conclude that an investment is not the most likely scenario for the renewal crediting period under consideration.

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

The grid emission factor calculated ex-ante for the 3rd crediting period needs to be updated, as per the valid and latest version of "Tool to calculate the emission factor for an electricity system" ^{/2.7/}, the most recent information available should be used to update the emission factor for the 3rd crediting period. Hence, the emission factor is updated accordingly and appropriately described in the following section D.4 of this report.

Conclusion on step 1:

Applus+ Certification confirm that the current baseline is still valid as per methodology AMS-I.D., version 18.0. However the grid emission factor needs to be updated for the subsequent crediting period.

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

Step 2.1: Update the current baseline

As discussed above the baseline scenario of the project activity is still sustained in the second crediting period, hence reassessment of baseline scenario is not required. The baseline emission factor is calculated as per the latest version of CEA CO₂ baseline database Version 17 available at the time of PDD submission

	for renewal and contractual agreement with DoE. The emission factor determined referring CEA CO₂ baseline database Version 17 was used in estimation of baseline emissions for the second crediting period. The approved baseline methodology has been correctly applied to identify a complete list of realistic and credible baseline scenarios, and the identified baseline scenario most reasonably represents that would occur in the absence of the proposed CDM project activity. Applus+ Certification considers the baseline scenario is realistic and credible. In regard to requirement of VVS for PAs version 03.0. §§83, Applus+ Certification is able to confirm the following statements: a) All the assumptions and data used by the project participants are listed in the PDD, including their references and sources; b) All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the PDD; c) Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence, and can be deemed reasonable; d) Relevant national and/or sectoral policies and circumstances are considered and listed in the PDD; e) The approved baseline methodology has been correctly applied to identify the most reasonable baseline scenario, and the identified baseline scenario reasonably represents what would occur in the absence of the proposed CDM project activity. Step 2.2: Update the data and parameters The baseline emission factor will be updated ex-ante, as described in section D.4 of this report. The parameters described under step 1.4 were appropriately updated considering the latest version of methodology AMS-I.D, version 18.0.
Findings	CAR 03 was raised in this section, and closed successfully Please refer Appendix 4 for the detail closure of the CARs.
Conclusion	Applus+ Certification confirms that there have been no changes in the relevant national and/or sectoral regulations on installation of hydro power power project for exporting electricity to power grid since the previous crediting period. On the other hand, the baseline scenario for the project remains the same as that in the registered PDD as “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 assessment of continued validity of the current baseline scenario and update of the baseline emissions are complied with Methodological Tool “Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period version 03.0.1” as per VVS for PAs version 03.0. In line with PS for PAs version 03.0 §§ 404, the demonstration of the validity of the original baseline or its update does not require a reassessment of the baseline scenario, but rather an assessment of the GHG emission reductions that would have resulted from that scenario.

D.4. Estimated emission reductions or net anthropogenic removals

Means of validation	The calculation of the emissions reductions exactly follow the procedures described in the methodology AMS-I.D, version 18.0 and relevant tool, e.g. the “Tool to calculate the emission factor for an electricity system”. Applus+ Certification have assessed the calculation of project emissions, baseline emissions, leakage emissions and emission reductions. Corresponding calculations have been carried out based on calculation spreadsheet. The consistency of the parameters and equations presented in revised PDD, as well as calculation spreadsheet etc., has been compared with the information and requirements presented in the methodology and respective tools. The assumptions and data used to determine the emission reductions are listed in the revised PDD and all the sources have been checked. Based on the information reviewed it is confirmed that the sources used are correctly quoted and interpreted in the PDD. The values presented in the PDD are considered reasonably based on the documentation and references reviewed and the results of the interviews. The estimation of the emission reductions are considered correct as the calculations have been reproduced by the assessment team with the attainment of the same results. The algorithms for the determination of the baseline, project, and leakage are discussed in the following sections. The GHG emission reductions are calculated applying the updated version of methodology AMS-I.D version 18.0 Baseline Emissions: <i>As per the methodology AMS-I.D Version 18.0 §§ 22:</i> <i>“Baseline emissions include only CO₂ emissions from electricity generation in power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as follows:”</i> $BE_y = EG_{PJ,y} \times EF_{grid,y}$ Where: BE_y = Baseline emissions in year y (t CO₂) $EF_{grid,y}$ = Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of “TOOL07: Tool to calculate the emission factor for an electricity system” (t CO₂/MWh) $EG_{PJ,y} = EG_{facility,y}$ (for Greenfield projects <i>AMS-I.D Version 18.0 §§ 26</i>) Where, $EG_{facility,y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh)
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The baseline emissions equivalent to tCO₂ due to the project have been calculated as the product of the net electricity supplied to the grid and the grid emission factor as per the combined margin approach described in the 'Tool to calculate the emission factor for an electricity system' version 07.0. The power produced will be exported to the Indian grid. Hence, the grid emission factor and the corresponding baseline emissions have been calculated for the Indian grid.

