




**Validation report form for
CDM project activities
(Version 04.0)**

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

BASIC INFORMATION

Title of the project activity	Hasang Hydro Electric Power Plant
Scale of the project activity	<input checked="" type="checkbox"/> Large-scale <input type="checkbox"/> Small-scale
Version number of the validation report	Version 1.0
Completion date of the validation report	17 th December 2020
Version number of the PDD to which this report applies	Version 3.0 dated 7 th October 2020
Date when PDD was uploaded for global stakeholder consultation	21 st February 2020
Project participants	PT Binsar Natorang Energi (Host party -Indonesia)
Host Party	Indonesia
Applied methodologies and standardized baselines	ACM0002-Grid-connected electricity generation from renewable sources -v20.0
Mandatory sectoral scopes	Sectoral Scope 1: Energy Industries (renewable/non-renewable sources)
Conditional sectoral scopes, if applicable	Not applicable
Estimated amount of annual average GHG emission reductions or GHG removals by sinks	216,320 tCO ₂ e per year
Name and UNFCCC reference number of the DOE	EPIC Sustainability Services Private Limited (E-0062) Report no: ESSPL/CDM/2019/266
Name, position and signature of the approver of the validation report	 K. Suryanarayana Murthy Managing Director

SECTION A. Executive summary

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EPIC Sustainability Services Private Limited (EPIC) has been contracted by PT Binsar Natorang Energi, the project participant (PP) to undertake the independent validation of the CDM project activity titled “Hasang Hydro Electric Power Plant”. The objectives of this validation is to validate that the project design, as documented is sound and reasonable, and meets the identified criteria CDM Project Standard for project activities^{/1/} v2.0, CDM validation & verification Standard for project activities^{/1/} v2.0, CDM Project Cycle Procedure for project activities^{/1/} v2.0 and other CDM requirements and associated guidance and to assess conformance with the certification criteria as laid out in the CDM Standards; to evaluate the conformance with the certification scope, including the GHG project and baseline scenarios; GHG sources, sinks, and reservoirs; and the physical infrastructure, activities, technologies and processes of the GHG project to the requirements of the CDM; to evaluate the calculation of GHG emissions, including the correctness and transparency of formulae and factors used; assumptions related to estimating GHG emission reductions; and uncertainties; and to determine whether the project could reasonably be expected to achieve the estimated GHG and to verify that the data estimated are complete, feasible and transparent. This report summarizes the findings of the validation of the project, performed on the basis of CDM requirements as well as criteria given to provide for consistent project operations, monitoring and reporting.

The project activity involved the construction and operation of 39 MW (13 MW x 3 units) large-scale run-of-river hydropower plant on the Aek Kualu River, in the Toba Samosir Regency, North Sumatera Province, Republic of Indonesia developed by the PP. The electricity thus generated will be sold to PT PLN (Indonesian State Owned Electricity Company) through regional electricity grid in Sumatera. The first two units are commissioned in 31st December 2019 and the third one is commissioned in 10th January 2020.

The validation team has, based on the recommendations in the Validation and Verification Standard for project activities^{/1/} v2.0 and employed a risk-based approach in the validation, focusing on the identification of significant risks and reliability of project monitoring and generations of estimated 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. PP has applied large scale methodology ACM0002-Grid-connected electricity generation from renewable sources^{/2/}-v20.0. The scope of the validation is the independent and objective review and ex-ante determination of the monitored reductions in GHG emission by the project activity. The validation is based on PDD v3.0^{/3/} (hereinafter referred to as final PDD). These documents were reviewed against the requirements of the CDM requirements.

It is the responsibility of EPIC to express an independent GHG validation opinion on the GHG emissions reductions and on the calculation of GHG emission reductions from the project based on the estimated emission reduction.

EPIC's validation approach was based on the requirements as defined under the CDM requirements. EPIC's approach was risk-based, drawing on an understanding of the risks associated with reported GHG emissions data and the controls in place to mitigate these. The examination includes assessment of evidence relevant to the amounts and disclosures in relation to the project's estimated GHG emission reductions.

The validation team has planned and performed the work to obtain the information and explanations that is considered necessary to provide sufficient evidence for it to give reasonable assurance that the amount of estimated GHG emission reductions is complete, feasible.

SECTION B. Validation team, technical reviewer and approver**B.1. Validation team member**

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interviews	Validation findings
1.	Team Leader	IR	Radhamadhavan	Vijayaraghavan	Central office, Bangalore, EPIC	√	x	√	√

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

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	IR	D	Siddaramu	Central office, Bangalore, EPIC
2.	Approver-Managing Director	IR	Murthy	K. Suryanarayana	Central office, Bangalore, EPIC

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

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The validation was performed primarily based on the review of the all the documents related to the PDD and the supporting documentation. This process included review of data and information related to project design, project implementation, applicable conditions of the methodology, baseline, and additionality, estimated emission reductions, monitoring plan, environmental impacts and local stakeholder consultation.

The PDD v1.0^{/3/} complying CDM requirements was submitted by the project participant and additional background documents related to the emission reductions are reviewed as an initial step of the validation process. The subsequent step involved the identification of corrective action requests and clarification requests (CARs, CLs and FARs) which are presented in Appendix 4 of this report. As a result, PP has submitted PDD v3.0 (hereinafter referred to as final PDD^{/3/}). A complete list of all documents and records reviewed is as attached in Appendix 3 of this report.

C.2. On-site inspection

Duration of on-site inspection: DD/MM/YYYY to DD/MM/YYYY (not conducted)				
No.	Activity performed on-site	Site location	Date	Team member
1.	The validation team conducted interviews with the PP, plant in-charge, other stakeholders to confirm the information and to resolve issues identified in the document review. An assessment was conducted as a part of validation activity and involved: 1) an assessment of the implementation and operation of the CDM project activity as per the PDD and CDM requirements	Onsite visit was not conducted due to COVID pandemic. The same was in line with UNFCCC' COVID pandemic notification. However, the validation team has conducted	NA	NA

	<p>2) To validate that the project design, as documented is sound and reasonable, and meets the identified criteria CDM Standard Requirements and associated guidance</p> <p>3) To assess conformance with the certification criteria as laid out in the CDM validation and verification Standard;</p> <p>4) To evaluate the conformance with the certification scope, including the GHG project and baseline scenarios, additionality; GHG sources, sinks, and reservoirs; and the physical infrastructure, activities, technologies and processes of the GHG project to the requirements of the CDM;</p> <p>5) To evaluate the calculation of GHG emissions, including the correctness and transparency of formulae and factors used; assumptions related to estimating GHG emission reductions; and uncertainties; and</p> <p>6) To determine whether the project could reasonably be expected to achieve the estimated GHG reduction/removals.</p> <p>7) a review of information flows for generating, aggregating and reporting of the ex-ante monitoring parameters</p> <p>8) interviews with relevant personnel to confirm that the operational and data collection procedures can be implemented in accordance with the Monitoring Plan</p> <p>9) a cross-check between information provided in the submitted documents and data from other sources</p> <p>10) a review of calculations and assumptions made in determining the GHG data and estimated ERs, and</p> <p>11) an identification of QA/QC procedures in place to prevent, or identify and correct, any errors or omissions in the reported monitoring parameters</p> <p>12) Validation of Stakeholder Consultation by interviewing the stakeholders.</p>	<p>skype meeting dated 16th June 2020 as an alternative measure to the onsite visit.</p>		
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C.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Heuw	Robert	PT Binsar Natorang Energi (PP)	16 th June 2020	As per subject C.2	Lead Auditor
2.	Lee	Sangsoo Lee	PT Binsar Natorang Energi	16 th June 2020	As per subject C.2	Lead Auditor
3.	Suranta Tarigan	Datkita	PT Binsar Natorang Energi	16 th June 2020	As per subject C.2	Lead Auditor
4.	Kwon	Seongwook	PT Binsar Natorang Energi	16 th June 2020	As per subject C.2	Lead Auditor
5.	Hayes	Tom	Agrienergy (CDM consultant)	16 th June 2020	As per subject C.2	Lead Auditor
6.	-	Kesman	Local stakeholder (Lubudapdap Village)	16 th June 2020	As per subject C.2	Lead Auditor
7.	-	Tiara	Local stakeholder - (Harilogoan Village)	16 th June 2020	As per subject C.2	Lead Auditor

Note: The annual estimated ER is 216,320 tCO₂e per year which is more than 100,000 tCO₂e per year. As per para 30 of PS-PA v2.0, onsite is mandatory if annual estimated ER is more than 100,000 tCO₂e per year. However, onsite could not be conducted due to COVID-19 pandemic. As per the announcement by the EB dated 23rd June 2020 https://cdm.unfccc.int/newsroom/latestnews/releases/2020/01041_index.html, it has agreed to, on an exceptional basis, considering the COVID-19 pandemic, to extend the period in which CDM Designated Operational Entities (DOEs) may apply alternative measures of validation/verification to mandatory on-site inspections until 31 December 2020. The validation team has conducted skype meeting dated 16th June 2020 as an alternative measure to the onsite visit.

C.4. Sampling approach

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No sampling approach is used for this validation process.

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

Areas of validation findings	No. of CL	No. of CAR	No. of FAR
Demonstration of prior consideration of the CDM	-	1 (CAR 8)	-
Identification of project type	-	-	-
Description of project activity	-	5 (CAR 1, CAR 2, CAR 3, CAR 7 and CAR 12)	-
Application and selection of methodologies and standardized baselines			
- Application of methodologies and standardized baselines	-	2 (CAR 5 and CAR 6)	-
- Deviation from methodology and/or methodological tool	-	-	-
- Clarification on applicability of methodology, tool and/or standardized baseline	-	-	-
- Project boundary, sources and GHGs	-	-	-
- Baseline scenario	-	-	-
- Demonstration of additionality	-	3 (CAR 4,	-

		CAR 9 and CAR 14)	
- Estimation of emission reductions or net anthropogenic removals	-	1 (CAR 10)	-
- Monitoring plan	-	1(CAR 11)	-
Start date, crediting period type and duration	-	-	-
Environmental impacts	-	-	-
Local stakeholder consultation	-	1 (CAR 13)	-
Sustainable development co-benefits	-	-	-
Approval	1 (CL 1)	-	-
Authorization	-	-	-
Modalities of communication	-	-	-
Global stakeholder consultation	1 (CL 2)	-	-
Others (please specify)	-	-	-
Total	2	14	0

SECTION D. Validation findings

D.1. Demonstration of prior consideration of the CDM

Means of validation	As per para 39-46 of the VVS-PA ¹⁷ v2.0, the validation team determined whether CDM benefits were considered necessary in the decision to undertake the project as a proposed CDM project activity if the starting date of the proposed CDM project activity is prior to the start of validation, which is the date of publication of the PDD for global stakeholder consultation.
Findings	1 CAR (CAR 8) was raised in this section.
Conclusion	As per the final PDD ^{3/} , start date of the project is 24 th October 2016. Since the start date of the project is after date of publication of the PDD for first GSCP (31 st Jan 2012 to 29 th Feb 2012), prior consideration is not required. However, PP has demonstrated that CDM benefits were considered necessary in the decision to undertake the project. Refer Appendix 5 of this report for details.

D.2. Identification of project type

Means of validation	As per para 47 to 49 of VVS-PA ¹⁷ v2.0, the validation team determined whether the project participants identified the type of CDM project activity they intend to design and implement in accordance with the "CDM project standard for project activities and whether the PDD has been completed using the valid version of the PDD form appropriate to the type of the proposed CDM project activity.
Findings	No CL, CAR or FAR is raised in this section.
Conclusion	PP is installing 39 MW large scale Hydro power plant.

D.3. Description of project activity

Means of validation	As per para 50 to 56 & 183 of VVS-PA ¹⁷ v2.0, the validation team determined whether the description of the proposed CDM project activity in the final PDD ^{3/} is accurate, complete, and provides an understanding of the proposed CDM project activity and assessed the eligibility of the land and the approach to address non-permanence described by the project participants in accordance with applicable specific requirements for A/R CDM project activities in the "CDM project standard for project activities".
Findings	5 CARs (CAR 1, CAR 2, CAR 3, CAR 7 and CAR 12) are raised in this section.
Conclusion	The project activity involved the construction and operation of 39 MW (13 MW x 3 units) large-scale run-of-river hydropower plant on the Aek Kualu River, in the Toba Samosir Regency, North Sumatera Province, Republic of Indonesia developed by the PP. The electricity thus generated will be sold to PT PLN (Indonesian State Owned Electricity Company) through regional electricity grid in Sumatera. The first two units are commissioned in 31 st December 2019 and the third one is commissioned in 10 th January 2020.

D.4. Application and selection of methodologies and standardized baselines**D.4.1. Application of methodologies and standardized baselines**

Means of validation	As per para 62-68 of VVS-PA ^{/1/} v2.0, the validation team validated whether the selected methodologies and, where applicable, the selected standardized baselines are applicable to the proposed CDM project activity and that the selected versions are valid at the time of submission of the proposed CDM project activity for registration.
Findings	2 CARs (CAR 5 and CAR 6) are raised in this section.
Conclusion	The project is complying to the latest valid version of the applied methodology ACM002 v20.0. Refer Appendix 8 of this report for details.

D.4.2. Deviation from methodology and/or methodological tool

Means of validation	As per para 58 to 60 of VVS-PA ^{/1/} v2.0, the validation team determined whether the PP has deviated from the approved applied methodology.
Findings	No CL, CAR or FAR is raised in this section.
Conclusion	This is not applicable as there is no request for deviation from PP. The project complies with the requirements of the applied methodology.

D.4.3. Clarification on applicability of methodology, tool and/or standardized baseline

Means of validation	As per para 61 of VVS-PA ^{/1/} v2.0, the validation team determined whether clarification is required for the project validation.
Findings	No CL, CAR or FAR is raised in this section
Conclusion	This is not applicable as there is no request for clarification sought by the PP. The project complies with the requirements of the applied methodology.

D.4.4. Project boundary, sources and GHGs

Means of validation	As per para 69 to 74 of VVS-PA ^{/1/} v2.0, the validation team determined whether all main GHG emission sources, the project boundary of the proposed CDM project activity, and other relevant project and baseline emission sources covered in the selected methodologies and, where applicable, the selected standardized baselines are included within the project boundary for the purpose of calculating project and baseline emissions for the proposed CDM project activity.
Findings	No CL, CAR or FAR is raised in this section
Conclusion	The validated team has reviewed the final PDD ^{/3/} under relevant section project boundary and accepted the source and sink of the project. Scenario mentioned in the relevant sections (under project boundary section and baseline section) is consistent. Refer Appendix 8 of this report for details.

D.4.5. Baseline scenario

Means of validation	As per para 75 to 85 of VVS-PA ^{/1/} v2.0, the validation team determine whether the baseline identified for the proposed CDM project activity is the scenario that reasonably represents the anthropogenic emissions by sources of GHGs that would occur in the absence of the proposed CDM project activity.
Findings	No CL, CAR or FAR is raised in this section
Conclusion	Since the project activity is the installation of a grid connected Greenfield hydro power plant, the baseline scenario is electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources. Hence Sumatra regional grid forms the baseline for this project.

D.4.6. Demonstration of additionality

Means of validation	As per para 86 to 109 & 201 of VVS-PA ^{/1/} v2.0, the validation team determined whether the proposed CDM project activity is additional as demonstrated in the PDD.
Findings	3 CARs (CAR 4, CAR 9 and CAR 14) are raised in this section.
Conclusion	Refer Appendix 9 and Appendix 11 of this report for details.

D.4.7. Estimation of emission reductions or net anthropogenic removals

Means of validation	As per para 110 to 114 of VVS-PA ¹⁷ v2.0, the validation team determined whether the description of how to undertake the ex-post calculation of baseline, project and leakage GHG emission reductions, to be achieved by the proposed CDM project activity, and the ex-ante calculation of them for each year of the crediting period provided in the PDD, are in accordance with the applied methodologies including applicable tools and, where applicable, the applied standardized baselines and the “Standard: Sampling and surveys for CDM project activities and programme of activities”
Findings	1 CAR (CAR 10) is raised in this section.
Conclusion	Refer Appendix 8 of this report for details.

D.4.8. Monitoring plan

Means of validation	As per para 115 to 122 of VVS-PA ¹⁷ v2.0, the validation team determined whether the description of the monitoring plan included in the PDD complies with the applied methodologies including applicable tools and, where applicable, the applied standardized baselines and, where applicable, the “Standard: Sampling and surveys for CDM project activities and programme of activities.”
Findings	1 CAR (CAR 11) is raised in this section.
Conclusion	Refer Appendix 8 of this report for details

D.5. Start date, crediting period type and duration

Means of validation	As per para 123 to 125 & 205 of VVS-PA ¹⁷ v2.0, the validation team determined whether the project participants specified the following on the start date and crediting period type and duration of the proposed CDM project activity in accordance with relevant requirements in the “CDM project standard for project activities.
Findings	No CL, CAR or FAR is raised in this section
Conclusion	Refer Appendix 5 of this report for details.

D.6. Environmental impacts

Means of validation	As per para 126 to 129 and 206 to 210 of VVS-PA ¹⁷ v2.0, the validation team determined whether the project participants conducted an analysis of the environmental impacts of the proposed CDM project activity, including transboundary impacts, and whether those impacts are considered significant by the project participants or by the host Party.
Findings	No CL, CAR or FAR is raised in this section
Conclusion	Refer Appendix 5 of this report for details.

D.7. Local stakeholder consultation

Means of validation	As per para 130 to 137 of VVS-PA ¹⁷ v2.0, the validation team determined whether the project participants have completed the local stakeholder consultation in accordance with the relevant requirements in the “CDM project standard for project activities.
Findings	1 CAR (CAR 13) is raised in this section.
Conclusion	Refer Appendix 5 of this report for details.

D.8. Sustainable development co-benefits

Means of validation	As per para 138 & 211 to 215 of VVS-PA ¹⁷ v2.0, the validation team determined how the project participants intend to monitor sustainable development co-benefits of the proposed CDM project activity by the project participants separately from the monitoring plan.
Findings	No CL, CAR or FAR is raised in this section
Conclusion	PP mentioned the environmental and social –economic benefits of the project activity in the section A.1 of PDD. But it intends not to monitor separately. PP has not developed any document describing how they intend to monitor sustainable development co-benefits. Since this is not a mandatory requirement, the validation team has accepted it. Refer Appendix 5 of this report for details.

D.9. Approval

Means of validation	As per para 139 to 146 of VVS-PA ¹⁷ v2.0, the validation team determined whether the designated national authority (DNA) of each Party indicated in the PDD as being involved in the proposed CDM project activity has provided a written letter of approval.
Findings	1 CL (CL 1) is raised in this section.
Conclusion	Refer Appendix 5 of this report for details.

D.10. Authorization

Means of validation	As per para 147 to 151 of VVS-PA ¹⁷ v2.0, the validation team determined whether each project participant of the proposed CDM project activity has been authorized to participate in the project activity by at least one Party involved in the letter of approval referred to in paragraph 139 of VVS-PA v1.0 or in a separate authorization letter.
Findings	No CL, CAR or FAR is raised in this section
Conclusion	Refer Appendix 5 of this report for details.

D.11. Modalities of communication

Means of validation	As per para 152 to 160 of VVS-PA ¹⁷ v2.0, the validation team determined whether the corporate identity of all project participants and focal points included in the Modalities of Communication (MoC) statement, as well as the personal identities, including specimen signatures and employment status, of their authorized signatories are correct.
Findings	No CL, CAR or FAR is raised in this section
Conclusion	Refer Appendix 5 of this report for details.

D.12. Global stakeholder consultation

Means of validation	As per para 254 to 265 of VVS-PA ¹⁷ v2.0, the validation team determined whether authentic and relevant comments in the global stakeholder consultation were taken into due account in the PDD of the proposed CDM project activity.
Findings	1 CL (CL 2) was raised in this section.
Conclusion	The project was uploaded for GSCP two times. First GSCP from 31 st Jan 2012 to 29 th Feb 2012: https://cdm.unfccc.int/Projects/Validation/DB/RQK0IAJ71O9YLM72WQC0W5R931A6D0/view.html Second GSCP from 21 st Feb 2020 to 21 st March 2020: https://cdm.unfccc.int/Projects/Validation/DB/DLG88CNHJLEOVYTH3Z0R8XGBORHEUS/view.html However, there was no comment received both the times. Refer Appendix 5 of this report for more details.

SECTION E. Internal quality control

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After the completion of assessment by the validation team all the relevant documentation is submitted to a qualified, Independent Technical reviewer as part of EPIC' internal quality control system. A Technical reviewer team is appointed to review the draft final validation report (Draft FVR). The comments made by the Technical reviewer team are taken into consideration and incorporated in the final FVR. The technical reviewer team assesses whether all the reporting requirements have been fulfilled and whether all the issues raised were closed satisfactorily by the validation team with justification. The technical review process can also raise issues in this regard which is resolved further by the validation team to the satisfaction of the technical reviewer. The technical reviewer team either accepts or rejects the report made by the validation team. The final report (after resolutions of all findings) is then submitted to the Head-operations for review and approval.

SECTION F. Validation opinion

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EPIC Sustainability Services Private Limited (EPIC) has been contracted by PT Binsar Natorang Energi to undertake the independent validation of the CDM project activity titled "Hasang Hydro Electric Power Plant".

The objectives of this validation is to validate that the project design, as documented is sound and reasonable, and meets the identified criteria CDM Project Standard for project activities v2.0, CDM validation & verification Standard for project activities v2.0, CDM Project Cycle Procedure for project activities v2.0 and other CDM Requirements and associated guidance and to assess conformance with the certification criteria as laid out in the CDM Standards; to evaluate the conformance with the certification scope, including the GHG project and baseline scenarios; GHG sources, sinks, and reservoirs; and the physical infrastructure, activities, technologies and processes of the GHG project to the requirements of the CDM; to evaluate the calculation of GHG emissions, including the correctness and transparency of formulae and factors used; assumptions related to estimating GHG emission reductions; and uncertainties; and to determine whether the project could reasonably be expected to achieve the estimated GHG and to verify that the data estimated are complete, feasible and transparent.

The validation team has, based on the recommendations in the Validation and Verification Standard^{/1/} for project activities v2.0 and employed a risk-based approach in the validation, focusing on the identification of significant risks and reliability of project monitoring and generations of estimated 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. The project activity was registered by applying the methodology^{/2/} ACM0002-Grid-connected electricity generation from renewable sources-v20.0 and the validation was carried out in accordance with the applied methodology. The scope of the validation is the independent and objective review and ex-ante determination of the monitored reductions in GHG emission by the project activity. The validation is based on final PDD^{/3/}. These documents were reviewed against the requirements of the CDM requirements.

The validation team has verified that the information submitted by the PP is correct and that the emission reduction achieved has been determined correctly. Based on the information seen and evaluated, the validation team has requested for registration of the CDM by confirming the following:

Project title:	Hasang Hydro Electric Power Plant
Sector and Methodology used	Sectoral Scope 1: Energy Industries (renewable/non-renewable sources) ACM0002-Grid-connected electricity generation from renewable sources - v20.0
Estimated Emissions reductions validated	216,320 tCO ₂ e per year

Appendix 1. Abbreviations

Abbreviations	Full texts
ACM	Approved Consolidated Methodology
AMDAL	Analisis Mengenai Dampak Lingkungan
BM	Build Margin
BNE	PT Binsar Natorang Energi
CAP	Installed Capacity
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction(s)
CL	Clarification request
CM	Combined Margin
CMP	Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
COP	Conference of the Parties
CTA	Common Terms Agreement
DGE	Directorate General-Electricity
DNA	Designated National Authority
DoE	Designated Operational Entity
DVR	Draft Validation Report
EAT	Earnings After Tax
EBITDA	Earnings before Interest on loan, income tax, depreciation and amortization
EBT	Earnings Before Tax
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EPC	Engineering Procurement Commissioning
EPIC	EPIC Sustainability Services Private Limited
ER	External Resources
ERPA	Emission Reduction Purchase Agreement
ESIA	Environmental & Social Impact Assessment
FAR	Forward Action Request
FSR	Feasibility Study Report
FVR	Final Validation Report
GHG	Greenhouse gas(es)
GSCP	Global Stakeholder Consultation Process
GWP	Global Warming Potential
HASL	Highest annual system load
HEPP	Hydro Electric Power Plant
IPCC	Intergovernmental Panel on Climate Change
IPP	Independent Power Producer
IR	Internal Resources
IRR	Internal Rate of Return
ISO	International Organization for Standardization
KDB	Korea Development Bank
LASL	Lowest annual system load
LCMR	Low Cost/ Must Run Resources
LGI	LG International
LSC	Local Stakeholder Consultation
MEF-DGC	Ministry of Environment and Forestry –Directorate General of Climate Change
MEMR	Ministry of Energy and Mineral Resources
MoC	Modalities of Communication
MP	Monitoring Plan

O&M	Operation and Maintenance
ODA	Official Development Assistance
OM	Operating Margin
PCP	Project Cycle Procedure
PD	Power Density
PDD	Project Design Document
PP	Project Participant
PPA	Power Purchase Agreement
PS	Project Standard
PT PLN	PT Perusahaan Listrik Negara
SMBC	Sumitomo Mitsui Banking Corporation
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Clean Development Mechanism Validation and Verification Standard
WACC	Weighted Average Cost of Capital

Appendix 2. Competence of team members and technical reviewers

The following validation team has been assigned to carry out the validation of the project.