The emission factor has been calculated as per Methodological Tool 07: Tool to calculate the emission factor for an electricity system" v 07.0 as recommended by the applied methodology AMS-I.D Version 18.0 §§ 23 (a).

"A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the "Tool to calculate the emission factor for an electricity system"."

It is verified that the latest available version for "Tool to calculate the emission factor for an electricity system" is version 07.0^{2.7/} and the PP has correctly referred to the same in the section B.6.1 of the final updated PDD^{1.2/} to determine the baseline grid emission factor.

The PP has considered Option (a) of Para 17 to calculate the grid emission factor as per the Methodological Tool 07 "Tool to calculate the emission factor for an electricity system" version 07.0 since data is available from an official source.

In accordance with step 1 of Tool; the project participant has identified the electricity system is based on the option 1 (under the para 17 of the tool) which is unified Indian Grid system. Therefore, the Indian grid has been correctly identified for the calculation of electricity emission factor, as the project displaces electrical energy from Indian grid, as per the CEA database Version 17^{3.1/}.

It is to be noted that CEA database Version 17 was published in October 2021 and it was the most recent information available version at the time of first submission of the PDD to DoE, and the PP has calculated the emission factor using CEA CO₂ baseline database Version 17 was found to be correct, hence the same is used in the estimation of baseline emissions for the second crediting period.

It can be confirmed that the determination of grid emission factor in compliance with the "Tool to calculate the emission factor for an electricity system" (version 07.0.0), which states that "If the DNA of the host country has published a delineation of the project electricity system and connected electricity systems, these delineations should be used". Thus, the Project Participant has considered the national grid that is delineated by the Central Electricity Authority of India which was found to be correct and acceptable.

The values of OM and BM have been determined ex-ante as per the CEA CO₂ baseline database Version 17 published on October 2021, which is published by the Ministry of Power, Government of India^{3.1/}. In step 2 of the Tool, the PP has considered option I "Only grid power plants are included in the calculation."

Further under step 3, the PP has used the simple operating margin calculation method to determine the operating margin (OM). Validation Team has verified from the CEA CO₂ baseline database that the percentage of total grid generation by low-cost/ must-run plants (on the basis of average of five most recent years) for the Indian grid is less than 50% of the total generation. Therefore, it is satisfied the condition stipulated under Para 40 (a) of Methodological Tool 07, Version 07,

hence the simple OM method (Option a in paragraph 38) has been used as low cost/must run resources constitute less than 50% of total grid generation.

As per Tool para 40 -42; the PP has chosen ex-ante option (option a of Para 42 of Methodological Tool 07 version 07) for calculation of Simple OM emission factor using a 3-year generation-weighted average, based on the most recent data available at the time of submission of the PDD.

In step 4, the PP has calculated the simple operating margin as per Option B as stipulated under Para 47 (b) of Methodological Tool 07, version 07. The PP has considered an average of the latest available three years i.e. 2018-19, 2019-20 and 2020-21 for calculation of simple OM emission factor. The value for weighted average operating margin has been validated and used as 0.9522 tCO₂/MWh.

In step 5; the Build margin for the Indian grid is considered as 0.9495 tCO₂/MWh as per "Tool to calculate the emission factor for an electricity system" (Version 07.0, EB 100, Annex 4) para 72 (i.e. as per the provision of the section 6.5 of the tool) where the Option 1 is chosen by PP to calculate the build margin emission factor for the project activity. BM is calculated ex-ante based on the most recent information/data from CEA CO₂ Baseline Database Version 17, dated October 2021 and is fixed for the entire crediting period.

In step 6, the combined margin (CM) emission factor is calculated based on option (a) i.e., weighted average CM as accordance to Tool. The weighted average combined margin has been calculated by the PP, considering the 75% weighted for operating margin and 25% for build margin; this is in accordance with the tool which states that for "Hydro power generation project activities: $W_{OM} = 0.25$ and $W_{BM} = 0.75$ (owing to their intermittent and non-dispatchable nature) for the first crediting period and for subsequent crediting periods".

The combined margin emission factor for the project activity arrives as 0.9586 tCO₂/MWh. The PP has provided the detailed calculation for the same in the ER calculation sheet. The baseline emission factor for the electricity system has been calculated on ex-ante basis and will remain fixed for the entire second crediting period.

In accordance with the Methodological tool 07: Tool to calculate the emission factor for an electricity system Version 07.0.0 /2.7/, "Regional or national average default values can be used for calculation of CO₂ Emission Factor if values are reliable and documented in regional or national energy statistics / energy balances".

The Central Electricity Authority of India (CEA) is a statutory organisation and the sole authority for publication of such data in India and hence, accepted. The assessment team verified that the parameters are determined ex-ante:

Parameter	Value	Source	Means of Validation
EF _{grid,OM,y} Operating Margin(OM) Emission Factor of Integrated Indian Electricity Grid	0.9522 tCO ₂ /MWh	Baseline Carbon Dioxide Emission Database Version 17 from the Central Electricity Authority (CEA), Ministry of Power,	Verified value against default value listed in CEA database Version 17 dated October 2021 /3.5/.

		Government of India /3.5/	
EF _{grid,BM,y} Build Margin (BM) Emission Factor of Integrated Indian Electricity Grid	0.9673 tCO ₂ /MWh	Baseline Carbon Dioxide Emission Database Version 17 from the Central Electricity Authority (CEA), Ministry of Power, Government of India /3.5/.	Verified value against default value listed in CEA database Version 17 dated October 2021 /3.5/.
EF _{grid,CM,y} Combined Margin Emission Factor	0.9635 tCO ₂ /MWh	Baseline Carbon Dioxide Emission Database Version 17 from the Central Electricity Authority (CEA), Ministry of Power, Government of India /3.5/.	Verified value against default value listed in CEA database Version 17 dated October 2021 /3.5/.
Ratio of Operating margin to build margin used for calculation of combined margin for hydroelectric Power project (Ratio OM:BM)	25:75	Baseline Carbon Dioxide Emission Database Version 17 from the Central Electricity Authority (CEA), Ministry of Power, Government of India /3.5/.	Verified value against default value listed in CEA database Version 17 dated October 2021 /3.5/.
The OM has been determined as the average of the previous 3 years values (2018-19, 2019-20 and 2020-21) mentioned in the CEA database. The value of BM (for year 2019-20) has been sourced directly from the CEA database/3.1/. The combined margin emission factor has been arrived at by applying weights of 25% for OM and 75% from BM, as specified in the methodological tool 07, version 07.0.0, §§ 86 (b) for third crediting period for hydro power project. The baseline emissions for the project activity have been calculated as per AMS-I.D, Version 18.0 §§22. The baseline emissions for the project activity have been calculated to be 12,980 tCO₂ per year. Validation team confirms that all data sources and assumptions are appropriate and calculations are correct, applicable to the CDM project activity and will result in a conservative estimate of the emission reductions. Calculation of project emissions: As per the applied methodology AMS-I.D, Version 18.0 §§39, “for most renewable power generation project activities, P_{Ey} = 0. However, for the following categories of project activities, project emissions have to be considered following the procedure described in the most recent version of “ACM0002: Grid-connected electricity generation from renewable sources”: (a) Emissions related to the operation of geothermal power plants (e.g. noncondensable gases, electricity/fossil fuel consumption); (b) Emissions from water reservoirs of hydro power plants.”			