Name	Mr. R. Vijayaraghavan	Dr. D. Siddaramu
Role	Lead Auditor	Technical Reviewer team
Competence in relevant sectors	1	1
Responsibility	Doc review, onsite, DVR preparation, DVR resolution, FVR preparation	Technical review

Mr. R. Vijayaraghavan holds BE in Mechanical Engineering, M. Tech in Energy Conservation and Management and MBA in Technology Management. He is certified as Energy Auditor by Bureau of Energy Efficiency (BEE), Government of India. He has 12 years of working experience in energy sector including validation / verification of CDM, VCS and GS projects. He has undergone extensive training on CDM validation and verification and has been qualified as Lead Auditor.

Dr. D. Siddaramu holds a M.Sc., Ph.D in Environmental Science, with over 16 years of experience. A qualified Clean Development Mechanism (CDM) Lead Auditor, successfully registered more than 30 projects with United Nations Framework Convention on Climate Change (UNFCCC) and Verified Carbon Standard registry (VCS) registry; well versed with both National and International legal regime. Has hands on experience in Environmental Impact Assessment (EIA) studies pertaining to different Ecosystem; monitoring, collection & analyzing environmental samples and conducting socio-economic surveys; data analysis. Conducting CDM/VCS audits, preparation of validation protocols and reports. He is qualified for Sector 1 based on CDM accreditation requirements and qualified lead auditor as per EPIC accreditation).

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	UNFCCC	Validation and Verification Standard for Project Activities v2.0 https://cdm.unfccc.int/sunsetcms/storage/contents	1	Publicly available

		/stored-file-20181221092105818/Reg_stan06v02.pdf Project Standard for Project Activities v2.0 https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20181221092046526/Reg_stan04v02.pdf Project cycle procedure for Project Activities v2.0 https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20181221092024737/PC_proc03v02.pdf		
2	UNFCCC	ACM0002-Grid-connected electricity generation from renewable sources -v20.0 https://cdm.unfccc.int/methodologies/DB/XP2LKUS A61DKUQC0PIWPGWDN8ED5PG TOOL01: Tool for the demonstration and assessment of additionality" v7.0; https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf TOOL02: Combined tool to identify the baseline scenario and demonstrate additionality" v7.0 https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-02-v7.0.pdf TOOL03: Tool to calculate project or leakage CO2 emissions from fossil fuel combustion" v3.0 https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-03-v3.pdf TOOL05: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" v3.0 https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-05-v3.0.pdf TOOL07: Tool to calculate the emission factor for an electricity system" v7.0 https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf TOOL10: Tool to determine the remaining lifetime of equipment" v1.0 https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-10-v1.pdf Guidelines on the assessment of investment analysis v5.0 Guidelines for the reporting and validation of plant load factors v1.0 EB48 Annex 11 https://cdm.unfccc.int/Reference/Guidclarif/meth/meth_guid35.pdf	2	Publicly available
3	PP	PDD v1.0 (initial version) (webhosted for GSCP) https://cdm.unfccc.int/Projects/Validation/DB/RQK0IAJ71O9YLM72WQC0W5R931A6D0/view.html PDD v2.0 PDD v3.0 (final version) (Request for Registration (including investment analysis sheet, emission reduction sheet)	3	PP
4	Directorate of	Host country LoA letter	4	PP

	Climate Change – Ministry of Environment and Forestry, Indonesia			
5	E.ON, Bureau Veritas and the PP	Deed of termination between outgoing PP and the current PP Letter DOE termination between the PP and the outgoing DoE Validation contract between the outgoing PP and the outgoing DoE	5	PP
6	PT Masaryo Gatra Nastiti	Commissioning certificates	6	PP
7	POSCO/PP	Offshore equipment supply contract (EPC contract) dated 24 th October 2016 (support document for start date of the project) Manufacturer specification of turbine, generator, transformers Photos of nameplate of major equipments, Elevation diagram	7	PP
8	PP	Declaration from PP dated 5 th August 2019 (Regarding no ODA) CDM website https://cdm.unfccc.int/Projects/Validation/index.html (regarding the project activity is neither registered as a CDM project activity nor included as a CPA in a registered CDM PoA)	8	PP
9	PP	Electrical line diagram	9	PP
10	Directorate General of Electricity under the Ministry of Energy and Mineral Resources (MEMR)	Grid EF calculations from host country DNA (regarding combined margin calculation) Letter from Directorate General of Electricity dated 15 th July 2020 Country power profiles 2018 document	10	PP
11	PLN/PP	Power purchase agreement	11	PP
12	UNFCCC	PDD template v11.0 https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20190531085424591/PDD_form05v11.doc	12	Publicly available
13	PP	Initial Prior consideration forms by the PP https://cdm.unfccc.int/Projects/PriorCDM/notifications/index.html?s=80 Prior consideration form by LGI https://cdm.unfccc.int/Projects/PriorCDM/notifications/index.html?s=0 Progress intimation letter by PP https://cdm.unfccc.int/Projects/PriorCDM/notifications/index.html?s=0	13	PP
14	UNFCCC	Applicability of sectoral scope” v1.0 https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20160314113213746/accr_stan03.pdf	14	Publicly available
15	President – Republic of Indonesia	Presidential Regulation (2006; Regulation no: 05/2006) Kebijakan Energi Nasional (National Energy Policy) document Indonesia President Decree No. 4/2010 https://peraturan.bpk.go.id/Home/Download/69703/Perpres%20No.4%20Tahun%202010.pdf Indonesia President Decree No. 48/2011	15	PP/ Publicly available

		https://peraturan.bpk.go.id/Home/Download/69522/Perpres_no_48_2011.pdf Indonesia President Decree No. 194/2014 https://peraturan.bpk.go.id/Home/Download/67603/Perpres%20Nomor%20194%20Tahun%202014.pdf		
16	UNFCCC	Glossary of CDM terms v10.0 https://cdm.unfccc.int/Reference/Guidclarif/glos_CDM.pdf	16	Publicly available
17	Government of Indonesia	Regulation No. 27 of 2012 on Environmental Permits (GR 27/2012). Environmental Permit for Transmission Line Environmental Permit for Power Plant Surface Water Use Permit Water utilisation permit	17	PP
18	Mott MacDonald	Environment and social impact assessment report	18	PP
19	PP	LSC report and its associated documents such as public notice, attendance sheet	19	PP
20	PP	MoC letter MoC form template (v3.0). https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20170523143706239/Reg_Form19.doc Incorporation certificate for the PP	20	PP
21	Ministry of Finance	Circular Letter No 55/PJ.6/1993 dated 08/10/1993 regarding the Guidelines decree from the Ministry of Finance No 174/KMK.04/1993 dated 23rd February 1993	21	PP
22	PP	Financial model	22	PP
23	PP/LGI	Draft Equity Support agreement dated 18 th October 2016 (support document for Investment decision) Equity support agreement dated 26 th October 2016	23	PP
24	Project Lenders	Common Terms Agreement dated 26 th October 2016	24	PP
25	Poyry	Feasibility report	25	PP
26	PT HOM	O&M agreement between the PP and PT HOM	26	PP
27	Lenders	Covered facility agreement	27	PP
28	Lenders	Uncovered facility agreement	28	PP
29	Macrotrends	Bank of Indonesia lending rate sheet Macrotrends website https://www.macrotrends.net/2519/6-month-libor-rate-historical-chart Bloomberg website https://www.bloomberg.com/quote/USDIDR:CUR	29	Publicly available
30	Government of Indonesia	Law No. 36/2008 on Income Tax	30	PP
31	Directorate General of Electricity under the Ministry of Energy and Mineral Resources (MEMR)	Power plant list regarding common practice	31	PP

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

Table 1. CLs from this validation

CL ID	1	Section no.	D.9	Date: 25/03/2020
Description of CL				
PP is requested to send the LoA letter for PT Binsar Natorang Energi from Indonesia DNA & LoA letter for LG from Korea DNA				
Project participant response				Date: 25/03/2020
A recent change in DNA in Indonesia and Covid-19 has caused delays to this process. The LOA is provided. LG will no longer be a registered PP, therefore a Korean LOA is not required.				
Documentation provided by project participant				
LoA letter ^{/4/}				
DOE assessment				Date: 20/11/2020
The validation team has reviewed the LoA letter ^{/4/} and closed. Refer Appendix 5 of this report for details.				

CL ID	2	Section no.	D.12	Date: 22/10/2020
Description of CL				
PP is requested to clarify the following				
<ol style="list-style-type: none"> 1. Date of current PP taking over the project from the outgoing PP and support document 2. Can PP confirm date of validation contract signed between outgoing DOE and outgoing PP is dated 10th November 2011. 3. Do PP have any findings (CARs/CLs) from outgoing DOE 				
Project participant response				Date: 27/10/2020
<ol style="list-style-type: none"> 1. <i>The date that BNE began to pursue the project unassisted by E.ON can be taken as the termination date of the 'Technical Management Agreement' between the two project participants. This date is 30/09/2012.</i> 2. <i>As per the termination letter from BV, their validation contract with E.ON was dated 10/11/2011.</i> 3. <i>BNE is not in possession of any findings issued to E.ON prior to the E.ON / BV webhosting of the project in 2012. The PP consulted an employee working on the project during this period, who confirmed that no findings were issued.</i> 				
Documentation provided by project participant				
120930_deed of termination_EON-BNE ^{/5/} Letter DOE termination - Hasang Hydro Power ^{/5/} Revised PDD.				
DOE assessment				Date: 20/11/2020
The validation team has reviewed the deed of termination ^{/5/} between current and outgoing PP, termination letter ^{/5/} between PP and the outgoing DOE, revised PDD and closed. Refer Appendix 5 of this report for details.				

Table 2. CARs from this validation

CAR ID	1	Section no.	D.3	Date: 25/03/2020
Description of CAR				
Pls mention commissioning date and evidence in the PDD (Refer p2 of PDD)				
Project participant response				Date: 25/03/2020
PDD updated.				
Documentation provided by project participant				
Commissioning certificates ^{/6/} provided Revised PDD				
DOE assessment				Date: 20/11/2020
The validation team has reviewed the commissioning letter ^{/6/} and closed. Refer Appendix 5 of this report for details.				

CAR ID	2	Section no.	D.3	Date: 25/03/2020
Description of CAR				
Pls mention make of turbine, generator and discharge of the turbines in the PDD (Refer p5 of PDD)				
Project participant response				Date: 25/03/2020
PDD updated				

Documentation provided by project participant			
<i>Revised PDD</i>			
DOE assessment			Date: 20/11/2020
The validation team has reviewed the technical specifications of turbine, generator and other balance of power plants from EPC contract ^{7/} . The validation team has reviewed the photo of nameplate details of desander, weir section, penstock, turbines, generators, switchyard and other balance of power plant along with its GPS coordinates. The same GPS was specified in the PDD. Hence accepted.			

CAR ID	3	Section no.	D.3	Date: 25/03/2020
Description of CAR				
Pls be consistent with rating of transformer (16.8 MVA x 3 is not 81.5. In the first page it is mentioned 16.15 MVA.) (Refer p6 of PDD)				
Project participant response				Date: 25/03/2020
<i>Typo in PDD has been revised in line with manufacturer specifications^{7/}.</i>				
Documentation provided by project participant				
<i>Revised PDD</i>				
DOE assessment				Date: 20/11/2020
The validation team has reviewed the PDD and EPC contract ^{7/} and now it is consistent. Hence closed.				

CAR ID	4	Section no.	D.4.6	Date: 25/03/2020
Description of CAR				
Please send a declaration to confirm the there is no ODA involved in the investment (Refer p6 of PDD). Please send a declaration to confirm the history of the project (Refer p6 of PDD).				
Project participant response				Date: 25/03/2020
<i>Declaration provided</i>				
Documentation provided by project participant				
<i>Declaration^{8/}</i>				
DOE assessment				Date: 20/11/2020
PP has declared through a letter ^{8/} dated 5 th August 2019 that there is no public funding. The validation team has reviewed the financial model ^{22/} and convinced that there cannot be any public funding. Hence closed the issue.				

CAR ID	5	Section no.	D.4.1	Date: 25/03/2020
Description of CAR				
Pls use the relevant and latest version of tools referenced in the PDD (refer p6/7 of PDD).				
Project participant response				Date: 25/02/2020
<i>PDD updated to include version numbers.</i>				
Documentation provided by project participant				
<i>Revised PDD</i>				
DOE assessment				Date: 20/11/2020
The validation team has reviewed the final PDD ^{3/} and accepted that PP has used the latest versions of the tools. Hence closed the issue. Refer Appendices of this report for more details.				

CAR ID	6	Section no.	D.4.1	Date: 25/03/2020
Description of CAR				
PP does not demonstrate the applicable conditions of the applied meth (Refer p7/8 of PDD).				
Project participant response				Date: 25/03/2020
<i>Paragraph 8 of AMC0002 has been added to the applicability conditions.</i>				
Documentation provided by project participant				
<i>Revised PDD</i>				
DOE assessment				Date: 20/11/2020
The validation team has reviewed the final PDD ^{3/} and accepted that PP has used the latest versions of the applied methodology. Hence closed the issue.				

CAR ID	7	Section no.	D.3	Date: 25/03/2020
Description of CAR				
Pls mention electrical line diagram with the monitoring points (Refer p9 of PDD)				
Project participant response				Date: 25/03/2020
<i>Electrical line diagram included in PDD</i>				
Documentation provided by project participant				

<i>Revised PDD</i> <i>Electrical Line Diagram</i> ^{9/}	
DOE assessment	Date: 20/11/2020
The validation team has reviewed the final PDD ^{3/} and accepted the single line diagram ^{9/} consistent with the plant layout. Hence closed the issue.	

CAR ID	8	Section no.	D.1	Date: 25/03/2020
Description of CAR				
Pls mention the exhaustive list of CDM and non CDM events under prior consideration section (Refer p10 of PDD)				
Project participant response				Date: 25/03/2020
<i>Key events provided in PDD.</i>				
Documentation provided by project participant				
<i>Revised PDD</i>				
DOE assessment				Date: 20/11/2020
The validation team has reviewed the final PDD ^{3/} and accepted. Hence closed the issue. Refer Appendix 5 of this report for details.				

CAR ID	9	Section no.	D.4.6	Date: 25/03/2020
Description of CAR				
Pls demonstrate the additionality section and common practice analysis in detail in the PDD (Refer p9 to14 of PDD)				
Project participant response				Date: 25/03/2020
<i>Further detail has been added to the PDD in line with DOE comments.</i>				
Documentation provided by project participant				
<i>Revised PDD.</i>				
DOE assessment				Date: 20/11/2020
Refer Appendix 9 and Appendix 11 of this report for closure.				

CAR ID	10	Section no.	D.4.7	Date: 25/03/2020
Description of CAR				
Link specified in section B.6.2 is not opening. Please make one working sheet for combined margin calculation. This value 0.805 should be in line with requirements of emission tool v7.0. (Refer p18 of PDD)				
Project participant response				Date: 25/03/2020
<i>The link has been removed and DNA worksheets provided.</i>				
Documentation provided by project participant				
<i>Revised PDD</i> <i>Grid EF calculations from DNA Provided</i> ^{10/}				
DOE assessment				Date: 20/11/2020
The validation team has reviewed the final PDD ^{3/} and accepted. Refer Appendix 10 of this report for closure.				

CAR ID	11	Section no.	D.4.8	Date: 25/03/2020
Description of CAR				
Pls mention Accuracy class, frequency of calibration may be mentioned in section B.7.1. In case of failure of meter for a particular month, how will the PP determine the value for that particular month. The electricity generation should be crosschecked with sale receipts/invoices. (Refer p21 of PDD). There are alternative methods to determine the missing data for a particular meter failure period. Pls check and mention.(Refer p22 of 40).				
Project participant response				Date: 25/03/2020
<i>Accuracy class and calibration frequency is as per the PPA:</i> <i>Accuracy class: 0.2</i> <i>Frequency: Annual</i>				
<i>Details of crosschecking are already mentioned under 'measurement methods and procedures':</i> The net electricity exported is the difference between these two meters. Data will also be cross checked with invoices.				
Alternative methods for determining missing data are now explained in section B.7.3.				
Documentation provided by project participant				
<i>Revised PDD</i>				

DOE assessment			Date: 20/11/2020
The validation team has reviewed the final PDD ^{/3/} and accepted. Refer Appendix 8 of this report for closure.			
CAR ID	12	Section no.	D.3
Description of CAR			
Pls mention lifetime certificate and evidence in the PDD (Refer p23 of PDD)			
Project participant response			Date: 25/03/2020
<i>Lifetime evidence can be seen in the PPA^{/11/}</i>			
Documentation provided by project participant			
PPA			
DOE assessment			Date: 20/11/2020
The validation team has reviewed the final PDD ^{/3/} and accepted. Refer Appendix 5 of this report for closure.			

CAR ID	13	Section no.	D.7
Description of CAR			
Pls provide LSC report (Refer p27 of PDD)			
Project participant response			Date: 25/03/2020
<i>LSC report provided</i>			
Documentation provided by project participant			
<i>LSC Report</i>			
DOE assessment			Date: 20/11/2020
The validation team has reviewed the final PDD ^{/3/} and accepted. Refer Appendix 5 of this report for closure.			

CAR ID	14	Section no.	D.4.6
Description of CAR			
Please demonstrate with support document that local commercial lending rate (11.64%) is post tax.			
Project participant response			Date: 25/09/2020
<i>As the Central Bank of Indonesia does not explicitly state that their investment lending rate is post-tax in our supporting evidence, we have instead provided a WACC calculation and applied this as the appropriate post-tax project IRR benchmark. This is in line with paragraph 15 of Tool 27 v10 that states 'Local commercial lending rates or WACC are appropriate benchmarks for a project IRR'.</i>			
Documentation provided by project participant			
<i>Revised PDD (20-10-07 Hasang PDD New EF)</i>			
<i>WACC Calculation in CER / FM Sheet (201007 Hasang CERs_WACC_FM New EF)^{/3/}</i>			
DOE assessment			Date: 20/11/2020
The validation team has reviewed the final PDD ^{/3/} , additionality sheet and accepted. Refer Appendix 11 of this report for closure.			

Table 3. FARs from this validation

FAR ID	-	Section no.	-
Description of FAR			
No FAR is raised.			
Project participant response			Date: 25/03/2020
-			
Documentation provided by project participant			
-			
DOE assessment			Date: 20/11/2020
Not applicable			

Appendix 5: Project Standard for Project Activity v2.0 requirements

Project Standard v2.0 requirements	Validation opinion
<p>1. Introduction</p> <p>1.1. Background</p> <p>1. The Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP) established the basis of the regulatory framework for the clean development mechanism (CDM) to implement Article 12 of the Kyoto Protocol through the following:</p> <p>(a) Annex to decision 3/CMP.1: Modalities and procedures for a clean development mechanism (hereinafter referred to as the CDM M&Ps);</p> <p>(b) Annexes to decision 4/CMP.1, including annex II: Simplified modalities and procedures for small-scale clean development mechanism project activities (hereinafter referred to as the CDM SSC M&Ps);</p> <p>(c) Annex to decision 5/CMP.1: Modalities and procedures for afforestation and reforestation project activities under the clean development mechanism (hereinafter referred to as the CDM A/R M&Ps);</p> <p>(d) Annex to decision 6/CMP.1: Simplified modalities and procedures for small-scale afforestation and reforestation project activities under the clean development mechanism (hereinafter referred to as the CDM SSC A/R M&Ps);</p> <p>(e) Decision 7/CMP.1: Further guidance relating to the clean development mechanism;</p> <p>(f) Annex to decision 10/CMP.7: Modalities and procedures for carbon dioxide capture and storage in geological formations under the clean development mechanism (hereinafter referred to as the CDM CCS M&Ps).</p>	<p>The validation team has understood the requirements of decision made during CMP meetings.</p>
<p>2. The CMP revised some of the provisions in these decisions through new decisions in subsequent sessions.</p> <p>3. Pursuant to its mandate from the CMP to operationalize the CDM, the Executive Board of the CDM (hereinafter referred to as the Board) has adopted various standards (including baseline and monitoring methodologies (hereinafter referred to as methodologies) and standardized baselines), methodological tools, guidelines, procedures, clarifications and forms, and revised them, as appropriate, with a view to improving the CDM process.</p>	<p>The validation team has referred the latest standards, tools, guidelines, procedures, clarifications, forms in validating the project.</p>
<p>1.2. Objectives</p> <p>4. The objectives of the “CDM project standard for project activities” (hereinafter referred to as this standard) are to:</p> <p>(a) Provide for requirements applicable to all types of CDM project activities, and facilitate and promote a clear and common understanding by all parties involved in the CDM;</p>	<p>The validation team has also followed the objectives of the standard in validating the project ensuring quality of the final PDD^{/3/} and overall efficiency and integrity of the CDM.</p>

<p>(b) Ensure the quality of project design documents (PDDs) and monitoring reports prepared by project participants and submitted in the CDM project cycle;</p> <p>(c) Ensure the overall efficiency and integrity of the CDM.</p>	
<p>2. Scope, applicability and entry into force</p> <p>2.1. Scope</p> <p>5. This standard provides project participants with minimum requirements for designing and implementing a CDM project activity and seeking issuance of certified emission reductions (CERs).</p> <p>2.2. Application</p> <p>6. Sections 5 and 6 set out principles and general requirements for designing, implementing and reporting on a CDM project activity.</p> <p>7. Section 7 contains requirements for designing a project activity for registration under the CDM. Compliance with these requirements needs to be demonstrated by providing the relevant information in the PDD and other documents specified in this section.</p> <p>The requirements in sections 7.1–7.11 and 7.16 below apply to any type of project activities, while the requirements in sections 7.12, 7.13, 7.14 and 7.15 apply specifically to small-scale project activities, large-scale afforestation and reforestation (A/R) project activities, small-scale A/R project activities, and carbon dioxide capture and storage (CCS) project activities, respectively.</p> <p>8. Sections 8 and 10 provide for requirements for post-registration changes and renewal of crediting period of a registered CDM project activity, respectively.</p> <p>Compliance with these requirements needs to be demonstrated by providing the relevant information in the revised PDD and other documents specified in these sections.</p> <p>9. Section 9 contains requirements for implementation of a registered CDM project activity and monitoring and reporting of achieved greenhouse gas (GHG) emission reductions or net anthropogenic GHG removals for obtaining CERs.</p> <p>Compliance with these requirements needs to be demonstrated by providing the relevant information in the monitoring report and other documents specified in these sections.</p> <p>10. Section 11 contains requirements for voluntary deregistration of a registered CDM project activity.</p>	<p>Since this is validation project, sections 5, 6, 7 and 9 are used by the validation team.</p>

<p>2.3. Entry into force 11. Version 02.0 of this standard enters into force on 1 January 2019.</p> <p>3. Normative references 12. The following referenced documents are indispensable for the application of this standard: (a) "Procedure: CDM project cycle procedure for project activities"; (b) "Glossary: CDM terms".</p> <p>4. Terms and definitions 13. In addition to the definitions contained in the "Glossary: CDM terms", the following terms apply in this standard: (a) "Shall" is used to indicate requirements to be followed; (b) "Should" is used to indicate that among several possibilities, one course of action is recommended as particularly suitable; (c) "May" is used to indicate what is permitted.</p>	<p>The validation team has used latest version (v2.0) of the Project Standard^{1/}.</p>
<p>5. Principles 5.1. General 14. The following principles guide the design and implementation of a CDM project activity and the monitoring of GHG emission reductions or net anthropogenic GHG removals, and contribute to enhancing the environmental integrity of CDM project activities.</p> <p>Note: This text is adapted to the CDM and is taken from ISO 14064-2:2006 – Greenhouse gases – Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements; it is reproduced with the permission of the International Organization for Standardization (ISO). This standard can be obtained from any ISO member and from the website of the ISO Central Secretariat at the following address: <http://www.iso.org>. Copyright remains with ISO.</p> <p>5.2. Relevance 15. Select the GHG sources, GHG sinks, GHG reservoirs, data, methodologies and all other information that is appropriate to the needs of the intended user.</p> <p>Note: "Intended users" include project participants, designated operational entities (DOEs), the Board, the UNFCCC secretariat, designated national authorities (DNAs) and local and other stakeholders</p> <p>5.3. Completeness 16. Include all relevant GHG sources and sinks, and information to support compliance with all requirements.</p> <p>5.4. Consistency</p>	<p>The validation team has also followed the principles such as relevance, completeness, consistency, accuracy & conservativeness and transparency.</p>

<p>17. Enable meaningful comparisons in project activity-related information.</p> <p>5.5. Accuracy and conservativeness</p> <p>18. Reduce bias and uncertainties as far as it is practical/cost-effective, or otherwise use conservative assumptions, values and procedures to ensure that GHG emission reductions or net anthropogenic GHG removals are not overestimated.</p> <p>5.6. Transparency</p> <p>19. Disclose sufficient and appropriate project activity-related information in a truthful manner to allow intended users to make decisions with reasonable confidence.</p> <p>Do not disclose proprietary or confidential information marked as such by project participants without the written consent of the provider of the information, except as required by national law.</p> <p>In this context, information used to determine additionality, to describe the baseline methodology and its application, and to support an environmental impact assessment shall not be considered as proprietary or confidential.</p>	
<p>6. General requirements</p> <p>6.1. Use of and compliance with applicable standards</p> <p>20. While designing as well as implementing and monitoring a CDM project activity, the project participants shall consider and use any applicable standards, methodologies, standardized baselines, methodological tools, guidelines and other regulatory documents adopted by the CMP or the Board in accordance with this standard.</p> <p>Note: These documents are available on the UNFCCC CDM website</p> <p>21. The project participants shall ensure that the proposed CDM project activity complies with all requirements in the CDM M&Ps applicable to the project activity, as referred to in paragraph 1 above, all applicable requirements in this standard and all other applicable CDM rules and requirements adopted by the CMP or the Board.</p>	<p>PP used methodologies ACM002 - ACM0002- Grid-connected electricity generation from renewable sources - -- v20.0 adopted at EB105 (hereinafter referred to as applied methodology^{/2/}). Its associate guidelines/tools such as</p> <p>(a) "TOOL01: Tool for the demonstration and assessment of additionality"^{/2/} v7.0; (adopted at EB70) (hereinafter referred to as additionality tool)</p> <p>(b) "TOOL02: Combined tool to identify the baseline scenario and demonstrate additionality"^{/2/} v7.0 (EB96); (hereinafter referred to as combined baseline and additionality tool)</p> <p>(c) "TOOL03: Tool to calculate project or leakage CO2 emissions from fossil fuel combustion"^{/2/} v3.0 (EB96); (hereinafter referred to as emission due to fossil fuel tool)</p> <p>(d) "TOOL05: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation"^{/2/} v3.0 (EB96); hereinafter referred to as emission due to electricity tool)</p> <p>(e) "TOOL07: Tool to calculate the emission factor for an electricity system"^{/2/} v7.0 (EB100); (hereinafter referred to as emission factor tool)</p> <p>(f) "TOOL10: Tool to determine the remaining lifetime of equipment"^{/2/} v1.0 (EB50); (hereinafter referred to as lifetime tool)</p> <p>(g) "TOOL11: Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period"^{/2/} v3.0.1 (EB66);</p> <p>(h) "TOOL32: Positive lists of technologies"^{/2/} v2.0 (EB105).</p>
<p>6.2. Use of applicable forms</p> <p>22. The project participants wishing to have a proposed CDM project activity validated by a designated operational entity (DOE) shall prepare a PDD, using the valid version of the applicable PDD</p>	<p>PP has used latest version of PDD template^{/12/} v11.0.</p> <p>https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20190531085424591/PDD_form05v11.doc</p>

form. Note: All types of PDD forms are available on the UNFCCC CDM website	
23. When completing the PDD form, the project participants shall provide all necessary information and documentation to demonstrate compliance of the proposed CDM project activity with all applicable requirements in this standard and other CDM rules and requirements.	The validation team checked the final PDD ^{/3/} and found PP provided all the necessary information to demonstrate compliance with the applicable requirements.
24. The project participants wishing to have the GHG emission reductions or net anthropogenic GHG removals achieved by the implemented registered CDM project activity verified by a DOE shall prepare, for each monitoring period, a monitoring report using the valid version of the monitoring report form.	The scope of the DOE here involves validation of project. Hence this is not required.
25. When completing a monitoring report form, the project participants shall provide all necessary information and documentation to demonstrate compliance of the implemented registered CDM project activity and monitored GHG emission reductions or net anthropogenic GHG removals with all applicable requirements in this standard and other applicable CDM rules and requirements.	The scope of the DOE here involves validation of project. Hence this is not required.
26. When completing the PDD or monitoring report form, the project participants shall follow the instructions therein.	PP has followed the instructions therein in the PDD template ^{/12/} v11.0. Hence accepted by the validation team.
6.3. Use of applicable global warming potentials 27. The project participants shall use the global warming potentials (GWPs) adopted by the CMP at its seventh session, in accordance with decision 4/CMP.7, to calculate the GHG emission reductions or net anthropogenic GHG removals achieved by the CDM project activity in the second commitment period of the Kyoto Protocol. This requirement shall apply from 1 January 2013, notwithstanding any GWPs stated to be applicable in the relevant standards, methodologies, standardized baselines, methodological tools, guidelines, procedures and other rules being used in relation to that project activity.	CME used only CO ₂ , CH ₄ whose GWP is 1 and 25 respectively. This is true as per decision 4/CMP.7.
28. The project participants shall apply the GWPs valid for the second commitment period for the purposes of demonstrating additionality and the ex-ante calculation of GHG emission reductions or net anthropogenic GHG removals, if the PDD to be published for global stakeholder consultation or the request for registration of the proposed CDM project activity is submitted on or after 1 January 2013. A request for registration submitted before 1 January 2013 that has applied the GWPs valid for the first commitment period in relation to additionality demonstration is not required to re-assess additionality or redo the ex ante calculation of GHG emission reductions or net anthropogenic GHG removals applying the GWPs valid for the second commitment period.	CME used only CO ₂ , CH ₄ whose GWP is 1 and 25 respectively. This is true as per decision 4/CMP.7. The validation report is prepared during the second commitment period after 1 st January 2013
29. The PDDs for CDM project activities registered before 1 January 2013 are not required to be amended, republished for global stakeholder consultation, or revalidated using the GWPs as applied by decision 4/CMP.7.	This is not applicable.

<p>30. All references in standards, methodologies, standardized baselines, methodological tools, guidelines and procedures to one or more GWPs, including specific references to GWPs valid for the first commitment period, from 1 January 2013, shall be read as references to the relevant GWPs valid for the second commitment period.</p>	<p>CME used only CO₂, CH₄ whose GWP is 1 and 25 respectively. This is true as per decision 4/CMP.7.</p>														
<p>7. Design of project activity 7.1. Demonstration of prior consideration of the clean development mechanism 31. If the start date of a proposed CDM project activity, as determined in accordance with paragraph 85 below, is prior to the date of publication of the PDD for global stakeholder consultation, the project participants shall demonstrate that the CDM benefits were considered necessary in the decision to undertake the project as a CDM project activity in accordance with paragraphs 32 or 33 below.</p> <p>If the start date of the project activity is on or after the date of publication of the PDD for global stakeholder consultation, such demonstration is not necessary.</p>	<p>The validation of following CDM events is detailed below.</p> <table border="1"> <thead> <tr> <th>Date of CDM events</th><th>Validation opinion</th></tr> </thead> <tbody> <tr> <td>Date of prior consideration letter to UNFCCC =15th August 2011</td><td>The validation team has reviewed the CDM website^{/13/} and confirmed the same. Prior consideration form^{/13/} also checked by the validation team and found to be acceptable https://cdm.unfccc.int/Projects/PriorCDM/notifications/index.html?s=80</td></tr> <tr> <td>Date of validation contract signed between outgoing DOE and outgoing PP =10th November 2011</td><td>The validation contract^{/5/} was first signed between E.ON Carbon Sourcing GmbH and Bureau Veritas.</td></tr> <tr> <td>Date of LSC=17th November 2011</td><td>The validation team has reviewed the LSC report^{/19/} and accepted.</td></tr> <tr> <td>Date of GSCP = 31st January 2012 to 29th February 2012</td><td>The project was first uploaded for GSCP from 31st January 2012 to 29th February 2012 by Bureau Veritas. https://cdm.unfccc.int/Projects/Validation/DB/RQK0IAJ71O9YLM72WQC0W5R931A6D0/view.html PP at that time was E.ON Carbon Sourcing GmbH</td></tr> <tr> <td>Date of current PP taking over the project from the outgoing PP=30th September 2012</td><td>E.ON Carbon Sourcing withdrew from the project and the current PP took over. The validation team has reviewed the deed of termination^{/5/} between the outgoing PP and the current PP.</td></tr> <tr> <td>Date of prior consideration letter to UNFCCC by LGI (LGI being shareholder) =17th June 2016</td><td>The validation team has reviewed the CDM website^{/13/} and confirmed the date of receipt of prior consideration form^{/13/}. https://cdm.unfccc.int/Projects/PriorCDM/notifications/index.html?s=0</td></tr> </tbody> </table>	Date of CDM events	Validation opinion	Date of prior consideration letter to UNFCCC =15 th August 2011	The validation team has reviewed the CDM website ^{/13/} and confirmed the same. Prior consideration form ^{/13/} also checked by the validation team and found to be acceptable https://cdm.unfccc.int/Projects/PriorCDM/notifications/index.html?s=80	Date of validation contract signed between outgoing DOE and outgoing PP =10 th November 2011	The validation contract ^{/5/} was first signed between E.ON Carbon Sourcing GmbH and Bureau Veritas.	Date of LSC=17 th November 2011	The validation team has reviewed the LSC report ^{/19/} and accepted.	Date of GSCP = 31 st January 2012 to 29 th February 2012	The project was first uploaded for GSCP from 31 st January 2012 to 29 th February 2012 by Bureau Veritas. https://cdm.unfccc.int/Projects/Validation/DB/RQK0IAJ71O9YLM72WQC0W5R931A6D0/view.html PP at that time was E.ON Carbon Sourcing GmbH	Date of current PP taking over the project from the outgoing PP=30 th September 2012	E.ON Carbon Sourcing withdrew from the project and the current PP took over. The validation team has reviewed the deed of termination ^{/5/} between the outgoing PP and the current PP.	Date of prior consideration letter to UNFCCC by LGI (LGI being shareholder) =17 th June 2016	The validation team has reviewed the CDM website ^{/13/} and confirmed the date of receipt of prior consideration form ^{/13/} . https://cdm.unfccc.int/Projects/PriorCDM/notifications/index.html?s=0
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	Date of investment decision =18 th October 2016	The validation team has reviewed the draft equity support agreement ^{/23/} and accepted the same. In the said agreement, investment decision was taken to make expenditure (with LGI as shareholder). The validation team has also reviewed the final equity support agreement ^{/23/} as well.
	Start date of the project= 24 th October 2016	As per glossary of CDM terms v10.0, for a CDM project activity, the date on which the PP commit to making expenditures for the construction of the main equipment or facility. The validation team has reviewed the offshore equipment supply contract ^{/7/} signed between the current PP and POSCO Engineering Co Ltd. Since signing of supply contract indicates the commitment to making expenditure, the validation team has accepted this date as start date of the project. As per the final PDD ^{/3/} , start date of the project is 24 th October 2016. Since the start date of the project is after date of publication of the PDD for GSCP, prior consideration is not required. As per the PDD uploaded for GSCP in 2012, start date was on based initial PPA version. However, in the final PDD, start date was based on offshore equipment supply contract ^{/7/} which is accepted by the validation team.
	Date of contract termination from outgoing DOE =15 th January 2017	The contract with the Bureau Veritas was terminated on 15 January 2017. The validation team has reviewed the letter of termination ^{/5/} from Bureau Veritas addressed to the current

	<div> <div>PP.</div> <div> Date of prior consideration letter to UNFCCC by PP =14th May 2018 </div> </div> <div> <div>The validation team has reviewed the CDM website^{/13/} and confirmed the date of receipt of progress prior consideration form^{/13/}. https://cdm.unfccc.int/Projects/PriorCDM/notifications/index_html?s=0 </div> </div>	
	<div> <div>PP and EPIC signed validation agreement dated December 2019.</div> </div>	
	<div> <div>The validation team has reviewed the CDM website^{/3/} and confirmed.</div> </div>	
	<div> <div>The validation team has reviewed the CDM website^{/3/} and confirmed.</div> </div>	
	<div> <div>The validation team has reviewed the LoA letter^{/4/} and confirmed the same.</div> </div>	
	<p>In view of the above CDM events, the validation team has accepted that sufficient steps were taken by the PP in receiving the CDM benefits.</p>	
<p>32. For a proposed CDM project activity with a start date on or after 2 August 2008, the project participants shall notify the designated national authority (DNA) of the host Party of the project activity, if such DNA exists, and the UNFCCC secretariat (hereinafter referred to as the secretariat), in writing of the commencement of the project activity and their intention to seek the CDM status for the project activity, or, through a DOE, publish the PDD for global stakeholder consultation, within 180 days of the start date in accordance with the “CDM project cycle procedure for project activities”.</p>	<p>Since the PDD uploaded for GSCP (Date of GSCP = 31st January 2012 to 29th February 2012) was well before the start date (24th October 2016), prior consideration demonstration is not required. However, PP had sent prior consideration forms^{/13/} to UNFCCC as validated above.</p>	
<p>33. For a proposed CDM project activity with a start date before 2 August 2008 and prior to the date of publication of the PDD for global stakeholder consultation, the project participants shall demonstrate that the CDM was seriously considered in the decision to implement the project activity. Such demonstration requires the following elements to be satisfied:</p> <p>(a) The project participants shall provide evidence of their awareness of the CDM prior to the start date of the project activity, and that the benefits of the CDM were a decisive factor in the decision to proceed with the project activity;</p> <p>Note: Evidence to support this could include minutes and/or notes related to the consideration of the decision by the board of directors, or equivalent, of the project participants to undertake the project as a CDM project activity</p>	<p>Since the start date of the project is after date of publication of the PDD for GSCP, prior consideration is not required.</p>	

<p>(b) The project participants shall provide evidence that continuing and real actions were taken to secure the CDM status for the project activity in parallel with its implementation;</p> <p>Note: Evidence to support this should include one or more of the following: Contracts with consultants for CDM/ PDD/ methodology/ standardized baseline services; draft versions of PDDs and underlying documents such as letters of authorization, and, if available, letters of intent; Emission reduction purchase agreement (ERPA) term sheets, ERPAs, or other documentation related to the sale of the potential CERs (including correspondence with multilateral financial institutions or carbon funds); Evidence of agreements or negotiations with a DOE for validation services; Submission of a new methodology or standardized baseline, or requests to the Board for clarification or revision of an existing methodology, methodological tool or standardized baseline; Publication in a newspaper; interviews with the DNA; and earlier correspondence on the project activity with the DNA or the secretariat. Letters, e-mail exchanges and other documented communications may help to substantiate the evidence.</p>	<p>This is already validated as above.</p>
<p>(c) The project participants shall provide an implementation timeline of the project activity. The timeline should include, where applicable, the date when the investment decision was made, the date when the construction work started, the date when commissioning started, and the date of start-up (e.g. the date when commercial production started). The project participants shall provide a timeline of events that have occurred and actions that have been taken to achieve CDM registration, with a description of the evidence used to support these actions</p>	<p>PP has mentioned the implementation timelines of the project activity in the final PDD^{3/} and is accepted by validation team.</p>
<p>7.2. Identification of project type 34. The project participants shall determine the type of the CDM project activity they intend to design and implement from the following: (a) Large-scale project activity; (b) Small-scale project activity; (c) Large-scale A/R project activity; (d) Small-scale A/R project activity; (e) CCS project activity.</p>	<p>PP is installing 39 MW large scale Hydro power plant.</p>
<p>7.3. Description of project activity 35. The project participants shall describe the proposed CDM project activity in the PDD to provide an understanding of the nature and the implementation of the project activity.</p>	<p>The project activity involved the construction and operation of 39 MW (13 MW x 3 units) large-scale run-of-river hydropower plant on the Aek Kualu River, in the Toba Samosir Regency, North Sumatera Province, Republic of Indonesia developed by the PP. The validation team has reviewed the EPC contract^{7/} the capacity. The guaranteed rated capacity of 16.15 MVA per unit as per the EPC contract^{7/}. The electricity thus generated will be sold to PT PLN (Indonesian State Owned Electricity Company) through regional electricity grid in Sumatera. The first two units are commissioned in 31st December 2019 and the third one is commissioned in 10th January 2020. PLN declared the commercial operation date as</p>

	January 14 th 2020.
36. When describing the proposed CDM project activity, the project participants shall provide, inter alia, the following information:	PP has mentioned the unique title for the project activity in the final PDD ^{/3/} .
(a) The title for the project activity;	
(b) The sectoral scopes linked to the methodologies applied and relevant to the project activity;	PP has applied ACM0002 v20.0. As per "Applicability of sectoral scope" ^{/14/} v1.0, for ACM2, sector 1 applies.
(c) The purpose and a general description of the project activity, including how it contributes to the sustainable development of the host Party;	The project activity involved the construction and operation of 39 MW (13 MW x 3 units) large-scale run-of-river hydropower plant on the Aek Kualu River, in the Toba Samosir Regency, North Sumatera Province, Republic of Indonesia developed by the PP. The electricity thus generated will be sold to PT PLN (Indonesian State Owned Electricity Company) through regional electricity grid in Sumatera. The equivalent amount of electricity would be saved in the grid leading to sustainable development of Indonesia.
(d) The physical/geographical location of the project activity;	The project is located in Lumban Rau Utara village, Lumban Rau Tenggara village and Siantarasa village, Nassau District, Toba Samosir Regency, North Sumatera Province, Indonesia.
(e) The technologies/measures to be employed and/or implemented by the project activity, including: (i) A list of the facilities, systems and equipment that will be installed and/or modified by the project activity; (ii) The types and levels of services (such as the amount of a certain type of cement produced or the amount of electricity fed into the electricity grid) provided by the facilities, systems and equipment and their relation, if any, to other facilities, systems and equipment outside the project boundary; (iii) The arrangement of the facilities, systems and equipment;	The validation team has reviewed the manufacturer specification ^{/7/} and name plate details of the water turbines, generators, transformers and substation etc.
(iv) The age and average lifetime of the equipment based on the manufacturer's specifications and industry standards;	As per the power purchase agreement (PPA) ^{/11/} , the lifetime of the project is 30 years. As per the agreement, PP is obliged to deliver electricity for the lifetime of 30 years. The equipment manufacturer also confirms the same.
(v) The installed capacities, load factors and efficiencies;	The validation team has reviewed the PPA ^{/11/} , offshore equipment supply contract ^{/7/} and confirmed the installed capacity, loading factor and efficiency, energy and mass balances.
(vi) The energy and mass flows and balances of the facilities, systems and equipment, if necessary;	The validation team has reviewed the PPA ^{/11/} , offshore equipment supply contract ^{/7/} and confirmed the installed capacity, loading factor and efficiency, energy and mass balances.
(vii) The monitoring equipment and their location in the systems;	The validation team has reviewed the single line diagram ^{/9/} and confirmed the monitoring equipment and their location.
(f) The technologies/measures existing prior to the implementation of the project activity at the same site, as applicable, including the equivalent information listed in subparagraph (e) above on the facilities, systems and equipment;	The project is installed in the greenfield facility. Since there is no pre project activity.
(g) A short summary of the baseline scenario as established in accordance with section 7.5.3 below, including the equivalent information listed in subparagraph (e) above;	As per para 22 of the applied methodology ^{/2/} ACM002 v20.0, the baseline for the Greenfield power plant is electricity delivered to the grid by the project activity that would have otherwise been generated by the operation of grid-connected power plants and by the addition of new

	generation sources.
(h) A description of how the technologies/measures and know-how for their use are transferred to the host Party, where applicable	The project involved installation of turbines, generators (make: Andritz Hydro), transformers, substation in addition to other balance of units. The technical knowledge would be transferred to the host country, Indonesia.
37. The project participants shall identify: (a) The Parties involved in the proposed CDM project activity, including the host Party; (b) The project participants of the proposed CDM project activity	Indonesia is the party involved in this project as host party. PT Binsar Natorang Energi is the only PP involved in this project.
38. The project participants shall provide information on sources of public funding for the proposed CDM project activity. If public funding from Parties included in Annex I to the United Nations Framework Convention on Climate Change (hereinafter referred to as the Convention) is involved, the project participants shall provide an affirmation obtained from the Annex I Parties that such funding does not result in a diversion of official development assistance, and is separate from and not counted towards the financial obligations of those Parties.	PP has declared through a letter ^{/B/} dated 5 th August 2019 that there is no public funding. The validation team has reviewed the investment model and convinced that there cannot be any public funding.
39. The project participants shall confirm that the proposed CDM project activity is neither registered as a CDM project activity nor included as a component project activity (CPA) in a registered CDM PoA.	PP has declared through a letter ^{/B/} dated 5 th August 2019 that proposed CDM project activity is neither registered as a CDM project activity nor included as a CPA in a registered CDM PoA. The validation team has checked with CDM website ^{/B/} and confirmed the same.
40. The project participants shall confirm that the proposed CDM project activity is not a project activity that has been deregistered.	PP has declared through a letter ^{/B/} dated 5 th August 2019 that proposed CDM project activity is not deregistered. The validation team has checked with CDM website ^{/B/} and confirmed the same.
41. If the proposed CDM project activity was a CPA that has been excluded from a registered CDM programme of activities (PoA), the project participants shall ensure that: (a) The PDD transparently declares that the project activity was a CPA that has been previously excluded from a registered CDM PoA, either voluntarily or due to erroneous inclusion; (b) The crediting period type (renewable or fixed) and duration and its end-date are the same as before the exclusion; (c) The project activity meets all relevant requirements for registration of project activities valid at the time of submission of the request for registration as a CDM project activity; (d) If the project activity applies a methodology that potentially accrues negative GHG emission reductions, GHG emission reductions have been continuously monitored in accordance with the monitoring plan as described in the CPA-DD and verified by a DOE since the end of the monitoring period in the last published monitoring report for the CPA, including the exclusion period. For such project activity, if there were net negative GHG emission reductions during the period before the registration	This is not applicable as the project activity was not part of any PoA nor developed as CPA in a registered PoA.