	Since the project activity is a hydroelectric Power based power generation, the project emissions are not applicable to the project activity. Hence, $PE_y = 0$ Calculation of leakage emissions: As per the applied methodology AMS-I.D, Version 18.0 §§42, "General guidance on leakage in biomass project activities shall be followed to quantify leakages pertaining to the use of biomass residues." No leakage emissions are considered. The main emissions potentially giving rise to leakage in the context of electric sector projects are emissions arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, and transport). These emissions sources are neglected. Therefore, $LE_y = 0$. Emission reductions: Emission reductions are calculated as follows: $ER_y = BE_y - PE_y$, where ER_y = Emission reductions in year y (tCO₂e) BE_y = Baseline Emissions in year y (tCO₂ e) PE_y = Leakage emissions in year y (tCO₂ e) As discussed above $PE_y = 0$ and $LE_y = 0$, hence $ER_y = BE_y - 0 = 0$ $ER_y = BE_y$ $ER_y = EG_{\text{facility},y} \times EF_{\text{grid},y}$ Value of $EG_{\text{facility},y}$ is estimated to be 13,471 MWh per year, which is same as in the updated PDD. Hence baseline emission reductions as follows: $BE_y = 13,471 \text{ MWh} \times 0.9635 \text{ tCO}_2\text{e/MWh}$ $= 12,980 \text{ tCO}_2\text{e}$ $ER_y = BE_y = 12,980 \text{ tCO}_2\text{e}$ per year for the selected 7 years crediting period. Total emission reductions during the 3rd crediting period are estimated to be 90,860 tCO₂.
Findings	CAR#1 was raised during the validation process and closed successfully. Please refer Appendix 4 for the detail closure of the CARs.
Conclusion	Applus+ Certification have assessed the calculations of project emissions, baseline emissions, leakage emissions and emission reductions. Corresponding calculations have been carried out based on calculation spreadsheets. The parameters and equations presented in the PDD, as well as other applicable documents, have been compared with the information and requirements presented in the methodology and respective tools. The assessment team has compared all the formulae to ensure consistency between those presented in the calculation files and in the PDD, methodology, and tools. This is found to be correct. In general, Applus+ Certification is able to confirm the following: ➤ All assumptions and data used by the project participants are listed in the PDD and/or supporting documents, including their references and sources; ➤ All documentation used by the project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PDD; ➤ All values used in the PDD are considered reasonable in the context of the

	proposed CDM project activity; ➤ The baseline methodology has been applied correctly to calculate project emissions, baseline emissions, and leakage emissions; ➤ All estimates of the baseline, project and leakage emissions can be replicated using the data and parameter values provided in the PDD. Applus+ Certification confirms that the baseline, the estimated GHG emission reductions in the final updated PDD comply with the applicable requirements in the section 7.5.5 PS for PAs version 03.0, and the valid version of the methodology applicable to the registered CDM project activity.
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D.5. Validity of monitoring plan

Means of validation	The assessment team reviewed the updated PDD, checked whether the PDD update the monitoring plan section in accordance with all relevant applicable requirements in the CDM PS for PAs. Also verified whether the PDD list all data and parameters to be monitored, as required by the applied methodology and whether the monitoring plan explained the operational and management structure, responsibilities and institutional arrangement for data collection/archiving, QA/QC procedures. The project applies the approved monitoring methodology AMS-I.D. version 18.0 - "Grid connected renewable electricity generation". The monitoring parameter relevant to this project activity described in the applied methodology is: $EG_{\text{facility},y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh) During the Onsite Audit with PPs representative and through the review of latest share certificates & actual photographs of project site, it is verified that: The Net electricity supplied to the grid by the project activity will be calculated as a difference of electricity exported to the grid, electricity imported from the grid obtained from Joint Energy Meter Reading Report. The energy meter is of accuracy class of at least 0.2. The meter is monitored continuously & cumulative readings are taken at the end of the month. These are sealed by SEB to avoid malfunctioning with meter readings. The officials frequently check the meter for tampering and malfunctioning with the meter. Meter is calibrated annually by the authority in the presence of O&M Contractor / investors representatives and MPPKVCL officials. The net electricity supplied to grid on the monthly credit report can be cross checked with records for sold electricity (As invoices are raised against net electricity supplied to grid). However, only the net electricity generation supplied to the grid value as per the monthly credit/generation report provided by respective state electricity utility is considered for the emission reduction calculations. The monitoring methodology applies consistently the choice of the option selected for monitoring of baseline emissions. The monitoring plan provide procedures for the collection and archiving of all relevant data necessary for estimation or measuring the emission reductions within the project boundary during the crediting period. The assessment team has also verified the actual photographs of monitoring equipments(indicating technical specifications), video recording of online SCADA system and the JMR verification records^{1.6/} and it is confirmed that registered monitoring plan as described in the updated PDD was implemented in accordance with the applied methodology . All the relevant data records will be kept by the Project owner during the crediting
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	period and electronically archived for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later. Data management and quality control measures have been confirmed through desk review of the project documents^{/1.3/} and interview with the PPs representatives. Assessment team confirmed that project is not involve any sampling plan in monitoring of project activity parameters hence section B.7.2 in the revised PDD is not applicable for this project activity. <u>Implementation of the monitoring plan:</u> An organizational structure is provided in section B.7.3 of the revised PDD. The functions such as data collection, aggregation, verification, calculation, archiving, as well as the maintenance of equipment's etc. have been defined. Quality assurance and quality control procedures for recording, maintaining and data archiving etc. will be ensured according to CDM EB rules. The calibration of the meter will be implemented as per national standard. An emergency treatment process has been defined in PDD when the meter is in malfunction. Data management and quality control system are quoted in PDD. The monitoring staffs will be trained based on the training program described in the updated PDD. The procedures described in the updated PDD have been recognized by the assessment team through document review and skype-interviews with the relevant personnel. It is confirmed that remaining aspects of monitoring plan like monitoring procedure, metering system, calibration procedure, data recording, monitoring role and responsibility and QA/QC procedure as mentioned in the registered PDD, will remain same during the 3rd crediting period. The assessment team is able to confirm that the proposed monitoring plan is feasible within the project design.
Findings	No non-conformability was observed during assessment for validation of crediting period. Therefore, no finding was raised.
Conclusion	Applus+ Certification confirms that the monitoring plan contains all necessary parameters which have been clearly described in revised PDD^{/1.3/} and that the means of monitoring described in the plan complies with the requirements of the methodology. In conclusion, based on document review and stakeholder interview, together based on local and sectoral expertise, the assessment team confirms that: ➤ The monitoring plan of the revised PDD is in compliance with the requirements of the methodology AMS-I.D version 18.0. ➤ Monitoring arrangements described in the monitoring plan of the updated PDD are feasible within the project design. ➤ The PP's ability to implement the monitoring plan can be guaranteed. The monitoring plan of the updated PDD is complied with the registered PDD. Applus+ Certification are of the opinion that the project participants are able to implement the monitoring plan and the emission reductions achieved can be reported ex-post for verification.

D.6. Crediting period

Means of validation	The assessment team checked whether the updated PDD indicated that the next crediting period commences on the day immediately after the expiration of the current crediting period by means of a document review, use of official sources and interviews with relevant personnel during skype-call. The first 7 years renewable crediting period was from First Crediting Period: 25/11/2007 – 24/11/2014 and Second Crediting Period: 15/06/2015 – 24/11/2021; the Project Participant is applying for a 3rd renewable crediting period, which is 7 years (25/11/2021 to 24/11/2028).
Findings	No CAR was raised in this section.
Conclusion	Applus+ Certification confirmed that the notification regarding to the request for renewal of Crediting period of the project meets the requirements of the CDM PCP for PAs version 03.0 §§ 274 and the next crediting period of the registered CDM project activity commences on the day immediately after the expiration of the current crediting period. Therefore, CDM requirements stipulated under VVS for PAs Version 03.0 §§412 is satisfied completely.

D.7. Project participants

Means of validation	The assessment team checked whether the names of the project participant included in the updated PDD are consistent with the names of the project participants in the registered PDD by means of desk review and interviews of PPs representative . The project participant in registered PDD is M/s M/s Ascent Hydro Projects Ltd.. The project participant in updated PDD is same as in the registered PDD and indicated in latest version of the MoC statement, dated 07/02/2017.
Findings	No non-conformability was observed during assessment of details of Project Participant. Therefore, no finding was raised.
Conclusion	Applus+ Certification confirmed that the project participants in the updated PDD are consistent with the actual situation. Therefore, CDM requirements stipulated under VVS for PAs Version 03.0 §§412 a (vi) is satisfied completely.

D.8. Post-registration changes

Type of post-registration changes (PRCs)	Confirmation (Y/N)	Validation report for PRCs	
		Version	Completion date
Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents ¹	N	-	-
Corrections	N	-	-
Change to the start date of the crediting period	N	-	-
Inclusion of a monitoring plan	N	-	-
Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents	N	-	-
Changes to the project design	N	-	-

¹ 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).

Changes specific to afforestation and reforestation project activities	N	-	-
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SECTION E. Internal quality control

As a final step for Validation RCP assessment, the final documentation, including the Validation of RCP Report, has to undergo an internal quality control by the Technical Reviewer(s) to be approved.

Details of the Technical Reviewer(s) are provided within the Validation of RCP Report in Section B.2. and Appendix 2 for further references of knowledge and capability to conduct the quality checking.

After the Technical Review process, the final documentation may undergo a final quality checking process called Administrative Review, done by the Applus+ Certification's Project Manager and/or Technical Support.

For final approval, the final set of documents are prepared by the DOE's Technical Manager or its deputy and signed by the authorized signatory of the DOE.

In case any of the persons performing this final internal quality control approval process has acted as a part of the Assessment Team or Technical Review team, the approval can only be given by DOE's authorized personnel who are not part of those teams.

If the final set of documents has been satisfactorily approved, a Request for Renewal of Crediting Period is submitted to the UNFCCC CDM EB along with the relevant documents.