<p>as a CDM project activity, the amount shall be deducted from the first requests for issuance of CERs after the registration;</p> <p>(e) If the CPA has been excluded as a result of erroneous inclusion and if CERs have been issued for the CPA, an equivalent amount of Kyoto credits has been compensated by the DOE that included the CPA, or that validated the CPA at its first verification if it was included by the coordinating/managing entity, to the CDM registry in accordance with the "CDM project cycle procedure for programmes of activities".</p>	
<p>42. The project participants shall declare, if applicable, the existence of a registered CDM project activity or a CPA under a registered CDM PoA whose crediting period has or has not expired (hereinafter referred to as former project) in the same geographical location as that of the proposed CDM project activity.</p> <p>Note: The geographical location includes the project boundary excluding the location of non-project-specific equipment such as electricity grid and district heating.</p> <p>It does not apply to distributed unit projects in which the project boundary consists of a region.</p>	<p>Since this is the first project being developed by the PP. PP has declared through a letter^{/8/} dated 5th August 2019 that there exists no registered CDM project activity or a CPA under a registered CDM PoA whose crediting period has or has not expired (hereinafter referred to as former project) in the same geographical location as that of the proposed CDM project activity.</p>
<p>43. If the project participants identify that the proposed CDM project activity is in the same geographical location as that of a former project, they shall declare that the proposed CDM project activity will not lead to the discontinuation or modification of the former project and does not decrease the GHG emission reductions or net anthropogenic GHG removals by the former project, and that the proposed CDM project activity complies with the following conditions:</p> <p>(a) It utilizes both a different measure and a different technology from those of the former project;</p> <p>(b) It does not share or utilize any of the assets of the former project;</p> <p>(c) It utilizes a different resource type compared to the former project</p>	<p>This is not applicable.</p>

<p>44. The following definitions shall apply for paragraph 43 above:</p> <p>(a) Measure: fuel/feedstock switch, technology switch, methane destruction and methane avoidance;</p> <p>Note: Guidelines for determining baselines for measure(s)”</p> <p>(b) Technology: equipment or conversion process used for the production of goods or provision of services.</p> <p>Two different project activities/CPAs are considered to be using the same technology(ies) if they:</p> <p>(i) Provide the same kind of output and use the same kind of equipment and conversion process; or</p> <p>(ii) Undertake the same course of action that results in the same kind of effect (e.g. two projects using the same management practice such as fuel switching);</p> <p>(c) Assets: resources with economic value that an individual, corporation or country owns or controls with the expectation that it will provide future benefit; the assets could be physical such as project equipment, or non-corporeal such as permits and exclusive position in legislation. The definition of assets in this context excludes land;</p> <p>(d) Output: amount of goods or services produced by a technology;</p> <p>(e) Resource: a source of supply or support needed for the production of an output. It may include categories of goods, energy and energy carriers that are supplied into the project location and are required for the implementation of the project activity/CPA, such as fossil fuel, by-product of a process, biomass, solar, wind, geothermal heat.</p>	<p>For the PP, this project activity is the first project. So this is not applicable.</p>
<p>45. If the proposed CDM project activity involves the implementation of distributed units in households and the conditions in paragraph 43(a)–(c) above are not met, the project participants shall request a DOE to validate and confirm by other means that the project activity will not lead to the discontinuation or modification of the former project, and does not decrease the GHG emission reductions or net anthropogenic GHG removals by the former project, in accordance with the “CDM validation and verification standard for project activities”.</p>	<p>This is not applicable.</p>
<p>46. In all other cases, the project participants may submit a communication to the Board to request clarification in accordance with the “Procedure: Direct communication with stakeholders”, prior to the submission of a request for registration</p>	<p>This is not applicable.</p>
<p>7.4. Selection of methodologies and standardized baselines</p> <p>47. The project participants shall select methodologies that have been approved by the Board and that are valid and applicable to the proposed CDM project activity.</p> <p>Note: The valid version of a methodology is its latest version, or a previous version if the submission of</p>	<p>PP used methodologies ACM0002- Grid-connected electricity generation from renewable sources --- v20.0 adopted at EB105. Its associate guidelines/tools such as</p> <p>(a) “TOOL01: Tool for the demonstration and assessment of additionality” v7.0; (adopted at EB70)</p> <p>(b) “TOOL02: Combined tool to identify the baseline scenario and demonstrate additionality” v7.0 (EB96);</p>

<p>the request for registration of the proposed CDM project activity to the secretariat in accordance with the "CDM project cycle procedure for project activities" is still within the grace period of the previous version(s) for use in accordance with the "Procedure: Development, revision and clarification of methodologies and methodological tools.</p>	<p>(c) "TOOL03: Tool to calculate project or leakage CO2 emissions from fossil fuel combustion" v3.0 (EB96);</p> <p>(d) "TOOL05: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" v3.0 (EB96);</p> <p>(e) "TOOL07: Tool to calculate the emission factor for an electricity system" v7.0 (EB100);</p> <p>(f) "TOOL10: Tool to determine the remaining lifetime of equipment" v1.0 (EB50);</p> <p>(g) "TOOL11: Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period" v3.0.1 (EB66);</p> <p>(h) "TOOL32: Positive lists of technologies v2.0 (EB105).</p>
<p>48. In selecting a methodology for the proposed CDM project activity, the project participants may:</p> <p>(a) Propose a new methodology in accordance with the "Procedure: Development, revision and clarification of methodologies and methodological tools";</p> <p>(b) Propose a revision to an approved methodology or methodological tool in accordance with the procedure referred to in subparagraph (a) above;</p> <p>(c) Seek clarification of an approved methodology or methodological tool in accordance with the procedure referred to in subparagraph (a) above; or</p> <p>(d) Request approval of deviation from an approved methodology or methodological tool in accordance with the "CDM project cycle procedure for project activities".</p> <p>Note: See the relevant provisions in the "CDM validation and verification standard for project activities" for examples of deviation in project-specific situations</p>	<p>PP did not propose new methodology, revision to the approved methodology, seek clarification or request approval of deviation from the applied methodology.</p>
<p>49. The project participants may select a standardized baseline that has been approved by the Board if it is valid and applicable to the proposed CDM project activity and to the selected methodology in accordance with the applicability section of the standardized baseline (hereinafter referred to as selected standardized baseline).</p> <p>Note: The valid version of a standardized baseline is its latest version, or a previous version if the submission of the request for registration of the proposed CDM project activity to the secretariat in accordance with the "CDM project cycle procedure for project activities" is still within the grace period of the previous version(s) for use in accordance with the "Procedure: Development, revision, clarification and update of standardized baselines".</p> <p>50. Notwithstanding paragraph 49 above, the project participants shall select an approved standardized baseline for the proposed CDM project activity if the standardized baseline is valid, and applicable to the proposed CDM project activity and to the selected methodology, and the selection of the standardized baseline is mandatory in accordance with the applicability section of the standardized baseline.</p>	<p>PP did not select any standardised baseline.</p>

<p>Note: Such standardized baselines may, for example, state in their applicability section that the latest approved and valid values of the standardized baseline are the only values of the carbon dioxide (CO₂) emission factor(s) that shall be applied for the project electricity system</p>	
<p>51. Notwithstanding paragraphs 49 and 50 above, the project participants shall not select an approved standardized baseline that standardizes additionality for the proposed CDM project activity if the start date of the project activity is before the date when the standardized baseline becomes valid.</p> <p>52. If a PDD has been published for global stakeholder consultation when no applicable approved standardized baseline was valid, and if, after the publication of the PDD for global stakeholder consultation but before the submission of a request for registration of the proposed CDM project activity, an applicable approved standardized baseline whose selection is mandatory has become valid, the request for registration may be submitted without selecting the standardized baseline if the submission is made within 240 days after the standardized baseline became valid.</p> <p>53. In selecting a standardized baseline for the proposed CDM project activity, the project participants may, in accordance with the "Procedure: Development, revision, clarification and update of standardized baselines":</p> <p>(a) Propose a new standardized baseline;</p> <p>(b) Propose a revision to an approved standardized baseline;</p> <p>(c) Seek clarification of an approved standardized baseline; or</p> <p>(d) Propose an updated standardized baseline.</p>	<p>PP did not select any standardised baseline.</p>
<p>7.5. Application of methodologies and standardized baselines</p> <p>7.5.1. General requirements</p> <p>54. The project participants shall provide the references (titles, versions and UNFCCC reference numbers) of the selected methodologies and, where applicable, of the selected standardized baselines that are applied to the proposed CDM project activity, including any other methodologies or methodological tools to which the selected methodologies refer.</p> <p>55. The project participants shall demonstrate why the selected methodologies and, where applicable, the selected standardized baselines and any other standards, methodologies, methodological tools and guidelines applied in accordance with the selected methodologies (hereinafter "any other standards, methodologies, methodological tools and guidelines (to be) applied in accordance with the selected(applied) methodologies" are collectively referred to as the other (applied) methodological regulatory documents), are applicable to the proposed CDM project activity by showing that the project activity meets all applicability conditions of these regulatory documents.</p>	<p>PP used methodologies ACM0002- Grid-connected electricity generation from renewable sources --- v20.0 adopted at EB105. Its associate guidelines/tools such as</p> <p>(a) "TOOL01: Tool for the demonstration and assessment of additionality" v7.0; (adopted at EB70)</p> <p>(b) "TOOL02: Combined tool to identify the baseline scenario and demonstrate additionality" v7.0 (EB96);</p> <p>(c) "TOOL03: Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion" v3.0 (EB96);</p> <p>(d) "TOOL05: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" v3.0 (EB96);</p> <p>(e) "TOOL07: Tool to calculate the emission factor for an electricity system" v7.0 (EB100);</p> <p>(f) "TOOL10: Tool to determine the remaining lifetime of equipment" v1.0 (EB50);</p> <p>(g) "TOOL11: Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period" v3.0.1 (EB66);</p> <p>(h) "TOOL32: Positive lists of technologies v2.0 (EB105).</p> <p>The validation opinion of all the applicable conditions of</p>

56. The project participants shall ensure that the proposed CDM project activity complies with all the requirements of the applied methodologies, the applied standardized baselines and the other applied methodological regulatory documents.	applied meth and its relevant tools in the context of the project is detailed in Appendix 8 to Appendix 12 of this report.
7.5.2. Project boundary, sources and greenhouse gases 57. The project participants shall describe the project boundary of the proposed CDM project activity, including the physical delineation of the project activity, and which sources and GHGs are included in the project boundary in accordance with the applied methodologies and the applied standardized baselines.	<p>The project consists of hydro power plant which is physically connected to the Sumatera regional grid. In the baseline, CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity is applicable.</p> <p>In the project boundary, PP has considered emissions of CH₄ from the reservoir and CO₂ emissions from the DG used as a backup generator.</p> <p>However, PP demonstrated that CH₄ emissions from the reservoir and CO₂ emissions from the DG is zero for this project.</p>
58. If the applied methodologies or the applied standardized baselines allow the project participants to choose whether a source or GHG is to be included in the project boundary, the project participants shall explain and justify the choice	PP explained the source of GHG in the baseline and project in the final PDD ^{/3/} with justification.
7.5.3. Baseline scenario 59. The project participants shall establish and describe the baseline scenario for the proposed CDM project activity in accordance with the applied methodologies, the applied standardized baselines and the other applied methodological regulatory documents, and the provisions in paragraphs 60–66 below.	<p>The project activity involved the construction and operation of 39 MW (13 MW x 3 units) large-scale run-of-river hydropower plant on the Aek Kualu River, in the Toba Samosir Regency, North Sumatera Province, Republic of Indonesia developed by the PP. The electricity thus generated will be sold to PT PLN (Indonesian State Owned Electricity Company) through regional electricity grid in Sumatera.</p> <p>Since the project activity is the installation of a grid connected Greenfield hydro power plant, the baseline scenario is electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources. This is inline with the para 22 of the applied methodology. Hence Sumatra regional grid forms the baseline for this project.</p>
60. The project participants shall provide information on the facilities, systems and equipment to be operated under the proposed CDM project activity and in the baseline scenario, and clearly explain how the same types and levels of services provided by the project activity would have been provided in the baseline scenario.	<p>The project activity involved the construction and operation of 39 MW (13 MW x 3 units) large-scale run-of-river hydropower plant on the Aek Kualu River, in the Toba Samosir Regency, North Sumatera Province, Republic of Indonesia developed by the PP. The electricity thus generated will be sold to PT PLN (Indonesian State Owned Electricity Company) through regional electricity grid in Sumatera. As per the final PDD^{/3/}, net electricity generated from the project is 242,240 MWh per year.</p> <p>The validation team has checked the technical specifications^{/7/} of the water turbines, generators, transformers, substation etc. PP has mentioned the specifications of the major equipments in the final PDD^{/3/}. In the absence of the project activity, the same amount of electricity would be generated in the Sumatera regional grid which is more GHG intensive.</p>
61. When establishing the baseline scenario, if the project participants foresee that future anthropogenic emissions by sources are projected to rise above current levels due to the specific circumstances of the host Party, they may follow the "Guidelines on the consideration of suppressed demand in CDM methodologies" to propose a revision to an approved	PP does not foresee that future anthropogenic emissions by sources are projected to rise above current levels due to the specific circumstances of the host country Indonesia.

methodology to cover such scenario if it is not covered in the methodology.	
62. In case of replacement of existing equipment, the project participants shall estimate the point in time when the existing equipment would be replaced in the absence of the proposed CDM project activity in accordance with the "Tool to determine the remaining lifetime of equipment".	Since this is greenfield project, the condition is not applicable.
63. As a general principle, relevant national and/or sectoral policies, regulations and circumstances shall be taken into account in the establishment of the baseline scenario, without creating perverse incentives that may impact host Parties' contributions to the ultimate objective of the Convention.	There is no perverse incentive that is affecting host country Indonesia's contribution to CDM convention while establishing the baseline scenario.
<p>64. When establishing the baseline scenario, the project participants shall take into account the following two types of national and/or sectoral policies or regulations:</p> <p>(a) National and/or sectoral policies or regulations that give comparative advantages to more emissions-intensive technologies or fuels over less emissions-intensive technologies or fuels;</p> <p>Note: Such policies, which increase GHG emissions, are called E+ policies.</p> <p>(b) National and/or sectoral policies or regulations that give comparative advantages to less emissions-intensive technologies over more emissions-intensive technologies (e.g. public subsidies to promote the diffusion of renewable energy or to finance energy efficiency programmes).</p> <p>Note: Such policies, which decrease GHG emissions, are called E- policies</p>	<p>PP is the independent power producer in Indonesia. The validation has checked that there is no current law that mandates an independent power producer (IPP) or any potential power producers to develop hydroelectric power plants in Indonesia; however as per the national policy (Presidential Regulation (2006; Regulation no: 05/2006) Kebijakan Energi Nasional (National Energy Policy^{/15/}) document, the government does aim to increase the usage of both coal fired and renewable energy plants (including Hyo power plants) in national Energy mix. However there are no incentives or special schemes available for setting up of a hydro power plant. The validation team has also reviewed the Indonesia President Decree No. 4/2010^{/15/}, Indonesia President Decree No. 48/2011^{/15/} and Indonesia President Decree No. 194/2014^{/15/} and found that the government has introduced various fast-track programs to accelerate power generation, with the fast track II program having a specific focus on renewable energy. Hence these can be considered as E- policy since these Government programs give comparative advantage to less emission intensive technologies or fuels such as hydro power plants. The impacts of these policies thus excluded in establishing the baseline scenario as they have been implemented since the adoption of the Marrakesh Accords (11/11/2001).</p> <p>However, the fast track program is voluntary and as such, there are no legal or regulatory requirements that prevent the project activity from occurring or mandates switching over from energy intensive power plant to Hydro power plant in Indonesia. The validation team has found that there are no financial incentives such as government subsidy available to hydro power projects in Indonesia. No national or sectoral policies were found relevant to the project activity and hence have not been considered.</p>
<p>65. The project participants shall address the two types of policies or regulations described in paragraph 64 above as follows:</p> <p>(a) Only national and/or sectoral policies or regulations described in 64(a) above that have been implemented before the adoption of the Kyoto Protocol by the Conference of the Parties (hereinafter referred to as the COP) (decision 1/CP.3, 11 December 1997) shall be taken into account when establishing the baseline scenario.</p> <p>If such national and/or sectoral policies or regulations were implemented since the adoption of</p>	It is validated as above.

<p>the Kyoto Protocol, the baseline scenario should refer to a hypothetical situation without the national and/or sectoral policies or regulations being in place;</p> <p>(b) National and/or sectoral policies or regulations described in paragraph 64(b) above that have been implemented since the adoption by the COP of the CDM M&Ps (decision 17/CP.7, 11 November 2001) need not be taken into account in establishing the baseline scenario.</p> <p>If such national and/or sectoral policies or regulations were implemented since the adoption of the CDM M&Ps, the baseline scenario could refer to a hypothetical situation without the national and/or sectoral policies or regulations being in place.</p>	
<p>66. Notwithstanding paragraphs 59–65 above or 149–151 below, if the proposed CDM project activity applies an approved standardized baseline that standardizes baseline scenario, the project participants shall describe the baseline scenario as per the applied standardized baseline.</p>	<p>PP did not use any standardised baseline.</p>
<p>7.5.4. Demonstration of additionality</p> <p>67. The project participants shall demonstrate, in accordance with the applied methodologies, the other applied methodological regulatory documents and the requirements relating to prior consideration of the CDM contained in section 7.1 above, that the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the proposed CDM project activity.</p>	<p>PP has demonstrated that the anthropogenic emissions of GHG by sources (project emissions and leakage emissions) are reduced below those that would have occurred in the absence of the proposed CDM project activity (baseline emissions). The validation opinion of calculation of baseline emissions, project emissions and leakage emissions is detailed in Appendix 8 of this report.</p>
<p>68. For demonstration of additionality of the proposed CDM project activity, and if it is required by the applied methodologies or the other applied methodological regulatory documents, the project participants shall follow:</p> <p>(a) “Methodological tool: Investment analysis”;</p> <p>(b) “Guidelines for objective demonstration and assessment of barriers”.</p>	<p>PP has applied Methodological tool: Investment analysis^{2/} v10.0. The validation of the same is detailed in Appendix 11 of this report.</p>
<p>69. For demonstration of additionality of the proposed CDM project activity, the project participants may also consider following:</p> <p>(a) “Methodological tool: Additionality of first-of-its-kind project activities”;</p> <p>(b) “Methodological tool: Common practice”.</p>	<p>PP has applied Methodological tool: Common practice^{2/} v3.1. The validation of the same is detailed in Appendix 12 of this report.</p>
<p>70. Notwithstanding paragraphs 67–69 above and 134 and 152 below, if the proposed CDM project activity applies an approved standardized baseline that standardizes additionality, the project participants shall demonstrate that the project activity meets the additionality criteria (e.g. positive lists of technologies) identified in the applied standardized baseline as well as the requirements relating to prior consideration of the CDM contained in section 7.1 above.</p>	<p>PP did not use any standardised baseline.</p>
<p>7.5.5. Estimation of emission reductions or net anthropogenic removals</p> <p>71. The project participants shall describe how to undertake the ex post calculation of baseline, project and leakage GHG emissions, as well as GHG</p>	<p>The validation opinion of baseline emissions, project emissions, leakage emissions including ex-post parameters, ex-ante parameters is detailed in Appendix 8 of this report. The project activity contains one component only (renewable energy).</p>

<p>emission reductions, to be achieved by the proposed CDM project activity, and provide the ex-ante calculation of them for each year of the crediting period, in accordance with the applied methodologies and the applied standardized baselines.</p> <p>If the proposed CDM project activity contains more than one component, the project participants shall apply this requirement for each component separately.</p> <p>The project participants shall describe all steps to be undertaken for these calculations and provide all results.</p>	
<p>72. If the applied methodologies, the applied standardized baselines or other applied methodological regulatory documents include different scenarios or cases, or provide different options and/or default values to choose from, the project participants shall justify their choice.</p>	<p>The validation opinion of baseline emissions, project emissions, leakage emissions including ex-post parameters, ex-ante parameters is detailed in Appendix 8 of this report.</p>
<p>73. To determine the performance of the equipment used in the proposed CDM project activity, if required for the calculation of GHG emission reductions, the project participants shall use:</p> <p>(a) The appropriate values, or the values calculated based on the methods, specified in the applied methodologies, the applied standardized baselines and the other applied methodological regulatory documents;</p> <p>(b) The national standard for the performance of the equipment type (the project participants shall identify the standard used) if the value referred to in subparagraph (a) above is not available;</p> <p>(c) An international standard for the performance of the equipment type, such as International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC) standards (the project participants shall identify the standard used) if the values referred to in subparagraphs (a) and (b) above are not available;</p> <p>(d) The manufacturer's specifications, provided that they are tested and certified by national or international certifiers, if the values referred to in subparagraphs (a)–(c) above are not available;</p> <p>(e) Performance data from test results conducted by an independent entity for the equipment to be installed under the project activity, if the values referred to in subparagraphs (a)–(d) above are not available.</p>	<p>The emissions reduction is based on quantity of net electricity fed into the grid and grid emission factor. The calibration of electricity meter is performed as per the requirements of the applied methodology (option a) and power purchase agreement^{11/}.</p> <p>The validation opinion of baseline emissions, project emissions, leakage emissions including calibration details is detailed in Appendix 8 of this report.</p>
<p>74. The project participants shall use the valid version of the norms, specifications, standards and test procedures referred to in the applied methodologies, the applied standardized baselines and the other applied methodological regulatory documents, as available at the time of submission of the PDD to a DOE for validation.</p>	<p>PP has used valid version of the norms, specifications, standards and test procedures referred to in the applied methodology.</p>
<p>75. The project participants shall, in accordance with the applied methodologies, the applied standardized</p>	<p>The validation opinion of baseline emissions, project emissions, leakage emissions including ex-post</p>

<p>baselines and the other applied methodological regulatory documents, provide the data and parameters that will not be monitored but are determined before the registration of the proposed CDM project activity and remain fixed throughout the crediting period.</p> <p>These data and parameters shall be available at the time of the validation of the project activity for registration.</p>	<p>parameters, ex-ante parameters is detailed in Appendix 8 of this report.</p>
<p>76. The project participants shall ensure that the application of default data in the estimation of GHG emission reductions or net anthropogenic GHG removals for the proposed CDM project activity results in conservative estimates.</p>	<p>The validation opinion of baseline emissions, project emissions, leakage emissions including ex-post parameters, ex-ante parameters is detailed in Appendix 8 of this report.</p>
<p>77. The project participants may use sampling for the determination of parameter values for calculating GHG emission reductions if the applied methodologies, the applied standardized baselines or the other applied methodological regulatory documents allow this.</p> <p>In such cases, the project participants shall develop and describe a sampling plan in accordance with the "Standard: Sampling and surveys for CDM project activities and programmes of activities".</p>	<p>The measurement of quantity of net electricity fed into the grid is continuous and recorded monthly. There is no sampling involved for this project.</p>
<p>7.5.6. Monitoring plan</p> <p>78. The project participants shall develop and describe a monitoring plan for the proposed CDM project activity in accordance with the applied methodologies, the applied standardized baselines and the other applied methodological regulatory documents, all other applicable CDM rules and requirements, and the provisions in paragraphs 79–82 below.</p>	<p>The validation opinion of baseline emissions, project emissions, leakage emissions including ex-post parameters, ex-ante parameters is detailed in Appendix 8 of this report.</p>
<p>79. In developing a monitoring plan for the proposed CDM project activity, the project participants shall apply the following unless the applied methodologies, the applied standardized baselines or the other applied methodological regulatory documents state otherwise:</p> <p>(a) Data variables that impact the GHG emission reductions continuously (e.g. quantity of fuel inputs, amount of heat or electricity produced, gas captured) shall be measured continuously and recorded at appropriate intervals;</p> <p>(b) Data variables that are generally constant (e.g. emission factors, calorific value, system efficiencies) shall be measured or calculated at least once a year;</p> <p>(c) Measuring equipment shall be certified to national or IEC standards;</p> <p>(d) The calibration of measuring equipment shall be carried out by an accredited person or institution;</p> <p>(e) Measured data with high levels of uncertainty shall be compared with data from other sources to check the consistency.</p>	<p>The validation opinion of baseline emissions, project emissions, leakage emissions including ex-post parameters, ex-ante parameters is detailed in Appendix 8 of this report.</p>
<p>80. For parameters to be measured in accordance with the applied methodologies, the applied standardized baselines and the other applied methodological regulatory documents, the monitoring</p>	<p>The validation opinion of baseline emissions, project emissions, leakage emissions including ex-post parameters, ex-ante parameters is detailed in Appendix 8 of this report.</p>