SECTION F. Validation opinion

Applus+ Certification has performed a validation of renewal of crediting period of the "2.2 MW hydropower plant in Birsinghpur, Madhya Pradesh of Ascent Hydro Projects Limited (AHPL)" (UNFCCC Ref. No. 1280). The validation was performed on the basis of the updated sections of the PDD relating to the baseline, estimated emission reductions and the monitoring plan using the most recent version of baseline and monitoring methodology applicable for the project activity.

The final validation opinion was finalized in accordance with the CDM VVS for PAs version 03.0 and the CDM PS for PAs version 03.0 including the assessment of:

- a) An 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 for the applicable crediting period.

The review of the project design documentation and the subsequent follow-up interviews have provided Applus+ Certification with sufficient evidence to determine the validity of the original baseline and/or its update through an assessment. The project correctly applies the latest baseline and monitoring methodology AMS-I.D "Grid connected renewable electricity generation", version 18.0.

Given that the project is implemented as designed and the underlying assumptions do not change, the project is likely to achieve the estimated amount of annual emission reductions of 12,980 tCO₂e and a total estimated emission reductions of 129,800 tCO₂e over the 3rd renewable crediting period as specified within the final updated PDD.

The monitoring plan provides for the monitoring of the project's emission reductions. The monitoring arrangements described in the monitoring plan are feasible within the project design. It's Applus+ Certification opinion that the project participants are able to implement the monitoring plan and the emission reductions achieved can be reported ex-post for verification.

In summary, it is Applus+ Certification opinion that the project activity "2.2 MW hydropower plant in Birsinghpur, Madhya Pradesh of Ascent Hydro Projects Limited (AHPL)" (UNFCCC Ref. No. 1280) in India, as described in the PDD, version 7 dated 01/11/2022, meets all relevant UNFCCC requirements for the renewal of the crediting period. Hence Applus+ Certification submitted the request for renewal of the crediting period of the project activity.

Appendix 1. Abbreviations

Abbreviations	Full texts
ABT	Availability Based Tariff
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM PCP	Clean Development Mechanism Project Cycle Procedure
CDM PS	Clean Development Mechanism Project Standard
CDM VVS	Clean Development Mechanism Validation and Verification Standard
EB	Executive Board
EF	Emission Factor
EPC	Engineering ,Procurement and Construction
ER	Emission Reductions
CEA	Central Electricity Authority
CER	Certified Emission Reduction
CL	Clarification Request
DOE	Designated Operational Entity
DNA	Designated National Authority
EIL	Enercon(India) Limited
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
GHG	Greenhouse Gas(es)
GOI	Government of India
HPSEB	Birsinghpur in Madhya Pradesh State Electricity Board
IRR	Internal Rate of Return
IPCC	Intergovernmental Panel on Climate Change
JMR	Joint Meter Reading
MP	Monitoring Plan
MR	Monitoring Report
MWh	Megawatt hour
PDD	Project Design Document
PPA	Power Purchase Agreement
PP	Project Participant
PRC	Post Registration Changes
PS	Project Standard
RMP	Revised Monitoring Plan
TR	Technical Review
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard
UID	Unique Identification number
UNFCCC	United Nations Framework Convention on Climate Change

Appendix 2. Competence of team members and technical reviewers

According to the sectoral scope / technical area and experience in the sectoral or national business environment, Applus+ Certification has composed a project assessment team in accordance with the appointment rules in the internal Quality Management System of Applus+ Certification.

The composition of audit team shall be approved by the Applus+ Certification ensuring that the required skills are covered by the team. The four qualification levels for team members that are assigned by formal appointment rules are as presented below:

- Lead Auditor (LA).
- Auditor (A) / Auditor in Training (AiT).
- Technical Expert (TE).
- Technical Reviewer (TR).

The sectoral scope / technical area knowledge linked to the applied methodology/ies shall be covered by the assessment team.

Name	Qualification	Coverage of scope	Coverage of technical Area	Financial aspect	Host country Experience	Attendance to the On-Site Assessment
Vivek kumar Ahirwar	Lead Auditor (LA) and Technical Expert (TE)	Yes (1)	Yes (1.2)	N/A	Yes	No
Simon Shen	Technical Reviewer (TR)	Yes (1)	Yes (1.2)	N/A	N/A	N/A

Vivek Kumar Ahirwar is a BEE-Certified Energy Auditor by Govt of India with over eight years of relevant experience in energy efficiency, energy audit, thermal and electrical energy generation technology from renewable source and energy conservation in energy intensive industries, designated consumers and commercial buildings, implementation of energy conservation building codes, research, process and green building projects. He is a certified lead auditor for ISO 14001 EMS and 14064. He has experience under various categories of projects stating from renewable to waste to supercritical projects and WCD. He has successfully audited more than 100 GHG (CDM/VCS/GS) projects in different states across the India. He has done Mater in Technology (Energy Management) from a premier institute, School of Energy& Environmental Studies, DAVV, Indore (M.P.), India and Bachelor of Engineering (Mechanical Engineering) from Govt. Engineering College, Rewa, RGPV, India.

Simon Shen (Master Degree in Thermal Energy Engineering, Bachelor Degree in Environmental Engineering) is a Lead Auditor appointed by Applus+ Certification for the GHG project assessment. He is based in Shanghai. He has several years of work experience in environmental protection field. Before he joined Applus+ Certification, he had been worked for TÜV SÜD as a GHG Validator/Verifier and ISO 9001/14001 Lead Auditor for 5.5 years.

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
Basic Documents (Monitoring Report, Project Design Documents, Previous Verification Reports)				
1.0	PP	Registered PDD Version 06.2	Dated 10/01/2015	PP
1.2	PP	Updated PDD, version 07.0 (Intermidate Version)	Dated 01/11/2022	PP
1.3	PP	Updated PDD, version 07.0 (final)	Dated 01/11/2022	PP
1.4	Applus	Validation report	Dated 14/01/2015	Other: UNFCCC
1.5	UNFCCC	CDM Project activity view page "2.2 MW hydropower plant in Birsinghpur, Madhya Pradesh of Ascent Hydro Projects Limited (AHPL)" https://cdm.unfccc.int/Projects/DB/BVQI1186166310.82/view?cp=2	-	Other: UNFCCC
2.	References and requirements at UNFCCC/IPCC/etc.			
2.1	UNFCCC website	Clean Development Mechanism Validation and Verification Standard for Project Activity (CDM-VVS for PA), version 3.0 as per EB 111, Annex 1	Dated 09/09/2021	Other: UNFCCC
2.2	UNFCCC website	CDM Project Standard for Project Activity (CDM-PS for PA), version 03.0 as per EB 1011, Annex 1	Dated 09/09/2021	Other: UNFCCC
2.3	UNFCCC website	CDM Project Cycle Procedure for Project Activity (CDM-PCP for PA), version 02.0 as per EB 101, Annex 16	Dated 29/11/2018	Other: UNFCCC
2.4	UNFCCC website	Applied Methodology, AMS-I.D, Version 18.0 "Grid connected renewable electricity generation"	Dated 28/11/2014	Other: UNFCCC
2.5	CDM EB	PDD template form	Version 12.0	Other: UNFCCC
2.6	CDM EB	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, EB 66, Annex 47	02/02/2012	Other: UNFCCC
2.7	CDM EB	Tool to calculate the emission factor for an electricity system	Version 7.0	Other: UNFCCC
3.	Project implementation information			
3.1	State utility	Commissioning Certificates	-	PP
3.2	State utility	Power Purchase Agreement: Birsinghpur in Madhya Pradesh State Electricity Board and , M/s M/s Ascent Hydro Projects Ltd.	-	PP
3.3	State utility	Copies of joint meter readings	-	PP
3.4	PP	Invoice Copies for sale of electricity:	-	PP

		M/s M/s Ascent Hydro Projects Ltd.		
3.5	CEA	CEA CO ₂ Baseline Database for the Indian Power Sector Version 17	October 2021	Other
4.	ER calculation and cross checking issue			
4.1	PP	Emission reduction calculation sheet , Version 02	Dated 01/11/2022	PP
5.	Others			
5.1	CEA	Central Electricity Authority (Installation and Operation of Meters) Regulations - Notified on 17/03/2006 No.502/70/CEA/DP&D - Amendments Notified on 26/06/2010 No.502/6/2009/DP&D/D-I http://www.cea.nic.in/reports/regulation/meter_reg.pdf	17/03/2006	Other: CEA
5.2	Ministry of Power, GOI	The Electricity Act, 2003 http://www.cercind.gov.in/Act-with-amendment.pdf	Dated 26/05/2003	Other
5.3	Ministry of Power, GOI	National Electricity Policy, 2005 https://powermin.nic.in/en/content/national-electricity-policy	Dated 12/02/2005	Other
5.4	Ministry of Power, GOI	Tariff Policy, 2006 http://www.oriarc.org/documents/National%20Electricity%20Tariff%20Policy.pdf	January 2006	Other