<p>plan shall include the following:</p> <p>(a) The measurement methods and procedures, including accepted industry standards or national or international standards that will be applied; the measuring equipment that will be used; how the measurements will be undertaken; the accuracy of the measurement methods; the measurement intervals; and the responsible person/entity who/that will undertake the measurements;</p> <p>(b) The calibration procedures to be applied and the responsible person/entity who/that will perform the calibration.</p>	
<p>81. The monitoring plan shall include all data, parameters and related information required by the applied methodologies, the applied standardized baselines and the other applied methodological regulatory documents, including:</p> <p>(a) Quality assurance and quality control (QA/QC) procedures;</p> <p>(b) Uncertainty levels, methods and the associated accuracy level of measuring instruments to be used for various parameters and variables;</p> <p>(c) Specifications of the calibration frequency for the measuring equipment.</p> <p>If neither the applied methodologies, the applied standardized baselines, the other applied methodological regulatory documents, nor the Board's guidance specify any requirements for calibration frequency for measuring equipment, the project participants shall ensure that the equipment is calibrated either in accordance with the local/national standards or the manufacturer's specifications.</p> <p>If local/national standards or the manufacturer's specifications are not available, international standards may be used.</p>	<p>The validation opinion of baseline emissions, project emissions, leakage emissions including QA/QC is detailed in Appendix 8 of this report.</p>
<p>82. The monitoring plan shall also include the following other elements:</p> <p>(a) The operational and management structure to be put in place to implement the monitoring plan;</p> <p>(b) Provisions to ensure that data monitored and required for verification and issuance are kept and archived for at least two years after the end of the final crediting period or the last issuance of CERs, whichever occurs later;</p> <p>(c) Definition of responsibilities and institutional arrangements for data collection and archiving.</p>	<p>PP has mentioned management system in the operation and measurement of the electricity meters in the final PDD^{/3/}. This is accepted by the validation team.</p>
<p>83. The project participants may choose to make a delayed submission of the monitoring plan, that is, after the registration of the proposed CDM project activity and:</p> <p>(a) At any time prior to the submission of the request for issuance of CERs for the first monitoring period; or</p> <p>(b) Together with the request for issuance of CERs</p>	<p>PP did not delay the submission of the monitoring plan.</p>

for the first monitoring period.	
84. If the project participants choose to make a delayed submission of the monitoring plan in accordance with paragraph 83 above, they shall clearly state that the submission of the monitoring plan is delayed and that the PDD submitted for registration of the proposed CDM project activity does not contain information related to the monitoring plan.	PP did not delay the submission of the monitoring plan.
7.6. Start date, crediting period type and duration 85. The project participants shall determine the start date of the proposed CDM project activity and provide a description of how this start date has been determined in accordance with the definition of start date in the "Glossary: CDM terms".	As per Glossary of CDM terms ^{7/16/} v10.0, for a CDM project activity (non-A/R), start date is the date on which the project participants commit to making expenditures for the construction of the main equipment or facility for the CDM project activity. Where a contract is signed for such expenditures, it is the date on which the contract is signed. The validation team has reviewed the offshore equipment supply contract ^{7/7/} (dated 24 th October 2016) signed between the current PP and POSCO Engineering Co Ltd. It includes supply of hydraulic turbines, generators, transformers etc. Since signing of supply contract indicates the commitment to making expenditure, the validation team has accepted this date as start date of the project.
86. The project participants shall specify the expected operational lifetime of the proposed CDM project activity.	As per the final PDD ^{7/3/} , the lifetime is 30 years. As per the power purchase agreement ^{7/11/} , the lifetime of the project is 30 years. As per the PPA agreement, PP is obliged to deliver electricity for the lifetime of 30 years. The equipment manufacturer also confirms the same.
87. The project participants shall select a type (renewable or fixed) and specify the duration of the crediting period for the proposed CDM project activity, taking into account that: (a) Each renewable crediting period shall be at most seven years and may be renewed at most two times, for a maximum total length of 21 years; (b) A fixed crediting period shall be at most 10 years.	PP has selected fixed crediting period of 10 years.
88. The project participants shall determine the start date of the crediting period of the proposed CDM project activity, which shall be on or after the date of registration of the project activity as a CDM project activity.	The crediting period starts from the date of registration of the project as CDM project.
89. The project participants shall determine only one start date for the crediting period of the proposed CDM project activity, even in cases of phased implementation of the project activity.	The crediting period starts from the date of registration of the project as CDM project.
90. The project participants shall state the start date of the crediting period of the proposed CDM project activity in the format dd/mm/yyyy, and shall not attach any qualifications to the start date, such as "expected". Note: The start date of the crediting period provided in the PDD by the project participants is an indicative date. If it is prior to the date of registration of the project activity, it will be updated by the secretariat as the effective date of registration in accordance with the "CDM project cycle procedure for project activities". This update will not affect the specified length of the crediting period, nor will this affect the rights of the project participants to subsequently request a	The crediting period starts from the date of registration of the project as CDM project.

change of the start date in accordance with the same procedure.							
91. A project activity that has been registered as a CDM project activity may not be re-registered after the expiry of its final crediting period.	After the expiry of crediting period, the project will not be reregistered.						
7.7. Environmental impacts 92. The project participants shall carry out an analysis of the environmental impacts of the proposed CDM project activity, including transboundary impacts, and provide a summary of the analysis and references to all related documentation.	<p>The validation team has confirmed that on February 23, 2012, the Government of Indonesia issued regulation No. 27 of 2012 on Environmental Permits (GR 27/2012). GR 27/2012 is an implementing regulation of the Environmental Law (32/2009) and revokes Government Regulation No. 27 of 1999 (GR 27/1999) which previously regulated the AMDAL process.</p> <table border="1"> <tr> <td>Environmental Permit for Transmission Line</td><td>27 January 2014</td></tr> <tr> <td>Environmental Permit for Power Plant</td><td>20 February 2015</td></tr> <tr> <td>Surface Water Use Permit</td><td>17 March 2013</td></tr> </table> <p>The validation team has reviewed the Environment and social impact assessment report^{18/} prepared by Mott MacDonald dated December 2015. The ESIA has been prepared in accordance with national legislation, the International Finance Corporation's Environmental and Social Performance Standards (IFC PS) 2012 and the World Bank's Environmental, Health and Safety (EHS) Guidelines (2007). These international standards and guidelines place emphasis on meeting good international industry practice with a focus on environmental, social and health impacts, human and labour rights and stakeholder engagement.</p> <p>Under Indonesian legislation the Project is required to undertake an Analisis Mengenai Dampak Lingkungan (AMDAL) to satisfy Indonesian legislative requirements. An AMDAL was completed in November 2014 and approved by the Ministry of Environment in February 2015. Under the IFC PS the Project is classified as Category A (Projects with potential significant adverse social or environmental impacts that are diverse, irreversible or unprecedented). This classification requires the Project to develop a full ESIA and develop environmental & social (E&S) management plans to meet the IFC PS.</p> <p>The validation team has also reviewed the water utilisation permits</p>	Environmental Permit for Transmission Line	27 January 2014	Environmental Permit for Power Plant	20 February 2015	Surface Water Use Permit	17 March 2013
Environmental Permit for Transmission Line	27 January 2014						
Environmental Permit for Power Plant	20 February 2015						
Surface Water Use Permit	17 March 2013						
93. If, as a result of the analysis referred to in paragraph 92 above, the project participants or the host Party consider the environmental impacts of the proposed CDM project activity significant, the project participants shall carry out an environmental impact assessment in accordance with the relevant procedures of the host Party and provide all conclusions and references to all related documentation.	It is already validated as above.						
7.8. Local stakeholder consultation 7.8.1. General requirements 94. The project participants shall invite local stakeholders to provide comments on the proposed CDM project activity and shall demonstrate how due steps/actions were taken to appropriately engage	<p>The initial LSC meeting was conducted in 17th November 2011 and next LSC meetings conducted in August 2015. The local stakeholders are invited the local stakeholders through public notice (Newspaper ad-Batak Post – Lambaik Manalu) to provide comments on the proposed CDM project activity. Local people are well informed</p>						

stakeholders and solicit comments in accordance with this section.	<p>about the project, including project location, the name of the utilized river, project impacts, and the selected alternative.</p> <p>The steps involved are definition of principles of consultation and consultation requirements, stakeholder identification, stakeholder consultation, Resettlement planning consultation, engagement planned throughout the lifetime of the Project and Project grievance redress mechanism.</p> <p>Both the application for an environmental license and the environmental permit decision are disclosed to the public through mass media and / or through a bulletin board at the project site. The public have 10 working days to provide opinions to the relevant authority (AMDAL commission) after the environmental permit application has been announced.</p>
<p>7.8.2. Scope of local stakeholder consultation</p> <p>95. The scope of the local stakeholder consultation shall comprise, as a minimum, the potential direct positive and negative impacts that the proposed CDM project activity may have.</p>	<p>The validation team has reviewed the local stakeholder consultation document. Early and ongoing consultation, disclosure and meaningful stakeholder engagement are key requirements for projects financed by lenders. The consultation and disclosure activities used to inform affected communities about the Project. The scope being community engagement should be free from external manipulation, interference, coercion and intimidation and conducted on the basis of timely, relevant, understandable and accessible information.</p>
<p>96. The project participants shall conduct the local stakeholder consultation in accordance with applicable host Party rules, if any.</p> <p>Where host Party rules on local stakeholder consultation are applicable, the project participants shall provide, in the PDD, a summary of the consultations carried out under the host Party rules, including the direct positive and negative impacts identified and how the negative impacts identified will be addressed.</p>	<p>Under Indonesian EIA legal requirements, consultation with the public is conducted throughout the project development process at the following stages:</p> <p>1.Pre-arrangement stage of the project (before Analisis Mengenai Dampak Lingkungan (AMDAL) documents are prepared) – public are informed of the project by the competent authority.</p> <p>2.AMDAL Terms of Reference (KA-ANDAL) preparation – public have 10 working days to provide opinions before the preparation of the KA-ANDAL, and can also comment on the draft KA-ANDAL.</p>
<p>7.8.3. Minimum group of stakeholders to be involved</p> <p>97. For the purpose of the local stakeholder consultation, the project participants shall invite, as a minimum, representatives of local stakeholders directly impacted by the proposed CDM project activity and representatives of local authorities relevant to the project activity.</p>	<p>The stakeholders identified are Population of the Hydro Electric Power Plant (HEPP) and Transmission Line (T-Line) affected areas, Women's Group (PPP), Indigenous Leaders (Tokoh Adat), Community Leaders (Tokoh Masyarakat), Neighbourhood Association (Rukun Tetangga), Representatives from Youth Groups, Religious Leaders, Family Welfare Women Group (FWWG), Heads of polyclinics and other health facilities, Youth farmers group cooperative (Gapotkan), Vulnerable and marginalised groups, POSCO employees (EPC contractor), Local NGOs, Ministry of Environment and Forestry, Ministry of Public Works Ministry of Energy and Mineral Resources, Ministry of Labour, Provincial Government of North Sumatra, Toba Samosir / Labuanbatu Utara Regency Government, Nassau District Government, Aek Natas District Government , Na XI-X District Government , Lenders, Media, Emergency service providers and Universitas Sisingamangaraj. In total, there were 90 stakeholders attended the meeting.</p>
<p>98. The project participants shall provide evidence that invitations were sent to the relevant stakeholders and that their comments were invited. If any of the relevant stakeholders were not invited, the project participants shall provide appropriate</p>	<p>The local stakeholders are invited the local stakeholders through public notice (Newspaper ad-Batak Post – Lambaik Manalu) to provide comments on the proposed CDM project activity.</p> <p>Both the application for an environmental license and the</p>

justification.	environmental permit decision are disclosed to the public through mass media and / or through a bulletin board at the project site. The public have 10 working days to provide opinions to the relevant authority (AMDAL commission) after the environmental permit application has been announced
7.8.4. Means for inviting stakeholders' participation 99. The project participants shall invite local stakeholders to provide comments on the proposed CDM project activity in an open and transparent manner, in a way that facilitates comments to be received from local stakeholders and allows for a reasonable time for comments to be submitted. The project participants shall describe the steps/actions taken to invite comments, taking into account local and national circumstances.	Both the application for an environmental license and the environmental permit decision are disclosed to the public through mass media and / or through a bulletin board at the project site. The public have 10 working days to provide opinions to the relevant authority (AMDAL commission) after the environmental permit application has been announced
100. The project participants shall convey information to stakeholders about the local stakeholder consultation and the proposed CDM project activity. This should include information disseminated in ways that are appropriate for the community that is directly affected by the project activity. In areas where a significant part of the population is illiterate, the information shall be provided orally.	Both the application for an environmental license and the environmental permit decision are disclosed to the public through mass media and / or through a bulletin board at the project site. The public have 10 working days to provide opinions to the relevant authority (AMDAL commission) after the environmental permit application has been announced. During the meeting, the project (positive and negative impacts) was explained to the attendees in the local language.
7.8.5. Information to be made available to stakeholders 101. The project participants shall describe the proposed CDM project activity in a manner that allows local stakeholders to understand the project activity. The information to be made available to stakeholders shall include, inter alia: (a) A summary of the proposed CDM project activity, explaining the project activity in simple, non-technical terms, and containing a description of the direct positive and negative impacts; (b) Information on the projected scope, lifetime, and direct positive and negative impacts of the proposed CDM project activity; (c) Other relevant information about the proposed CDM project activity, taking into account confidentiality provisions of the applicable CDM M&Ps referred to in paragraph 1 above; (d) The means to provide comments about the proposed CDM project activity.	Both the application for an environmental license and the environmental permit decision are disclosed to the public through mass media and / or through a bulletin board at the project site. In addition, summary of the proposed CDM project activity including direct positive and negative impacts are demonstrated to the local stakeholders;
7.8.6. Conduct of consultation 102. The project participants shall conduct the local stakeholder consultation through means that are appropriate for the local and national circumstances.	Under Indonesian EIA legal requirements, consultation with the public is conducted throughout the project development process at the following stages: 1.Pre-arrangement stage of the project (before Analisis Mengenai Dampak Lingkungan (AMDAL) documents are prepared) – public are informed of the project by the competent authority. 2.AMDAL Terms of Reference (KA-ANDAL) preparation – public have 10 working days to provide opinions before the preparation of the KA-ANDAL, and can also comment

	on the draft KA-ANDAL.
103. The project participants shall provide local stakeholders with the opportunity to comment in writing or via other means, and gather their comments about the proposed CDM project activity and its direct impacts.	The validation team has checked the LSC meeting report ^{19/} and therein stakeholders had shared their positive feedback such as project being environmental friendly, project creating job opportunities which will improve the living standard of the community, the project applying for the Clean Development Mechanism guidelines, the project rehabilitating the road and provide street lightning for a certain section (Paridian to Dolok Barimbing) under the CSR initiative. In addition, the stakeholders wished the project to create job opportunities and give the employment priority to the local people and to contribute to the development of the Nassau district as well as contribute to the district Income, to coordinate with the government and local people on the activity.
104. The project participants shall request the DNA of the host Party to forward any and all comments from local stakeholders to them.	There was no comments forwarded by the host country DNA as there was no comments from the local stakeholders contacted the DNA in this regard.
7.8.7. Summary of comments received 105. The project participants shall prepare a summary report of the comments received from local stakeholders.	The LSC meeting report ^{19/} dated November 2011 is submitted to the validation team. The ESIA report which documented the local stakeholder consultation is also submitted to the validation team.
7.8.8. Consideration of comments received 106. The project participants shall consider the comments provided by local stakeholders and report on how they have taken them into account in the PDD or in the revised PDD. The project participants shall provide justification if any comments were not incorporated.	PP has considered all the comments of stakeholders.
7.8.9. Timing of local stakeholder consultation 107. The project participants shall complete the local stakeholder consultation process at the timing required by the rules of the host Party on local stakeholder consultation, if such rules exist. If host Party rules do not exist, the project participants shall complete the process before, whichever the earlier of: (a) The start date of the project activity as defined in the "Glossary: CDM terms"; or (b) The date of submitting the PDD of the proposed CDM project activity to a DOE for validation.	Under Indonesian EIA legal requirements, consultation with the public is conducted throughout the project development process at the following stages: 1.Pre-arrangement stage of the project (before Analisis Mengenai Dampak Lingkungan (AMDAL) documents are prepared) – public are informed of the project by the competent authority. 2.AMDAL Terms of Reference (KA-ANDAL) preparation – public have 10 working days to provide opinions before the preparation of the KA-ANDAL, and can also comment on the draft KA-ANDAL. The initial LSC meeting was conducted in 17 th November 2011 whereas initial GSCP was initiated in 2012. The start date of the project was at 24 th October 2016
108. For the project activities that do not meet the requirement referred to in paragraph 107(a) above, but for which notifications of prior consideration of the CDM have been submitted to the secretariat in accordance with the "CDM project cycle procedure for project activities" before 23 February 2017, the project participants may, in accordance with the "Procedure: Direct communication with stakeholders", submit a request for exemption from the requirement to the Board for its consideration on a case-by-case basis.	This is not applicable.
7.8.10. Activities after local stakeholder consultation 109. If, during the validation of the proposed CDM project activity, complaints submitted to the DNA of the host Party on the handling of the outcome of the	This is not applicable.

<p>local stakeholder consultation are forwarded to the project participants through the DOE in accordance with the “CDM project cycle procedure for project activities”, the project participants shall take due account of such complaints and modify the PDD as appropriate before the DOE concludes the validation.</p>	
<p>110. If significant changes to the project design occur after the invitation of comments from local stakeholders, the project participants shall conduct a new local stakeholder consultation with relevant stakeholders.</p>	<p>This is not applicable.</p>
<p>7.9. Sustainable development co-benefits 111. The project participants may, separately from the monitoring plan referred to in section 7.5.6 above, develop a document describing how they intend to monitor sustainable development co-benefits of the proposed CDM project activity, including the frequency of reporting of monitoring results and whether they intend to have monitoring results independently verified.</p>	<p>PP mentioned the environmental and social –economic benefits of the project activity in the section A.1 of final PDD^{/3/}. But it intends not to monitor separately. PP has not developed any document describing how they intend to monitor sustainable development co-benefits. Since this is not a mandatory requirement, the validation team has accepted it.</p>
<p>7.10. Approval and authorization 112. The project participants shall obtain a letter of approval from the DNA of each Party involved in the proposed CDM project activity that:</p> <p>(a) Confirms that the Party is a Party to the Kyoto Protocol;</p> <p>Note: A proposed CDM project activity supported by a multilateral fund involving many host Parties does not necessarily require letters of approval from the DNAs of all Parties. However, those not providing a letter may be giving up some of their rights and privileges in terms of being a Party involved in the project activity. A letter of approval from a Party may cover more than one proposed CDM project activity, provided that the project activities are clearly listed in the letter.</p> <p>Note: At the time of making the PDD public at the stage of validation, a Party involved may or may not have provided its approval of the proposed CDM project activity, but by the time of requesting registration, approval from all Parties involved including the host Party shall be obtained.</p> <p>(b) Confirms that the participation in the proposed CDM project activity is voluntary;</p> <p>(c) Refers to the precise title of the proposed CDM project activity.</p>	<p>There is one party involved in this project activity. Host party is Indonesia. PT. Binsar Natorang Energi, the PP, has obtained LoA letter^{/4/} from Ministry of Environment and Forestry –Directorate General of Climate Change. The validation team has reviewed the CDM website^{/8/} https://cdm.unfccc.int/DNA/index.html and confirmed that DNA of party giving approval is correct</p> <p>The validation team has reviewed the LoA letter^{/4/}.</p> <p>Ministry of Environment and Forestry –Directorate General of Climate Change has issued the LoA (Ref no:S305/PPC/MS2R/KLN.0/10/2020 dated 26th October 2020) wherein the following was confirmed.</p> <ol style="list-style-type: none"> 1. Republic of Indonesia is party to the Kyoto protocol by ratifying it on 28th July 2004. 2. The participation of Republic of Indonesia in the proposed CDM project is voluntary 3. The LoA letter^{/4/} refers to the proposed Project activity
<p>113. Each project participant shall be authorized by at least one Party involved in the proposed CDM project activity to participate in the project activity, to be confirmed in the letter of approval referred to in paragraph 112 above or in a separate authorization letter.</p>	<p>There is one party involved in this project activity. Host party is Indonesia. PT. Binsar Natorang Energi, the PP is authorised by host country DNA.</p>
<p>114. In addition to the requirement in paragraph 112 above, the letter of approval from the host Party shall confirm that the proposed CDM project activity assists the host Party in achieving sustainable development.</p>	<p>LoA letter^{/4/} confirms that proposed CDM project activity assists the host Party in achieving sustainable development.</p>

115. A CDM project activity or a bundle of small-scale CDM project activities shall have only one host Party, which is the Party in which the project activity(ies) is(are) located as set out in the PDD.	The project is large scale project. This is not applicable.								
116. Where the methodologies or the other methodological regulatory documents applied to the proposed CDM project activity provide for the application of a system, such as an electricity grid, and that system extends across more than one Party, a letter of approval is required from the host Party and all other Parties involved in the system as indicated in the PDD. Note: This requirement replaces the clarification provided by the Board at its twenty-eighth meeting, as recorded in paragraph 14 of the meeting report.	The project and electricity system to which the project is physically connected lies in Indonesia only.								
7.11. Modalities of communication 117. The project participants shall define for the proposed CDM project activity their modalities of communication with the Board, and present them in a “Modalities of communication statement” (MoC statement), with the following content: (a) The title of the proposed CDM project activity (and UNFCCC reference number if available);	The validation team has reviewed the MoC letter ^{/20/} . The title is exactly matching with of the final PDD ^{/3/} .								
(b) The date of submission of the MoC statement (to a DOE for inclusion in the request for registration or to the secretariat for changes after registration);	The MoC letter is signed on 8 th October 2020.								
(c) The designation of a focal point for each scope of authority, contact details and specimen signatures of the authorized signatories of each focal point entity;	PP is the only focal point (sole focal point) for this project. MoC letter contains scope of authority, contact details and specimen signature of the authorised signatories.								
(d) A list of all project participants, contact details and specimen signatures of their authorized signatories;	PP is the only focal point (sole focal point) for this project. MoC letter contains scope of authority, contact details and specimen signature of the authorised signatories.								
(e) The signature of an authorized signatory (electronic if available) of all project participants confirming their agreement with the MoC statement.	PP is the only focal point (sole focal point) for this project. MoC letter contains scope of authority, contact details and specimen signature of the authorised signatories.								
7.16. Validation for registration of project activity 218. The project participants shall select a DOE, accredited for the validation function and in the sectoral scopes linked to the applied methodologies and relevant to the proposed CDM project activity, for validation of the project activity for registration. The project participants shall have a contractual arrangement with the DOE for the validation. Note: The list of all 16 sectoral scopes, the DOEs accredited in each scope as well as the approved methodologies linked with these sectoral scopes, are provided on the UNFCCC CDM website	<table><tr><td>Component</td><td>Methodology applied</td><td>Sector</td></tr><tr><td>Renewable energy</td><td>ACM002 v20.0</td><td>1</td></tr></table>	Component	Methodology applied	Sector	Renewable energy	ACM002 v20.0	1	As per this link https://cdm.unfccc.int/DOE/list/index.html , EPIC is accredited for all sectors including sectors 1. EPIC is signed an agreement for conducting the scope of PA validation with the PP.	
Component	Methodology applied	Sector							
Renewable energy	ACM002 v20.0	1							
219. The project participants shall submit to the selected DOE the completed PDD, together with supporting documentation, for validation and publication for global stakeholder consultation. If the project participants developed a document for voluntary monitoring of sustainable development co-benefits in accordance with paragraph 111 above, they may also submit it to the selected DOE for publication.	PP had submitted the completed final PDD ^{/3/} together with the support documentation. PP mentioned the environmental and social –economic benefits of the project activity in the section A.1 of final PDD ^{/3/} . But it intends not to monitor separately. PP has not developed any document describing how they intend to monitor sustainable development co-benefits								
220. If the PDD contains confidential or proprietary information, the project participants shall submit documentation in the following two versions:	There is no confidential information.								

<p>(a) A version in which all parts containing confidential/proprietary information are redacted (e.g. by covering those parts with black ink) so that the version can be made publicly available without displaying confidential/proprietary information;</p> <p>(b) A version containing all information that is to be treated as confidential /proprietary by all parties handling this documentation (DOEs; Board members and alternate members; CDM panel and working group members; external experts requested to consider such documents in support of the work of the Board; and the secretariat).</p>							
<p>221. Information used to demonstrate additionality, to describe the application of the selected methodologies, the selected standardized baselines and the other applied methodological regulatory documents and to support an environmental impact assessment shall not be considered proprietary or confidential.</p> <p>Any data, values and formulae included in electronic spreadsheets provided shall be made accessible and verifiable.</p>	There is no confidential information.						
<p>222. Before publishing the PDD for global stakeholder consultation in accordance with the "CDM project cycle procedure for project activities", the project participants may request the DOE to seek guidance from the Board on the acceptability of deviation from:</p> <p>(a) A selected methodology or methodological tool; or</p> <p>(b) Sections in the selected methodology or methodological tool that are not standardized by the selected standardized baselines, if the proposed CDM project activity applies standardized baselines.</p>	This is not applicable as there is no deviation.						
<p>223. If, after the publication of the PDD for global stakeholder consultation, the project participants have changed any of the applied methodologies or the combination thereof for the proposed CDM project activity, the project participants shall prepare a revised PDD and submit it to any DOE for publication for a new global stakeholder consultation in accordance with the "CDM project cycle procedure for project activities", and request the DOE to restart validation.</p>	This is not applicable as there is no change after the publication of the PDD for GSCP.						
<p>224. The project participants may request the DOE to withdraw the published PDD before the submission of a request for registration of the proposed CDM project activity in accordance with the "CDM project cycle procedure for project activities".</p>	<table border="1"> <thead> <tr> <th>Date of CDM events</th><th>Validation opinion</th></tr> </thead> <tbody> <tr> <td>Date of validation contract signed between outgoing DOE and outgoing PP = 10th November 2011</td><td>The validation contract was first signed between E.ON Carbon Sourcing GmbH and Bureau Veritas.</td></tr> <tr> <td>Date of GSCP = 31st January 2012 to 29th February 2012</td><td>The project was first uploaded for GSCP from 31st January 2012 to 29th February 2012 by Bureau Veritas. https://cdm.unfccc.int/Projects/Validation/DB/RQK0IAJ71O9YLM72WQC0W5R931A6D0/view.html PP at that time was</td></tr> </tbody> </table>	Date of CDM events	Validation opinion	Date of validation contract signed between outgoing DOE and outgoing PP = 10 th November 2011	The validation contract was first signed between E.ON Carbon Sourcing GmbH and Bureau Veritas.	Date of GSCP = 31 st January 2012 to 29 th February 2012	The project was first uploaded for GSCP from 31 st January 2012 to 29 th February 2012 by Bureau Veritas. https://cdm.unfccc.int/Projects/Validation/DB/RQK0IAJ71O9YLM72WQC0W5R931A6D0/view.html PP at that time was
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		E.ON Carbon Sourcing GmbH	
	Date of current PP taking over the project from the outgoing PP=30 th September 2012	E.ON Carbon Sourcing withdrew from the project and the current PP took over	
	Date of contract termination from outgoing DOE =15 th January 2017	The contract with the Bureau Veritas was terminated on 15 January 2017. The validation team has reviewed the letter of termination ^{/5/} from Bureau Veritas addressed to the current PP.	
	Date of incoming DOE agreement =December 2019	PP and EPIC signed validation agreement dated December 2019.	
	Date of EPIC as incoming DOE as reflected in the CDM website=4 th Feb 2020	The validation team has reviewed the CDM website ^{/3/} and confirmed.	
	Date of 2 nd GSCP by EPIC=21 st Feb 2020 to 21 st March 2020	The validation team has reviewed the CDM website ^{/3/} and confirmed.	
225. The project participants may request the DOE to withdraw the request for registration in accordance with the “CDM project cycle procedure for project activities”.	PP did not request the DOE to withdraw the request for registration.		
226. The project participants may change the DOE after the publication of the PDD in accordance with the “CDM project cycle procedure for project activities”	It is already validated as above.		

Appendix 6: VVS-PA v2.0 requirements

VVS-PA v2.0 requirements	Validation opinion
1. Introduction 1.1. Background 1. The Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP) established the basis of the regulatory framework for the clean development mechanism (CDM) to implement Article 12 of the Kyoto Protocol through the following: (a) Annex to decision 3/CMP.1: Modalities and procedures for a clean development mechanism (hereinafter referred to as the CDM M&Ps); (b) Annexes to decision 4/CMP.1, including annex II: Simplified modalities and procedures for small-scale clean development mechanism project activities (hereinafter referred to as the CDM SSC M&Ps); (c) Annex to decision 5/CMP.1: Modalities and procedures for afforestation and reforestation	The validation team has understood the requirements of decision made during CMP meetings.

<p>project activities under the clean development mechanism (hereinafter referred to as the CDM A/R M&Ps);</p> <p>(d) Annex to decision 6/CMP.1: Simplified modalities and procedures for small-scale afforestation and reforestation project activities under the clean development mechanism (hereinafter referred to as the CDM SSC A/R M&Ps);</p> <p>(e) Decision 7/CMP.1: Further guidance relating to the clean development mechanism;</p> <p>(f) Decision 10/CMP.7: Modalities and procedures for carbon dioxide capture and storage in geological formations as clean development mechanism project activities (hereinafter referred to as the CDM CCS M&Ps).</p> <p>2. The CMP revised some of the provisions in these decisions through new decisions in subsequent sessions.</p> <p>3. Pursuant to its mandate from the CMP to operationalize the CDM, the Executive Board of the CDM (hereinafter referred to as the Board) has adopted various standards (including baseline and monitoring methodologies (hereinafter referred to as methodologies) and standardized baselines), methodological tools, guidelines, procedures, clarifications and forms, and revised them with a view to improving the CDM process.</p>	
<p>1.2. Objectives</p> <p>4. The objectives of the “CDM validation and verification standard for project activities” (hereinafter referred to as the standard) are to:</p> <p>(a) Enhance consistency and clarity of minimum requirements for CDM validation and verification activities;</p> <p>(b) Improve the quality and consistency in the preparation, execution and reporting of CDM validation and verification activities;</p> <p>(c) Enhance the overall efficiency and integrity of the CDM.</p>	<p>The validation team has followed the objectives of the standard during validation of the project.</p>
<p>2. Scope, applicability and entry into force</p> <p>2.1. General</p> <p>5. This standard provides designated operational entities (DOEs) with minimum requirements for validation and verification of a CDM project activity based on the CDM rules and requirements approved by the Board.</p>	<p>As per this link https://cdm.unfccc.int/DOE/list/index.html, EPIC is accredited for all sectors including sectors 1.</p> <p>EPIC is signed an agreement for conducting the scope of PA validation with the PP.</p>
<p>2.2. Application</p> <p>6. Sections 5 and 6 contain general principles and requirements for validation and verification.</p> <p>7. Sections 7 contains validation requirements for registration of all types of CDM project activities. The requirements in sections 7.13–7.16 apply specifically to small-scale project activities, large-scale afforestation and reforestation (A/R) project activities, small-scale A/R project activities, and</p>	<p>This is validation project. Hence sections 5,6,7 apply.</p>

<p>carbon dioxide capture or storage (CCS) project activities, respectively.</p> <p>8. Sections 8 and 10 contain validation requirements for post-registration activities applicable to all types of CDM project activities, validation requirements for post-registration activities specific to large-scale A/R project activities, and validation requirements for renewal of the crediting period of all types of CDM activities including CCS project activities.</p> <p>9. Section 9 contains verification requirements applicable to all types of CDM project activities. The requirements in sections 9.3–9.5 apply specifically to small-scale project activities, large-scale A/R project activities and CCS project activities, respectively.</p>	
<p>2.3. Entry into force 10. Version 02.0 of this standard enters into force on 1 January 2019.</p> <p>3. Normative references 11. The following referenced documents are indispensable for the application of this standard:</p> <p>(a) “Standard: CDM accreditation standard”;</p> <p>(b) “Procedure: CDM project cycle procedure for project activities”;</p> <p>(c) “Standard: CDM project standard for project activities”;</p> <p>(d) “Glossary: CDM terms”.</p> <p>4. Terms and definitions 12. In addition to the definitions contained in the “Glossary: CDM terms”, the following terms apply in this standard:</p> <p>(a) “Shall” is used to indicate requirements to be followed;</p> <p>(b) “Should” is used to indicate that among several possibilities, one course of action is recommended as particularly suitable;</p> <p>(c) “May” is used to indicate what is permitted</p>	<p>The validation team has used v2.0 of the VVS standard</p>
<p>5. Principles 5.1. General 13. The following principles guide the preparation, execution, and reporting of validation and verification activities.</p> <p>Note: This text is taken from ISO 14064-3:2006 - Greenhouse gases - Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions and is reproduced with the permission of the International Organization for Standardization, ISO.</p> <p>This standard can be obtained from any ISO member from the website of the ISO Central Secretariat at the following address:</p>	<p>The validation team has followed the principles of the VVS standard^{/1/} v2.0.</p>

<p><www.iso.org>. Copyright remains with ISO.</p> <p>5.2. Independence 14. Remain independent of the activity being validated or verified, and free from bias and conflict of interest. Maintain objectivity throughout the validation or verification to ensure that the findings and conclusions are based on objective evidence generated during the validation or verification.</p> <p>5.3. Ethical conduct 15. Demonstrate ethical conduct through trust, integrity, confidentiality and discretion throughout the validation or verification.</p> <p>5.4. Fair presentation 16. Reflect truthfully and accurately the validation or verification activity, findings, conclusions and reports. Report significant obstacles encountered during the validation or verification, as well as unresolved, diverging opinions among validators or verifiers, the responsible party (e.g. the secretariat/the Board) and the client (e.g. the project participants).</p> <p>5.5. Due professional care 17. Exercise due professional care and judgement based on the importance of the task performed and the confidence placed by clients and intended users. Have the necessary skills and competences to undertake the validation or verification.</p>	
<p>6. General validation and verification requirements 6.1. General validation and verification approach 18. The DOE shall select a competent team to perform the validation or verification for the CDM project activity.</p> <p>19. In carrying out its validation or verification work, the DOE shall: (a) Follow this standard and integrate its provisions into the DOE's own quality management systems;</p>	<p>Appendix 2 of this report describes about the competency of the validation team. Section E of this report details about the quality management system.</p>
<p>(b) Apply the most recent applicable decisions and guidance provided by the Board;</p> <p>(c) Determine whether each CDM project activity meets all applicable CDM rules and requirements, including those specified in the "CDM project standard for project activities", the selected methodologies, the selected standardized baselines and any other standards, methodologies, methodological tools and guidelines applied in accordance with the selected methodologies (hereinafter "any other standards, methodologies, methodological tools and guidelines (to be) applied in accordance with the selected(applied) methodologies" are collectively referred to as the other (applied) methodological regulatory documents);</p> <p>(d) Assess the accuracy, conservativeness,</p>	<p>The validation team has referred the latest versions of PS-PA^{/1/} v2.0, PCP-PA^{/1/} v2.0 and VVS-PA^{/1/} v2.0. The validation team determined checked if the project activity meeting all the applicable CDM rules.</p> <p>The validation team checked if the information provided by the PP is reliable and credible based crosschecking of the documents with independent third party documents.</p> <p>The validation team applied consistent validation criteria throughout the validation of project activity.</p> <p>The team members of the validation team is bound by confidentiality clause.</p>

<p>relevance, completeness, consistency and transparency of the information provided by the project participants;</p> <p>Note: Principles for each can be found in the “CDM project standard for project activities”.</p> <p>(e) Determine whether information provided by the project participants is reliable and credible;</p> <p>Note: Information is credible if it is authentic and is able to inspire belief or trust, and the willingness of persons to accept the quality of evidence. Information is reliable if the quality of evidence is accurate and credible and able to yield the same results on a repeated basis.</p> <p>(f) Apply consistent validation/verification criteria:</p> <p>(i) To the requirements of the selected methodologies, the selected standardized baselines and the other applied methodological regulatory documents throughout the crediting period(s);</p> <p>(ii) To CDM project activities with similar characteristics such as a similar application of the selected methodologies, the selected standardized baselines and the other applied methodological regulatory documents, use of technology, time period or region;</p> <p>(iii) To expert judgements, over time and among CDM project activities;</p> <p>(g) Base its findings and conclusions on objective evidence and conduct all validation or verification activities in accordance with CDM rules and procedures;</p> <p>(h) Not omit evidence that is likely to alter the validation or verification opinion;</p> <p>(i) Present information in the validation report or verification and certification report in a factual, neutral and coherent manner and document all assumptions, provide references to background material, and identify changes made to the documentation;</p> <p>(j) Safeguard the confidentiality of all information obtained or created during the validation or verification.</p>	
<p>6.2. Use of and compliance with applicable standards</p> <p>20. In carrying out its validation and verification work, the DOE shall use and determine the compliance with the valid version of applicable standards, methodologies, standardized baselines, methodological tools, guidelines and other regulatory documents adopted by the CMP or the Board</p>	<p>PP used methodologies ACM002 - ACM0002- Grid-connected electricity generation from renewable sources^{/2/} - -- v20.0 adopted at EB105. Its associate guidelines/tools such as</p> <p>(a) “TOOL01: Tool for the demonstration and assessment of additionality” v7.0; (adopted at EB70)</p> <p>(b) “TOOL02: Combined tool to identify the baseline scenario and demonstrate additionality” v7.0 (EB96);</p> <p>(c) “TOOL03: Tool to calculate project or leakage CO2 emissions from fossil fuel combustion” v3.0 (EB96);</p> <p>(d) “TOOL05: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation” v3.0 (EB96);</p>

	<p>(e) "TOOL07: Tool to calculate the emission factor for an electricity system" v7.0 (EB100);</p> <p>(f) "TOOL10: Tool to determine the remaining lifetime of equipment" v1.0 (EB50);</p> <p>(g) "TOOL11: Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period" v3.0.1 (EB66);</p> <p>(h) "TOOL32: Positive lists of technologies v2.0 (EB105).</p>
<p>6.3. Use of applicable forms</p> <p>21. The DOE contracted to conduct validation for registration of a proposed CDM project activity, post-registration changes or renewal of the crediting period of a registered CDM project activity shall prepare a validation report using the valid version of the relevant validation report form.</p> <p>Note: All types of validation report forms are available on the UNFCCC CDM website.</p>	<p>PP has signed an agreement with EPIC, the scope being validation of project activity. The validation team has used validation report template for project activity using version 4.0.</p>
<p>22. The DOE contracted to conduct verification and certification for the implementation of the registered CDM project activity and monitored greenhouse gas (GHG) emission reductions or net anthropogenic GHG removals shall prepare verification and certification report using the valid version of the relevant verification and certification report form.</p> <p>Note: All types of verification and certification report forms are available on the UNFCCC CDM website</p>	<p>This is not applicable.</p>
<p>23. When completing a validation or verification and certification report form, the DOE shall follow the instructions therein.</p>	<p>The validation team has followed the instructions mentioned in the version 4.0 of validation template^{/12/}.</p>
<p>6.4. Use of applicable global warming potentials</p> <p>24. The DOE shall determine whether the global warming potentials (GWPs) were correctly applied in the project design document (PDD) and in the monitoring report in accordance with relevant requirements in the "CDM project standard for project activities".</p>	<p>GWP of CO₂/CH₄ is 1 and 25 respectively. This is true as per decision 4/CMP.7. No other GHG gases are applicable for this project.</p>
<p>7. Validation for registration of project activities</p> <p>7.1. General validation requirements</p> <p>7.1.1. Objectives of validation</p> <p>25. The DOE shall conduct a thorough and independent assessment of a proposed CDM project activity against the applicable CDM rules and requirements.</p>	<p>This report summarizes the findings of the validation of the project, performed on the basis of UNFCCC criteria for CDM, 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 assessment is objective and independent.</p>
<p>7.1.2. Validation approach</p> <p>26. In carrying out its validation work, the DOE shall: (a) Determine whether the proposed CDM project activity complies with the requirements in paragraph 37 of the CDM M&Ps (with the exception of paragraph 37(c) for CCS CDM project activities), the applicability conditions of the selected methodologies, the selected standardized baselines, the other applied methodological regulatory documents, and guidance provided by the Board;</p>	<p>The validation team has confirmed that the project is meeting all the applicable conditions of the applied methodology and its associated tools. Refer Appendix 8 of this report for details.</p>

(b) Assess the claims and assumptions in the PDD. The evidence used in this assessment shall not be limited to that provided by the project participants.	
27. The DOE shall make publicly available the PDD received from the project participants in accordance with the “CDM project cycle procedure for project activities”.	The project was uploaded for GSCP first time in 2012 and in 2020.
7.1.3. Means of validation 7.1.3.1. Standard auditing techniques 28. The DOE shall assess the information provided by the project participants.	The validation assessment is based on the information provided by the PP. The validation team has also considered third party information for crosschecking.
29. In assessing the information, the DOE shall apply the means of validation specified throughout this standard and, where appropriate, standard auditing techniques, including, but not limited to: (a) Document review, involving: (i) A review of data and information; (ii) Cross checks between the information provided in the PDD and information from sources other than those used; if available, the DOE's sectoral or local expertise; and, if necessary, independent background investigations; (b) Follow-up actions (e.g. on-site inspection and telephone or e-mail interviews), including: (i) Interviews with relevant stakeholders in the host country, such as personnel with knowledge of the project design and implementation; (ii) Cross checks between information provided by interviewed personnel (i.e. by checking sources or other interviews) to ensure that no relevant information has been omitted; (c) Reference to available information relating to projects or technologies similar to the proposed CDM project activity under validation; (d) Review, based on the selected methodologies, the selected standardized baselines and the other applied methodological regulatory documents, of the appropriateness of formulae and accuracy of calculations; (e) Sampling approach in accordance with the “Standard: Sampling and surveys for CDM project activities and programme of activities”, including: (i) A random sampling for cases where the project participants did not apply a sampling approach; (ii) An acceptance sampling or another sampling approach for cases where the project participants applied a sampling approach.	The validation assessment is based on document review, cross checks with third party information, interviews, and similar CDM projects. The validation team did not use Sampling standard as it was not required for the validation.
30. It is mandatory for the DOE to conduct an on-site inspection at validation for the proposed CDM project activity if: (a) Its estimated annual average of greenhouse gas (GHG) emission reductions or net anthropogenic GHG removals is more than	The estimated annual ER is 216,320 tCO ₂ e per year which is more than 100,000 tCO ₂ e per year. However, onsite could not be conducted due to COVID-19 pandemic. As per the announcement by the EB dated 23 rd June 2020, it has agreed to, on an exceptional basis, considering the COVID-19 pandemic, to extend the period in which CDM

100,000 t CO ₂ eq; or (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.	Designated Operational Entities (DOEs) may apply alternative measures of validation/verification to mandatory on-site inspections until 31 December 2020. The validation team has conducted skype meeting dated 16 th June 2020 as an alternative measure to the onsite visit.
31. For cases that are not referred to in paragraph 30 above, it is optional for the DOE to conduct an on-site inspection at validation. If the DOE does not conduct an on-site inspection as a means of validation, it shall describe the alternative means used and justify that they are sufficient for the purpose of validation	The validation team has conducted skype meeting dated 16 th June 2020 as an alternative measure to the onsite visit.
32. Where no specific means of validation is specified, the DOE shall apply the standard auditing techniques described in paragraph 29 above.	The validation team has used standard auditing principles and used professional judgment for the assessment.
7.1.3.2. Corrective action requests, clarification requests and forward action requests 33. If the DOE identifies issues that require further elaboration, research or expansion in order to determine whether the project activity meet the CDM rules and requirements and can achieve credible GHG emission reductions or net anthropogenic GHG removals, the DOE shall ensure that these issues are accurately identified, formulated, discussed and concluded in the validation report.	The validation team has identified issues and these are concluded (Refer Appendix 4 of this report).
34. The DOE shall raise a corrective action request (CAR) if one of the following situations occurs: (a) The project participants have made mistakes that will influence the ability of the proposed CDM project activity to achieve real, measurable, verifiable and additional GHG emission reductions or net anthropogenic GHG removals; (b) The applicable CDM rules and requirements have not been met; (c) There is a risk that GHG emission reductions or net anthropogenic GHG removals cannot be monitored or calculated.	The validation team has identified issues and these are concluded (Refer Appendix 4 of this report).
35. The DOE shall raise a clarification request (CL) if information is insufficient or not clear enough to determine whether the applicable CDM rules and requirements have been met.	The validation team has identified issues and these are concluded (Refer Appendix 4 of this report).
36. The DOE shall raise a forward action request (FAR) during validation to identify issues related to project implementation that require review during the first verification of the proposed CDM project activity. The DOE shall not raise a FAR that relates to the CDM rules and requirements for registration of the project activity.	The validation team has identified issues and these are concluded (Refer Appendix 4 of this report).
37. The DOE shall resolve or "close out" CARs and CLs only if the project participants modify the project design, rectify the PDD, or provide additional explanations or evidence that satisfy the DOE's concerns. If this is not done, the DOE shall not submit a request for registration of the proposed CDM project activity.	The validation team has identified issues and these are concluded (Refer Appendix 4 of this report).
38. The DOE shall report on all CARs, CLs and FARs in its validation report.	The validation team has identified issues and these are concluded (Refer Appendix 4 of this report).

This reporting shall explain the issues raised, the responses provided by the project participants, the means of validation of such responses and references to any resulting changes in the PDD or supporting annexes.															
7.2. Demonstration of prior consideration of the clean development mechanism 39. The DOE shall determine whether CDM benefits were considered necessary in the decision to undertake the project as a proposed CDM project activity if the starting date of the proposed CDM project activity is prior to the start of validation, which is the date of publication of the PDD for global stakeholder consultation.	Date of first GSCP = 31 st Jan 2012 to 29 th Feb 2012 Start date of the project= 24 th October 2016 As per the final PDD ^{/3/} , start date of the project is 24 th October 2016. Since the start date of the project is after date of publication of the PDD for GSCP, prior consideration is not required. However, PP has demonstrated that CDM benefits were considered necessary in the decision to undertake the project. Refer Appendix 5 of this report for details.														
40. The DOE shall determine whether the start date of the proposed CDM project activity, specified in the PDD, is determined in accordance with the definition of start date in the Glossary: CDM terms". The DOE shall determine whether it is a project activity with a start date: (a) On or after 2 August 2008; or (b) Before 2 August 2008.	As per glossary of CDM terms ^{/16/} v10.0, For a CDM project activity, the date on which the PP commit to making expenditures for the construction of the main equipment or facility. The validation team has reviewed the offshore equipment supply contract ^{/7/} signed between the current PP and POSCO Engineering Co Ltd. Since signing of supply contract indicates the commitment to making expenditure, the validation team has accepted this date as start date of the project (24 th October 2016). The project is thus with a start date after 2 nd August 2008.														
41. For a proposed CDM project activity with a start date on or after 2 August 2008, the DOE shall confirm, by referring to the list of prior consideration notifications from the UNFCCC CDM website and communication between the project participants, the secretariat and the host Party DNA, if the DNA exists, regarding the commencement of a new project activity and the intention to seek CDM status for the project activity, or referring to the UNFCCC CDM website, whether the PDD has been published within 180 days of the start date. If such notification has not been provided by the project participants or if the PDD has not been published for global stakeholder consultation within 180 days of the start date in accordance with the "CDM project cycle procedure for project activities", the DOE shall determine that the CDM was not seriously considered in the decision to implement the project activity.	<table border="1"> <thead> <tr> <th>Date of CDM events</th><th>Validation opinion</th></tr> </thead> <tbody> <tr> <td>Date of prior consideration letter to UNFCCC =15th August 2011</td><td>The validation team has reviewed the CDM website and confirmed the same. Prior consideration form also checked by the validation team and found to be acceptable</td></tr> <tr> <td>Date of validation contract signed between outgoing DOE and outgoing PP =10th November 2011</td><td>The validation contract was first signed between E.ON Carbon Sourcing GmbH and Bureau Veritas.</td></tr> <tr> <td>Date of LSC=17th November 2011</td><td>The validation team has reviewed the LSC report and accepted.</td></tr> <tr> <td>Date of GSCP = 31st January 2012 to 29th February 2012</td><td>The project was first uploaded for GSCP from 31st January 2012 to 29th February 2012 by Bureau Veritas. PP at that time was E.ON Carbon Sourcing GmbH. PDD was published before the start date.</td></tr> <tr> <td>Date of current PP taking over the project from the outgoing PP=30th September 2012</td><td>E.ON Carbon Sourcing withdrew from the project and the current PP took over</td></tr> <tr> <td>Date of prior consideration letter to UNFCCC by LGI (LGI being shareholder) =17th June 2016</td><td>The validation team has reviewed the CDM website^{/13/} and confirmed the date of receipt of prior consideration form.</td></tr> </tbody> </table>	Date of CDM events	Validation opinion	Date of prior consideration letter to UNFCCC =15 th August 2011	The validation team has reviewed the CDM website and confirmed the same. Prior consideration form also checked by the validation team and found to be acceptable	Date of validation contract signed between outgoing DOE and outgoing PP =10 th November 2011	The validation contract was first signed between E.ON Carbon Sourcing GmbH and Bureau Veritas.	Date of LSC=17 th November 2011	The validation team has reviewed the LSC report and accepted.	Date of GSCP = 31 st January 2012 to 29 th February 2012	The project was first uploaded for GSCP from 31 st January 2012 to 29 th February 2012 by Bureau Veritas. PP at that time was E.ON Carbon Sourcing GmbH. PDD was published before the start date.	Date of current PP taking over the project from the outgoing PP=30 th September 2012	E.ON Carbon Sourcing withdrew from the project and the current PP took over	Date of prior consideration letter to UNFCCC by LGI (LGI being shareholder) =17 th June 2016	The validation team has reviewed the CDM website ^{/13/} and confirmed the date of receipt of prior consideration form.
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Date of prior consideration letter to UNFCCC by LGI (LGI being shareholder) =17 th June 2016	The validation team has reviewed the CDM website ^{/13/} and confirmed the date of receipt of prior consideration form.														