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

Table 1. CL from this verification

CL ID	01	Section no.	D.2.1	Date :20/09/2022
Description of CL				
PP is requested to provide declaration for the following points mentioned in Section A.6:				
(a) This CDM project activity is neither registered as a another CDM project activity nor included as a component project activity (CPA) in a registered CDM programme of activities (PoA);				
(b) This project activity is not a project activity that has been deregistered.				
(c) This CDM project activity was not a CPA that has been excluded from a registered CDM PoA;				
Project participant response				Date : 01/11/2022
PP has submitted one declaration in line with the statements prescribed under the section A.6 of the PDD.				
Documentation provided by project participant				
Copy of the declaration from Project Proponent				
DOE assessment				Date : 21/11/2022
PP has provided the deceleration letter and confirm the same. Hence, CL #01 is closed.				

Table 1. CAR from this verification

CAR ID	01	Section no.	D.2.1& B.6.2	Date :20/09/2022
Description of CAR				
ER sheet is not provided to the assessment team and also not provided the latest version of the CEA database. Hence, CAR raised for the same.				
Project participant response				Date : 01/11/2022
PP has updated the ER sheet as per the latest CEA database to calculate the Grid Emission Factor. The ER sheet is now submitted to DOE for further review and acceptance.				
Documentation provided by project participant				
ER sheet, version 02, dated 01/11/2022				
DOE assessment				Date : 21/11/2022
PP has provided the updated ER hsheet along with the latest version of CEA database. Hence, CAR#01 is closed.				

CAR ID	02	Section no.	A.1	Date :20/09/2022
Description of CAR				
The PP is requested to submit supporting documents to confirm there is no change of ownership of the project, Capacity and Technology Provider /Supplier.				
Project participant response				Date : 01/11/2022
PP has submitted the copy of the PPA and sample copies of the JMR and invoices. Also, the commission certificate of the project is still valid. Additionally, the photographs from the plant are submitted with all nameplates, meter details etc. These documents show that there is no change in ownership. Also, as can be verified from the UNFCCC web interface there is no change in LoA and MOC status, which also confirms that there is no change in ownership or any project title ownership related event.				
Documentation provided by project participant				
Supporting documents related the project ownership (PPA, sample copies of JMR & Invoices, plant photographs, commissioning certificate).				
DOE assessment				Date : 21/11/2022
PP has provided the sample copy of JMR and other supporting evidence to confirm the project current status along with the ownership. Hence, CAR#02 is closed.				

CAR ID	03	Section no.	B.6.4	Date :20/09/2022
Description of CAR				
The PP has requested to clarify how the appropriate data vintage is applied to calculated OM and BM as PDD is submitted to DOE in March 2022.				

Project participant response	Date : 01/11/2022
PP has changed the EF consideration as per latest applicable CEA database. Thus, the data vintage consideration for OM and BM are also revised appropriately.	
Documentation provided by project participant	
ER sheet, version 02 dated 01/11/2022 Updated PDD, version 07, dated 01/11/2022	
DOE assessment	Date: 21/11/2022
PP has provided the updated PDD along with the ER sheet and it has been confirm the value has been taken from latest version . Hence, CAR#03 is closed.	

Table 2. FAR from this validation

FAR ID	01	Section no.	D.4	Date: 01/11/2022
Description of FAR				
Due to postponement of CMP 16 meeting and scheduled end of 2nd commitment period of Kyoto protocol on 31/12/2020, in accordance with para 7 (c) of EB 108th meeting report, CME shall apply any global warming potential values that may be adopted by the CMP for that period in their monitoring reports for any emission reductions achieved on or after 1 January 2021; and update their project or programme design documents in accordance with any requirements of the CMP guidance.				
Project participant response				Date: DD/MM/YYYY
Documentation provided by project participant				
DOE assessment				Date: DD/MM/YYYY

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Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
03.0	31 May 2019	Revision to: - Ensure consistency with version 02.0 of the “CDM validation and verification standard for project activities” (CDM-EB93-A05-STAN) and version 02.0 of the “CDM project cycle procedure for project activities” (CDM-EB93-A06-PROC); - Make editorial improvements.
02.0	31 October 2017	Revision to align with the requirements of the “CDM validation and verification standard for project activities” (version 01.0).
01.0	23 March 2015	Initial publication.
Decision Class: Regulatory Document Type: Form Business Function: Renewal of crediting period Keywords: crediting period, project activities, validation report		