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	Date of investment decision =18 th October 2016	The validation team has reviewed the draft equity support agreement ^{/23/} and accepted the same. In the said agreement, investment decision was taken to make expenditure (with LGI as shareholder)
	Start date of the project= 24 th October 2016 (Start date is after 2 nd August 2008)	As per glossary of CDM terms ^{/16/} v10.0, For a CDM project activity, the date on which the PP commit to making expenditures for the construction of the main equipment or facility. The validation team has reviewed the offshore equipment supply contract ^{/7/} signed between the current PP and POSCO Engineering Co Ltd. Since signing of supply contract indicates the commitment to making expenditure, the validation team has accepted this date as start date of the project. As per the final PDD ^{/3/} , start date of the project is 24 th October 2016. Since the start date of the project is after date of publication of the PDD for GSCP, prior consideration is not required.
	Date of contract termination from outgoing DOE =15 th January 2017	The contract with the Bureau Veritas was terminated on 15 January 2017. The validation team has reviewed the letter of termination ^{/5/} from Bureau Veritas addressed to the current PP.
	Date of prior consideration letter to UNFCCC by PP =14 th May 2018	The validation team has reviewed the CDM website ^{/13/} and confirmed the date of receipt of progress prior consideration form.
	Date of incoming DOE agreement =December 2019	PP and EPIC signed validation agreement dated December 2019.
	Date of EPIC as incoming DOE as reflected in the CDM website=4 th Feb 2020	The validation team has reviewed the CDM website ^{/3/} and confirmed.
	Date of 2 nd GSCP by EPIC=21 st Feb 2020 to 21 st March 2020	The validation team has reviewed the CDM website ^{/3/} and confirmed.
	Date of LoA=26 th October 2020	The validation team has reviewed the LoA letter ^{/4/} and confirmed the same.
42. For a proposed CDM project activity with a start date before 2 August 2008, the DOE shall assess the project participants' prior consideration of the CDM.		This is not applicable as start date is after 2 nd August 2008. However, PP had an awareness of the CDM prior to the project activity start date, and that the benefits of the CDM were a decisive factor in the decision to proceed with the project. PP also demonstrated that real and continuing

<p>Specifically, the DOE shall assess whether the project participants:</p> <p>(a) Had an awareness of the CDM prior to the project activity start date, and that the benefits of the CDM were a decisive factor in the decision to proceed with the project.</p> <p>Evidence to support this could include, inter alia, minutes and/or notes related to the consideration of the decision by the board of directors, or equivalent, of the project participants, to undertake the project as a proposed CDM project activity;</p> <p>(b) Demonstrated that real and continuing actions were taken to secure CDM status for the project in parallel with its implementation in accordance with relevant provisions related to the supporting evidence in the "CDM project standard for project activities".</p>	<p>actions were taken to secure CDM status for the project in parallel with its implementation.</p>
<p>43. Assessment of real and continuing actions shall be conducted by the DOE and should focus on real documented evidence as indicated in paragraph 42(b) above, including an assessment by the DOE of the authenticity of the evidence.</p> <p>The DOE shall assess letters, e-mail exchanges and other documented communications submitted by the project participants to substantiate the above information, and these shall be considered as evidence only after the DOE has assessed the reliability and authenticity of such communications, inter alia through cross-checking (e.g. interviews).</p>	<p>It is already validated as above.</p>
<p>44. In validating a proposed CDM project activity with a start date before 2 August 2008, where:</p> <p>(a) There is a gap of less than two years between the documented evidence, the DOE shall conclude that continuing and real actions were taken to secure CDM status for the project activity;</p> <p>(b) A gap between documented evidence is greater than two years and less than three years, the DOE may determine that continuing and real actions were taken to secure CDM status for the project activity and shall justify any positive or negative validation opinion based on the context of the evidence and information assessed;</p> <p>(c) A gap between documented evidence is greater than three years, the DOE shall conclude that continuing and real actions were not taken to secure CDM status for the project activity.</p>	<p>This is not applicable as start date is after 2nd August 2008.</p>
<p>45. For a proposed CDM project activity with a start date before 2 August 2008, if evidence to support the serious prior consideration of the CDM as indicated above is not available, the DOE shall determine that the CDM was not considered in the decision to implement the project activity.</p>	<p>This is not applicable as start date is after 2nd August 2008.</p>
<p>46. The validation report shall:</p> <p>(a) Describe the validation of the project activity start date provided in the PDD;</p> <p>(b) Describe the evidence for prior consideration of the CDM (if necessary) that was assessed and the process of cross-checking the evidence, including</p>	<p>As per glossary of CDM terms^{7/16/} v10.0, For a CDM project activity, the date on which the PP commit to making expenditures for the construction of the main equipment or facility. The validation team has reviewed the offshore equipment supply contract^{7/7/} signed between the current PP and POSCO Engineering Co Ltd. Since signing of supply contract indicates the commitment to making expenditure, the validation team has accepted this date as start date of</p>

the real and continuing action; (c) Provide a validation opinion regarding whether the proposed CDM project activity complies with the applicable requirements related to the prior consideration of the CDM.	the project. PP had demonstrated the prior consideration of the CDM. The validation team has thus confirmed that CDM project activity complies with the applicable requirements related to the prior consideration of the CDM.
7.3. Identification of project type 47. The DOE shall determine whether the project participants identified the type of CDM project activity they intend to design and implement in accordance with the “CDM project standard for project activities”.	The project activity involved the construction and operation of 39 MW (13 MW x 3 units) large-scale run-of-river hydropower plant on the Aek Kualu River, in the Toba Samosir Regency, North Sumatera Province, Republic of Indonesia developed by the PP. The electricity thus generated will be sold to PT PLN (Indonesian State Owned Electricity Company) through regional electricity grid in Sumatera. The first two units are commissioned in 31 st December 2019 and the third one is commissioned in 10 th January 2020.
48. The DOE shall determine whether the PDD has been completed using the valid version of the PDD form appropriate to the type of the proposed CDM project activity.	PP has valid version of the PDD v11.0 ^{/12/} . https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20190531085424591/PDD_form05v11.doc
49. The DOE shall state its opinion on whether the PDD has been completed using the valid version of relevant form and following instructions therein.	PDD has been completed using the valid version of relevant form ^{/12/} v11.0 and following instructions therein.
7.4. Description of project activity 50. The DOE shall determine whether the description of the proposed CDM project activity in the PDD is accurate, complete, and provides an understanding of the proposed CDM project activity.	The project activity involved the construction and operation of 39 MW (13 MW x 3 units) large-scale run-of-river hydropower plant on the Aek Kualu River, in the Toba Samosir Regency, North Sumatera Province, Republic of Indonesia developed by the PP. The electricity thus generated will be sold to PT PLN (Indonesian State Owned Electricity Company) through regional electricity grid in Sumatera. The validation team has reviewed the commissioning certificates provided by PT Masaryo Gatra Nastiti. The first two units are commissioned in 31 st December 2019 and the third one is commissioned in 10 th January 2020. The validation team has confirmed that the coordinates, serial numbers of the turbine, generators specified in the commissioning certificates ^{/6/} , final PDD ^{/3/} and the photo of nameplate details of turbines, generators (along with the coordinates taken by Garmin at the powerhouse) are exactly matching. Hence accepted by the validation team.
51. If the proposed CDM project activity involves the alteration of an existing installation or process, the DOE shall assess whether the project description states the differences resulting from the project activity compared to the pre-project situation.	This is not applicable as the project is installed in a greenfield.
52. If the proposed CDM project activity is in the same geographical location as a registered CDM project activity whose crediting period has or has not expired (hereinafter referred to as former project), as declared by the project participants in the PDD or based on the finding of the DOE during validation, the DOE shall confirm that the proposed CDM project activity shall not lead to the discontinuation or modification of the former project and will not decrease the GHG emission reductions or removals by the former project based on the relevant requirement of the “CDM project standards for project activities”.	This is the first project for the PP. Hence the condition is not applicable.
53. In the case of the implementation of distributed units in household projects without the relevant requirements in the “CDM project standard for	The project is installation of 39 MW hydro power plant. Hence the condition is not applicable.

<p>programme of activities” being met, the DOE shall validate and confirm by other means that the proposed project activity will not lead to the discontinuation or modification of the former project and will not decrease GHG emission reductions or removals by the former project, and justify the assessment in its validation report.</p> <p>The DOE shall use its local and sectoral expertise to confirm that there is no overlap of different measures and, where applicable, apply the “Guidelines for the consideration of interactive effects for the application of multiple CDM methodologies for a programme of activities” to address cross-effects.</p>	
<p>54. In all other cases, if the project participants have not submitted a communication to the Board to request clarification in accordance with the “CDM project standard for project activities”, the DOE shall submit such communication to the Board in accordance with the “Procedure: Direct communication with stakeholders” prior to submitting a request for registration of the project activity.</p>	<p>The project is installation of 39 MW hydro power plant. Hence the condition is not applicable.</p>
<p>55. If the proposed CDM project activity was a component project activity (CPA) that has been previously excluded from a registered CDM programme of activities (PoA), the DOE shall assess whether:</p> <p>(a) The project activity transparently declares that it was a CPA in a registered CDM PoA and has been previously excluded from it, either voluntarily or due to erroneous inclusion;</p> <p>(b) The crediting period type (i.e. renewable or fixed) and the total length of the crediting period (i.e. maximum 21 years for the renewable crediting period type and maximum 10 years for the fixed crediting period type) and its end date are the same as before the exclusion;</p> <p>(c) The project activity meets all relevant requirements for registration of project activities valid at the time of submission of the request for registration as a CDM project activity;</p> <p>(d) If the project activity applies a methodology that potentially accrues negative emission reductions, emission reductions have been continuously monitored since the end of the monitoring period in the last published monitoring report for the CPA, including the exclusion period. For such a project activity, if there were net negative emission reductions during the period before the registration as a CDM project activity, the amount shall be deducted from the first requests for issuance after the registration;</p> <p>(e) If the CPA has been excluded as a result of erroneous inclusion and if certified emission reductions (CERs) have been issued for the CPA, an equivalent amount of Kyoto credits have been compensated by the DOE that included the CPA or</p>	<p>PP has declared through a letter^{/8/} dated 5th August 2019 that proposed CDM project activity is neither registered as a CDM project activity nor included as a CPA in a registered CDM PoA. The validation team has checked with CDM website^{/8/} and confirmed the same.</p> <p>Hence the condition is not applicable.</p>

<p>that validated the CPA at its first verification if it was included by the coordinating/managing entity, in the CDM registry in accordance with the “CDM project cycle procedure for project activities”.</p>	
<p>56. The DOE shall:</p> <p>(a) Describe the process undertaken to validate the accuracy and completeness of the project description;</p> <p>(b) State its opinion on the accuracy and completeness of the project description</p>	<p>The project activity involved the construction and operation of 39 MW (13 MW x 3 units) large-scale run-of-river hydropower plant on the Aek Kualu River, in the Toba Samosir Regency, North Sumatera Province, Republic of Indonesia developed by the PP. The electricity thus generated will be sold to PT PLN (Indonesian State Owned Electricity Company) through regional electricity grid in Sumatera. The equivalent amount of electricity would be saved in the grid leading to sustainable development of Indonesia. The validation team has confirmed accuracy and completeness of the project description in the final PDD^{3/}. The validation team has reviewed the section A.1 and A.3 of the final PDD^{3/} and therefore confirming its accuracy and completeness.</p>
<p>7.5. Selection of methodologies and standardized baselines</p> <p>7.5.1. General</p> <p>57. The DOE shall apply specific guidance and/or clarifications provided by the Board with respect to the approved methodologies, standardized baselines and other methodological regulatory documents that are selected by the project participants.</p>	<p>This is not applicable as there is no clarification request.</p>
<p>7.5.2. Deviation from methodology and/or methodological tool</p> <p>58. The DOE may seek guidance from the Board on the acceptability of a deviation from a selected approved methodology or methodological tool prior to the submission of a request for registration or publication of the PDD, if the DOE, when performing validation for the proposed CDM project activity, or upon request from the project participants before the publication of the PDD, finds that, due to a project-specific issue implying that a revision of the methodology and/or methodological tool would not be required to address the issue, the project participants deviated from:</p> <p>(a) The selected methodology or methodological tool; or</p> <p>(b) Sections in the selected methodology or methodological tool that are not standardized by the selected standardized baselines, if the proposed CDM project activity applies standardized baselines.</p> <p>Note: Examples of project-specific issues include, but are not limited to, the following:</p> <p>(a) The methodology requires measurements using instrumentation of certain specifications or using a certain method.</p> <p>The project participants of the proposed CDM project activity identify a difficulty in acquiring the specified instrumentation or difficulty in implementing the measurement method; however, they can achieve comparable accuracy of measured parameters using an alternative</p>	<p>This is not applicable as there is no request for deviation from PP. The project complies with the requirements of the applied methodology.</p>

<p>instrumentation or measurement method;</p> <p>(b) A proposed CDM project activity does not have access to the data sources specified by the methodology for a certain parameter; a different source of data can be accessed by the CDM project activity to estimate the parameter with equal reliability and accuracy;</p> <p>(c) A minor deviation is sought for a project-specific situation, which is well justified and conservative.</p> <p>For example: a methodology requires limiting production in the project scenario between +/- 5% of rated capacity, if the historical baseline is to be applied.</p> <p>Due to government restrictions, the plant has never been operated at its rated capacity but at a capacity which is much below its rated capacity (20% below the rated capacity).</p> <p>A deviation can be presented specifying conservative approaches to calculate the emission reduction in such a project-specific case;</p> <p>(d) A conservative estimation technique or default factor suggested addressing uncertainties related to project-specific situations, which are not addressed in the methodology.</p> <p>For example, a well-justified conservative uncertainty factor proposed to be used in equations of baseline emissions to address uncertainties in the real-life situation during the crediting period.</p>	
<p>59. The DOE shall submit to the Board an assessment of the case including demonstration that the deviation does not require revision of the selected methodology or methodological tool, and shall include a description of the impact of the deviation on GHG emission reductions or net anthropogenic GHG removals by the proposed CDM project activity in accordance with the "CDM project cycle procedure for project activities".</p>	<p>This is not applicable as there is no request for deviation from PP. The project complies with the requirements of the applied methodology.</p>
<p>60. Alternatively, if the DOE considers that a revision of the selected methodology or methodological tool would be required to address the project situation then the DOE shall request the project participants to submit a request for revision in accordance with the "CDM project cycle procedure for project activities".</p>	<p>This is not applicable as there is no request for deviation/revision from PP. The project complies with the requirements of the applied methodology.</p>
<p>7.5.3. Clarification on applicability of methodology, tool and/or standardized baseline</p> <p>61. If the DOE cannot determine the applicability of a selected methodology, methodological tool and/or standardized baseline to the proposed CDM project activity, the DOE shall request a clarification on the applicability in accordance with the "Procedure: Development, revision and clarification of baseline and monitoring methodologies and methodological tools" and/or the "Procedure: Development, revision, clarification and update of standardized baselines". The DOE shall conduct an assessment to ensure that the request is not submitted with the intention of revising the selected methodology, methodological</p>	<p>This is not applicable as there is no request for clarification sought by the PP. The project complies with the requirements of the applied methodology.</p>

tool and/or standardized baseline to expand their applicability.	
7.6. Application of methodologies and standardized baselines 7.6.1. General 62. The DOE shall validate that the selected methodologies, the selected standardized baselines and the other applied methodological regulatory documents are applicable to the proposed CDM project activity and that the selected versions are valid at the time of submission of the proposed CDM project activity for registration.	PP used methodologies ACM002 - ACM0002- Grid-connected electricity generation from renewable sources ^{/2/} - -- v20.0 adopted at EB105. Its associate guidelines/tools such as (a) "TOOL01: Tool for the demonstration and assessment of additionality" v7.0; (adopted at EB70) (b) "TOOL02: Combined tool to identify the baseline scenario and demonstrate additionality" v7.0 (EB96); (c) "TOOL03: Tool to calculate project or leakage CO2 emissions from fossil fuel combustion" v3.0 (EB96); (d) "TOOL05: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" v3.0 (EB96); (e) "TOOL07: Tool to calculate the emission factor for an electricity system" v7.0 (EB100); (f) "TOOL10: Tool to determine the remaining lifetime of equipment" v1.0 (EB50); (g) "TOOL11: Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period" v3.0.1 (EB66); (h) "TOOL32: Positive lists of technologies v2.0 (EB105).
63. The DOE shall determine whether the selected methodologies, the selected standardized baselines and the other applied methodological regulatory documents apply to the proposed CDM project activity and was correctly applied with respect to the following: (a) Project boundary; (b) Baseline identification; (c) Algorithms and/or formulae used to determine emission reductions; (d) Additionality; (e) Monitoring methodology.	<u>a.Project boundary</u> The validated team has reviewed the final PDD ^{/3/} under relevant section project boundary and accepted the source and sink of the project. Scenario mentioned in the relevant sections (under project boundary section and baseline section) is consistent. <u>b.Baseline identification:</u> Refer Appendix 8 of this report for details. <u>c.Emission reduction and monitoring plan:</u> This requirements of emission reduction calculation and monitoring plan for each generic CPA is detailed Appendix 8 of this report <u>d.Additionality:</u> PP has demonstrated additionality of project activity. Refer Appendix 9 and Appendix 11 of this report for details. <u>e.Monitoring plan</u> PP demonstrated monitoring plan in the final PDD ^{/3/} . Refer Appendix 8 of this report for details.
64. The DOE shall determine whether the selected methodologies, the selected standardized baselines and the other applied methodological regulatory documents are correctly quoted and applied by comparing them with the actual text of the valid version of these documents, and relevant requirements in the "CDM project standard for project activities". Note: An approved methodology, an approved	Refer Appendix 8 of this report for details.

standardized baseline and other methodological regulatory documents apply to the proposed CDM project activity if the applicability conditions of these documents are met.	
65. If the PDD of a proposed project activity is based on a previous version of a methodology or a standardized baseline and was published for global stakeholder consultation but was not submitted for registration within the grace period for applying the later version, the DOE shall request the project participants to provide a revised PDD in accordance with the "CDM project cycle procedure for project activities".	PP is using the latest valid version of the applied methodology ^{72/} ACM002 v20.0.
66. The DOE shall request the project participants to provide a revised PDD in accordance with the "CDM project cycle procedure for project activities" if: (a) The PDD has been published for global stakeholder consultation when no applicable approved standardized baseline was valid; (b) An applicable approved standardized baseline whose selection is mandatory has become valid after the publication of the PDD for global stakeholder consultation but before the submission of a request for registration of the proposed CDM project activity; (c) The request for registration has not been submitted within 240 days after the standardized baseline became valid.	PP did not use any standardised baseline.
67. The DOE shall determine whether the proposed CDM project activity meets all the applicability conditions of the selected methodologies, the selected standardized baselines and the other applied methodological regulatory documents. This shall be done by validating the documentation referred to in the PDD and by verifying that the documentation content is correctly quoted and interpreted in the PDD. If the DOE, based on local and sectoral knowledge, is aware that comparable information is available from credible sources other than that used in the PDD, then the DOE shall cross-check the PDD against other sources to confirm that the CDM project activity meets the applicability conditions of the selected methodologies, the selected standardized baselines and the other applied methodological regulatory documents.	Refer Appendix 8 of this report for details.
68. For each applicability condition listed in the selected methodologies, the selected standardized baselines and the other applied methodological regulatory documents, the DOE shall describe the steps taken to assess the relevant information contained in the PDD against these criteria. The DOE shall state its opinion on the applicability of the selected methodologies, the selected standardized baselines and the other applied	Refer Appendix 8 of this report for details.

methodological regulatory documents to the proposed CDM project activity.	
7.6.2. Project boundary, sources and greenhouse gases 69. The DOE shall determine whether all main GHG emission sources, the project boundary of the proposed CDM project activity, and other relevant project and baseline emission sources covered in the applied methodologies and the applied standardized baselines are included within the project boundary for the purpose of calculating project and baseline emissions for the proposed CDM project activity.	<p>The project consists of hydro power plant which is physically connected to the Sumatera regional grid. In the baseline, CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity is applicable.</p> <p>In the project boundary, PP has considered emissions of CH₄ from the reservoir and CO₂ emissions from the DG used as a backup generator.</p> <p>However, PP demonstrated that CH₄ emissions from the reservoir and CO₂ emissions from the DG is zero for this project. The validation team has accepted as this is in line with para 20 of the applied methodology.</p>
70. The DOE shall confirm the project boundary based on documented evidence and, where conducted in accordance with paragraph 30 or 31 above, shall corroborate it by an on-site inspection.	The validation team has confirmed the project boundary by documentary evidence and is corroborated the same with skype meeting conducted in June 2020.
71. If the applied methodologies and the applied standardized baselines allow the project participants to choose whether a source or gas is to be included within the project boundary, the DOE shall determine whether the project participants have justified that choice. The DOE shall determine whether the justification provided is reasonable, based on an assessment of supporting documented evidence provided by the project participants and corroborated by observations if required.	PP did not use any standardised baseline.
72. For the proposed CDM project activities that have both A/R and non-A/R components, in order to avoid double counting of emission sources, the DOE shall confirm that the emissions associated with the A/R activity will be accounted for and documented by the A/R CDM project activity.	The project activity contains only non A/R component.
73. The DOE shall describe how the validation of the project boundary has been performed by detailing the documentation assessed (e.g. a commissioning report) and, where conducted in accordance with paragraph 30 or 31 above, by describing its observations during any on-site inspection undertaken (i.e. observations of the physical site or equipment used in the process).	It is already validated as above.
74. The DOE shall state whether the identified boundary and the selected sources and gases are justified for the proposed CDM project activity. Should the DOE identify emission sources that will be affected by the implementation of the CDM project activity and which are expected to contribute more than 1 per cent of the overall expected average annual GHG emission reductions or net anthropogenic GHG removals, and are not addressed by the applied methodologies or the applied standardized baselines, the DOE shall request a clarification of, revision to, or deviation from the methodologies or the standardized baselines, as appropriate.	<p>The validation team has confirmed the identified boundary and the selected sources and gases are justified for the proposed CDM project activity.</p> <p>Since the PP has identified all the emission sources as per the applied methodology, there is no additional source identified by the validation team.</p>
7.6.3. Baseline scenario	Since the project activity is the installation of a grid

<p>75. The DOE shall determine whether the baseline identified for the proposed CDM project activity is the scenario that reasonably represents the anthropogenic emissions by sources of GHGs that would occur in the absence of the proposed CDM project activity.</p>	<p>connected Greenfield hydro power plant, the baseline scenario is electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources. This is inline with the para 22 of the applied methodology. Hence Sumatra regional grid forms the baseline for this project.</p> <p>The project activity involved the construction and operation of 39 MW (13 MW x 3 units) large-scale run-of-river hydropower plant on the Aek Kualu River, in the Toba Samosir Regency, North Sumatera Province, Republic of Indonesia developed by the PP. The electricity thus generated will be sold to PT PLN (Indonesian State Owned Electricity Company) through regional electricity grid in Sumatera. As per the final PDD^{/3/}, net electricity generated from the project is 242,240 MWh per year.</p> <p>The validation team has checked the technical specifications^{/7/} of the water turbines, generators, transformers, substation etc. PP has mentioned the specifications of the major equipments in the final PDD^{/3/}. In the absence of the project activity, the same amount of electricity would be generated in the Sumatera regional grid which is more GHG intensive.</p>
<p>76. The following applies to a proposed CDM project activity using an approved standardized baseline that standardizes the baseline scenario instead of paragraph 75 above: The DOE shall determine whether the baseline scenario for the proposed CDM project activity described in the PDD is the scenario identified by the selected standardized baseline.</p>	<p>PP did not use any standardised baseline.</p>
<p>77. The DOE shall determine whether any procedure contained in the applied methodologies to identify the most reasonable baseline scenario has been correctly applied. If the applied methodologies require the use of methodological tools (such as the "Tool for the demonstration and assessment of additionality" and the "Combined tool to identify the baseline scenario and demonstrate additionality") to establish the baseline scenario, the DOE shall consult the methodologies on the application of these methodological tools. In such cases, the specific guidance in the methodologies shall supersede the corresponding requirements of the methodological tools.</p>	<p>The baseline is predefined in the applied methodology. So PP did not use "Combined tool to identify the baseline scenario and demonstrate additionality" v7.0</p>
<p>78. If the applied methodologies require several alternative scenarios to be considered in the identification of the most plausible baseline scenario, the DOE shall, based on financial expertise and local and sectoral knowledge, determine whether all scenarios that are considered by the project participants and any scenarios that are supplementary to those required by the methodologies, are realistic and credible in the context of the proposed CDM project activity and that no alternative scenario has been excluded.</p>	<p>The baseline is predefined in the applied methodology.</p>
<p>79. The DOE shall determine whether the most plausible baseline scenario identified is reasonable by validating the assumptions, calculations and rationales used in the PDD.</p>	<p>The baseline is predefined in the applied methodology.</p>

<p>It shall determine whether documents and sources referred to in the PDD are correctly quoted and interpreted.</p> <p>The DOE shall cross-check the information provided in the PDD with other verifiable and credible sources, such as local expert opinion, if available.</p>	
<p>80. The DOE shall determine whether the PDD provides a description of the identified baseline scenario, including a description of the technology that would be employed and/or the activities that would take place in the absence of the proposed CDM project activity.</p>	<p>PP has described the baseline scenario in the final PDD^{/3/}.</p>
<p>81. The DOE shall determine whether, drawing on its knowledge of the sector and/or advice from local experts, all applicable CDM rules and requirements have been taken into account in the identification of the baseline scenario for the proposed CDM project activity, as well as relevant national and/or sectoral policies, regulations and circumstances, such as sectoral reform initiatives, local fuel availability, power sector expansion plans, and the economic situation in the project sector.</p> <p>Two types of national and/or sectoral policies or regulations have to be taken into account:</p> <p>(a) National and/or sectoral policies or regulations that give comparative advantages to more emissions-intensive technologies or fuels over less emissions-intensive technologies or fuels, otherwise known as policies that increase GHG emissions, and are called type E+ policies.</p> <p>For this type of national and/or sectoral policies or regulations, only those that have been implemented before the adoption of the Kyoto Protocol by the Conference of the Parties (COP) (decision 1/CP.3, 11 December 1997) shall be taken into account when identifying a baseline scenario.</p> <p>If such national and/or sectoral policies or regulations were implemented since the adoption of the Kyoto Protocol, the baseline scenario shall refer to a hypothetical situation without the national and/or sectoral policies or regulations being in place;</p> <p>(b) National and/or sectoral policies or regulations that give comparative advantages to less emissions-intensive technologies over more emissions-intensive technologies (e.g. public subsidies to promote the diffusion of renewable energy or to finance energy efficiency programmes), otherwise known as policies that decrease GHG emissions, and are called type E- policies.</p> <p>For this type of national and/or sectoral policies or regulations, those that have been implemented since the adoption by the COP of the modalities and procedures for the CDM need not be taken</p>	<p>PP is the independent power producer in Indonesia. The validation has checked that there is no current law that mandates an independent power producer (IPP) or any potential power producers to develop hydroelectric power plants in Indonesia; however as per the national policy (Presidential Regulation (2006; Regulation no: 05/2006) Kebijakan Energi Nasional (National Energy Policy^{/15/}) document, the government does aim to increase the usage of both coal fired and renewable energy plants (including Hyo power plants) in national Energy mix. However there are no incentives or special schemes available for setting up of a hydro power plant. The validation team has also reviewed the Indonesia President Decree No. 4/2010^{/15/}, Indonesia President Decree No. 48/2011^{/15/} and Indonesia President Decree No. 194/2014^{/15/} and found that the government has introduced various fast-track programs to accelerate power generation, with the fast track II program having a specific focus on renewable energy. Hence these can be considered as E- policy since these Government programs give comparative advantage to less emission intensive technologies or fuels such as hydro power plants. The impacts of these policies thus excluded in establishing the baseline scenario as they have been implemented since the adoption of the Marrakesh Accords (11/11/2001). However, the fast track program is voluntary and as such, there are no legal or regulatory requirements that prevent the project activity from occurring or mandates switching over from energy intensive power plant to Hydro power plant in Indonesia. The validation team has found that there are no financial incentives such as government subsidy available to hydro power projects in Indonesia. No national or sectoral policies were found relevant to the project activity and hence have not been considered.</p>

into account in identifying a baseline scenario (i.e. the baseline scenario could refer to a hypothetical situation without the national and/or sectoral policies or regulations being in place).	
Note: Decision 17/CP.7.	
82. The following applies to a proposed CDM project activity using an approved standardized baseline that standardizes the baseline scenario instead of paragraphs 77–81 above: The DOE shall determine whether the description of the identified baseline scenario in the PDD is in accordance with the selected standardized baseline.	PP did not use standardised baseline.
83. The DOE shall describe the steps taken to assess the requirements and state its opinion on whether: (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, regulations and circumstances are considered and listed in the PDD; (e) The applied methodologies have been correctly followed to identify the most plausible baseline scenario and the identified baseline scenario reasonably represents what would occur in the absence of the proposed CDM project activity.	The validation team has checked the national policies available, assumptions made by the PP and confirmed the baseline. In the absence of the project activity, the same amount of electricity would be generated in the Sumatera regional grid which is more GHG intensive.
84. The DOE shall describe other steps taken and sources of information used to cross-check the information contained in the PDD.	The validation team has crosschecked the information contained in the final PDD ^{3/} for establishing the baseline.
85. The following applies to a proposed CDM project activity using an approved standardized baseline that standardizes the baseline scenario instead of paragraphs 83 and 84 above: The DOE shall state its opinion on whether the description of the identified baseline scenario in the PDD is in accordance with the selected standardized baseline.	PP did not use any standardised baseline.
7.6.4. Demonstration of additionality 7.6.4.1. General 86. The DOE shall determine whether the proposed CDM project activity is additional as demonstrated in the PDD. Note: In accordance with decision 3/CMP.1, annex, paragraph 43, "A CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity."	PP has demonstrated the proposed project is additional. The validation team has determined the proposed CDM project activity is additional as demonstrated in the final PDD ^{3/} . The validation opinion of the same is detailed in the Appendix 9 and Appendix 11 of this report.

While specific elements of the assessment of additionality are discussed in further detail below, not all elements discussed below will be applicable to all proposed CDM project activities	
87. The DOE shall assess and verify the reliability and credibility of all data, rationales, assumptions, justifications and documentation provided by the project participants to support the demonstration of additionality. This requires the DOE to critically assess the evidence presented, using local knowledge and sectoral and financial expertise.	The validation team has assessed and verified the reliability and credibility of all data, rationales, assumptions, justifications and documentation provided by the project participants to support the demonstration of additionality. The validation opinion of the same is detailed in the Appendix 9 and Appendix 11 of this report.
88. If required by the applied methodologies, the DOE shall consider methodological tools and guidelines provided by the Board to demonstrate the additionality of proposed CDM project activities. The DOE shall also consider specific complementary or alternative requirements included in the applied methodologies for demonstrating the additionality of the proposed CDM project activity.	As per para 29 of the applied methodology, The additionality of the project activity shall be demonstrated and assessed using the latest version of the "TOOL01: Tool for the demonstration and assessment of additionality v7.0 ^{2/} ". The validation opinion of the same is detailed in Appendix 9 of this report.
89. The following applies to a proposed CDM project activity using an approved standardized baseline that standardizes additionality instead of paragraphs 87 and 88 above and 96–109 below: The DOE shall assess whether the proposed CDM project activity meets the additionality criteria (e.g. positive lists of technologies) in the applied standardized baseline.	PP did not use any standardised baseline.
90. The DOE shall describe all steps taken and sources of information used to cross-check the information contained in the PDD. The DOE shall describe how it has determined that the evidence assessed is credible, where appropriate.	The validation team has assessed all the information contained in the final PDD ^{3/} . The validation opinion of the same is detailed in the Appendix 9 of this report.
7.6.4.2. Identification of alternatives 91. The requirements contained in paragraphs 92–95 below are not applicable to a proposed CDM project activity using an approved standardized baseline that standardizes the baseline scenario.	Baseline is predefined in the applied methodology. The condition is not applicable.
92. Where the baseline scenario is not prescribed in the applied methodologies, the DOE shall assess the list of identified credible alternatives to the proposed CDM project activity in the PDD selected to determine the most realistic baseline scenario.	Baseline is predefined in the applied methodology. The condition is not applicable.
93. The DOE shall assess the list of alternatives given in the PDD and to determine whether: (a) The list of alternatives includes as one of the options that the project activity is undertaken without being registered as a proposed CDM project activity; (b) The list contains all plausible alternatives that the DOE, on the basis of its local and sectoral knowledge, considers to be viable means of supplying the comparable outputs or services that are to be supplied by the proposed CDM project activity; (c) The alternatives comply with all applicable and enforced legislation.	Baseline is predefined in the applied methodology. The condition is not applicable.

94. Where the baseline scenario is prescribed in the applied methodologies, no further analysis is required.	Baseline is predefined in the applied methodology. The condition is not applicable.
95. The DOE shall describe whether it considers the listed alternatives to be credible and complete.	Baseline is predefined in the applied methodology.
7.6.4.3. Investment analysis 96. If investment analysis has been used to demonstrate the additionality of the proposed CDM project activity, the DOE shall determine whether the proposed CDM project activity would not be: (a) The most economically or financially attractive alternative; or (b) Economically or financially feasible without the revenue from the sale of CERs.	PP has used investment analysis to demonstrate the additionality of the proposed CDM project activity. PP has used benchmark analysis to demonstrate additionality. The proposed CDM project would not be financially feasible without the revenue from the sale of CERs.
97. The DOE shall apply the valid version of the "Methodological tool: Investment analysis" as provided by the Board and other relevant provisions.	PP has used Methodological tool: Investment analysis ^{72/} v10.0.(latest version). The validation opinion of the same is detailed in Appendix 11 of this report.
98. The DOE shall determine whether the proposed CDM project activity is not the most economically or financially attractive alternative, or that it is not economically or financially feasible without the CDM: (a) The proposed CDM project activity would produce no financial or economic benefits other than CDM-related income. The DOE shall determine whether the documented costs associated with the proposed CDM project activity and the alternatives identified demonstrate that there is at least one alternative which is less costly than the proposed CDM project activity (b) The proposed CDM project activity is less economically or financially attractive than at least one other credible and realistic alternative; (c) The financial returns of the proposed CDM project activity would be insufficient to justify the required investment. Note: It should be noted the valid version of the "Methodological tool: Investment analysis", and the requirements of specific methodologies may preclude the use of one of these options in certain scenarios.	PP has used investment analysis (step 2 of the additionality tool) to demonstrate the additionality of the proposed CDM project activity. PP has used benchmark analysis to demonstrate additionality. The proposed CDM project would not be financially feasible without the revenue from the sale of CERs.
99. To verify the accuracy of financial calculations carried out for any investment analysis, the DOE shall: (a) Determine the suitability of the financial indicator selected by the project participants and conduct a thorough assessment of all parameters and assumptions used in calculating such financial indicators, and determine the accuracy and suitability of these parameters using available evidence and applying its expertise in relevant accounting practices; (b) Cross-check the parameters against third-party or publicly available sources, such as invoices or	The validation opinion of the additionality is detailed in Appendix 9 and Appendix 11 of this report.

<p>price indices;</p> <p>(c) Review, as appropriate, feasibility reports, public announcements and annual financial reports related to the proposed CDM project activity and the project participants;</p> <p>(d) Assess the correctness of computations carried out and documented by the project participants;</p> <p>(e) Assess, where applicable, the sensitivity analysis by the project participants to determine under what conditions variations in the result would occur, and the likelihood of these conditions.</p>	
<p>100. To confirm the suitability of any benchmark applied in the investment analysis, the DOE shall:</p> <p>(a) Determine whether the type of benchmark applied is suitable for the type of financial indicator presented;</p> <p>(b) Ensure that any risk premiums applied in determining the benchmark reflect the risks associated with the project type or activity;</p> <p>(c) Determine whether it is reasonable to assume that no investment would be made at a rate of return lower than the benchmark.</p>	<p>PP has used post tax project IRR as financial indicator. Accordingly, WACC has taken as appropriate benchmark. The validation opinion on input parameters (cost of equity, cost of debt, weightage of equity and debt, corporate tax) for the calculation of the benchmark is detailed in Appendix 11 of this report.</p>
<p>101. Where the project participants rely on values from feasibility study reports (FSRs) that are approved by national authorities for proposed CDM project activities, the DOE shall determine whether:</p> <p>(a) The FSR is the basis for the decision to proceed with the investment in the project, i.e. that the period of time between the finalization of the FSR and the investment decision is sufficiently short that it is unlikely in the context of the underlying project activity that the input values would have materially changed;</p> <p>(b) The values used in the PDD and associated annexes are fully consistent with the FSR, and where inconsistencies occur the DOE shall assess the appropriateness of the values;</p> <p>(c) The input values from the FSR are valid and applicable at the time of investment decision. The DOE shall confirm this on the basis of its specific local and sectoral expertise and by cross-checking or other appropriate means.</p>	<p>The validation opinion of the additionality is detailed in Appendix 11 of this report.</p>
<p>102. The DOE shall:</p> <p>(a) Describe in detail how the parameters used in any financial calculations, including those taken from the FSR, if applicable, have been validated;</p> <p>(b) Describe how the suitability of any benchmark applied has been assessed;</p> <p>(c) Confirm whether the underlying assumptions are appropriate and the financial calculations are correct.</p>	<p>The validation opinion of the additionality is detailed in Appendix 11 of this report.</p>
<p>7.6.4.4. Barrier analysis</p> <p>103. If barrier analysis was used to demonstrate</p>	<p>PP did not use barrier analysis.</p>

<p>the additionality of the proposed CDM project activity, the DOE shall determine whether the proposed CDM project activity faces barriers that:</p> <p>(a) Prevent the implementation of this type of proposed CDM project activity;</p> <p>Note: Barriers are issues in project implementation that could prevent a potential investor from pursuing the implementation of the proposed CDM project activity. The identified barriers are only sufficient grounds for demonstration of additionality if they would prevent potential project participants from carrying out the proposed CDM project activity without being registered as a CDM project activity.</p> <p>Note: See the valid version of the “Guidelines for objective demonstration and assessment of barriers”.</p> <p>(b) Do not prevent the implementation of at least one of the alternatives.</p>	
<p>104. The DOE shall determine whether issues that have a direct impact on the financial returns of the proposed CDM project activity are not considered barriers and shall be assessed by investment analysis.</p> <p>This does not refer to either:</p> <p>(a) Risk-related barriers, for example risk of technical failure, that could have negative effects on financial performance; or</p> <p>Note: Defined in this context as those issues whose impacts can be expressed in monetary terms with reasonable certainty</p> <p>(b) Barriers related to the unavailability of sources of finance for the project activity.</p>	PP did not use barrier analysis.
<p>105. The DOE shall apply a two-step process in assessing the barrier analysis performed, as follows:</p> <p>(a) Determine whether the barriers are real: The DOE shall assess the available evidence and/or conduct interviews with relevant individuals (including members of industry associations, government officials or local experts if necessary) to determine whether the barriers listed in the PDD exist. The DOE shall determine whether the existence of barriers is substantiated by independent sources of data such as relevant national legislation, surveys of local conditions and national or international statistics. If the existence of a barrier is substantiated only by the opinions of the project participants, the DOE shall not consider this barrier to be adequately substantiated. If the DOE considers, on the basis of its sectoral or local expertise, that a barrier is not real or is not supported by sufficient evidence, it shall raise a</p>	PP did not use barrier analysis.

CAR to have reference to this barrier removed from the project documentation;	
(b) Determine whether the barriers prevent the implementation of the proposed CDM project activity but not the implementation of at least one of the possible alternatives: Since not all barriers present an insurmountable hurdle to a project activity being implemented, the DOE shall apply its local and sectoral expertise to judge whether a barrier or set of barriers would prevent the implementation of the proposed CDM project activity and would not equally prevent implementation of at least one of the possible alternatives, in particular the identified baseline scenario.	PP did not use barrier analysis.
106. The DOE shall: (a) Provide an assessment of each barrier listed in the PDD, which describes how it has undertaken validation of the barrier; (b) Provide an overall determination of the credibility of the barrier analysis performed.	PP did not use barrier analysis.
7.6.4.5. Common practice analysis 107. For proposed large-scale CDM project activities, unless the proposed project type is a first of its kind as determined in accordance with the relevant guidelines, the DOE shall assess whether the project participants have conducted a common practice analysis. Note: This is a test to complement the investment analysis (step 2 of the additionality tool) or barrier analysis (step 3 of the additionality tool) to confirm that the proposed CDM project activity is not widely observed and commonly carried out in the region.	The proposed project is not the first of its kind project in Indonesia. The validation team has assessed the common practice analysis. The validation opinion of the same is detailed in Appendix 12 of this report.
108. The DOE shall use official sources and its local and sectoral expertise to: (a) Assess whether the geographical scope (e.g. the defined region) of the common practice analysis is appropriate for the assessment of common practice related to the project activity's technology or industry type. For certain technologies, the relevant region for assessment will be local and for others it may be transnational/ global. If a region other than the entire host country is chosen, the DOE shall assess the explanation of why this region is more appropriate; (b) Determine to what extent similar and operational projects (e.g. using a similar technology or practice), other than CDM project activities, have been undertaken in the defined region; Note: Registered CDM project activities and proposed CDM project activities that have been published on the UNFCCC website for global stakeholder consultation as part of the validation processes	Geographical scope covers the entire host country by default.

<p>(c) Assess, if similar and operational projects, other than CDM project activities, are already “widely observed and commonly carried out” in the defined region, whether there are essential distinctions between the proposed CDM project activity and the other similar activities.</p>	
<p>109. The DOE shall:</p> <p>(a) Describe how the geographical scope of the common practice analysis has been validated, considering the technology or industry type to which the proposed CDM project activity belongs;</p> <p>(b) Describe how it has undertaken an assessment of the existence of similar projects;</p> <p>(c) Describe how it has assessed the essential distinctions between the proposed CDM project activity and any similar projects that are widely observed and commonly carried out;</p> <p>(d) Confirm whether the proposed CDM project activity is not common practice.</p>	<p>Geographical scope covers the entire host country by default. The validation opinion of the same is detailed in Appendix 12 of this report.</p>
<p>7.6.5. Estimation of emission reductions or net anthropogenic removals</p> <p>110. The DOE shall determine whether the description of how to undertake the ex-ante and ex post calculations of baseline, project and leakage GHG emissions as well as GHG emission reductions to be achieved by the proposed CDM project activity is in accordance with the applied methodologies, the applied standardized baselines, the other applied methodological regulatory documents and, where applicable, the “Standard: Sampling and surveys for CDM project activities and programme of activities”.</p>	<p>PP has used the applied methodology ACM0002 to calculate the baseline emissions, project emissions and leakage emissions. The validation opinion is detailed in Appendix 8 of this report.</p>
<p>111. Where the applied methodologies, the applied standardized baselines or the other applied methodological regulatory documents allow for selection between options for equations or parameters, the DOE shall determine whether adequate justification has been provided (based on the choice of the baseline scenario, context of the proposed CDM project activity and other evidence provided) and that the correct equations and parameters have been used, in accordance with the applied methodologies, the applied standardized baselines and the other applied methodological regulatory documents.</p> <p>Note: For proposed CDM project activities that have both A/R and non-A/R components, in order to avoid double counting of emission sources, the emissions associated with A/R activity shall be accounted for and clearly documented by the proposed A/R CDM project activity (see EB 25 report, paragraphs 38 and 48).</p>	<p>PP has used the applied methodology ACM0002 to calculate the baseline emissions, project emissions and leakage emissions. The validation opinion is detailed in Appendix 8 of this report.</p>
<p>112. The DOE shall verify the justification given in the PDD for the choice of data and parameters used in the equations:</p> <p>(a) Data and parameters fixed ex ante: If data and parameters will not be monitored throughout the crediting period of the proposed CDM project</p>	<p>PP has used the applied methodology ACM0002 to calculate the baseline emissions, project emissions and leakage emissions including ex-ante and ex-post parameters. The validation opinion is detailed in Appendix 8 of this report.</p>

<p>activity but have already been determined and will remain fixed throughout the crediting period, the DOE shall determine whether all data sources and assumptions are appropriate and calculations are correct as applicable to the proposed CDM project activity, and will result in an accurate or otherwise conservative estimate of the emission reductions.</p> <p>If the applied methodologies require that any of these data and parameters be determined in accordance with the “Standard: Sampling and surveys for CDM project activities and programme of activities”, the DOE shall determine whether the sampling efforts were undertaken in accordance with this standard;</p>	
<p>(b) Data and parameters to be monitored: If data and parameters will be monitored or estimated on implementation and hence become available only after validation of the proposed CDM project activity, the DOE shall determine whether the estimates provided in the PDD for these data and parameters are reasonable.</p> <p>If the applied methodologies require that any of these estimates be determined in accordance with the “Standard: Sampling and surveys for CDM project activities and programme of activities”, the DOE shall determine whether the sampling efforts were undertaken in accordance with this standard.</p>	<p>PP has used the applied methodology ACM0002 to calculate the baseline emissions, project emissions and leakage emissions including ex-ante and ex-post parameters. The validation opinion is detailed in Appendix 8 of this report.</p>
<p>113. The DOE shall describe the steps taken to assess the requirements and state its opinion on whether:</p> <p>(a) All assumptions and data used by the project participants are listed in the PDD, including their references and sources;</p> <p>(b) All documentation used by the project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PDD;</p> <p>(c) All values used in the PDD including GWPs are considered reasonable in the context of the proposed CDM project activity;</p> <p>(d) The methodologies and, where applicable, the standardized baselines and the other methodological regulatory documents have been applied correctly to calculate baseline, project and leakage GHG emissions, as well as GHG emission reductions;</p> <p>(e) All estimates of the baseline GHG emissions can be replicated using the data and parameter values provided in the PDD;</p> <p>(f) The sampling efforts were undertaken in accordance with the “Standard: Sampling and surveys for CDM project activities and programme of activities”, where the applied methodologies require that the data and parameters be determined in accordance with this standard.</p>	<p>PP has used the applied methodology ACM0002 to calculate the baseline emissions, project emissions and leakage emissions including ex-ante and ex-post parameters. The validation opinion is detailed in Appendix 8 of this report.</p>
<p>114. The DOE shall describe how it has verified the data and parameters used in the equations, including references to any other data sources used.</p>	<p>PP has used the applied methodology ACM0002 to calculate the baseline emissions, project emissions and leakage emissions including ex-ante and ex-post parameters. The validation opinion is detailed in Appendix 8 of this report.</p>
<p>7.6.6. Monitoring plan</p>	<p>PP has specified the monitoring plan in the final PDD^{3/}.</p>

<p>7.6.6.1. General</p> <p>115. If the project participants included a monitoring plan in the PDD for validation for registration of the proposed CDM project activity, the DOE shall apply the requirements in section 7.6.6.2 below.</p>	
<p>116. If the project participants chose to delay the submission of the monitoring plan for the proposed CDM project activity, the DOE shall apply the requirements in section 7.6.6.3 below.</p>	<p>PP did not opt to delay the submission of monitoring plan.</p>
<p>7.6.6.2. Validation of the monitoring plan</p> <p>117. The DOE shall determine whether the description of the monitoring plan included in the PDD complies with the applied methodologies, the applied standardized baselines, the other applied methodological regulatory documents and, where applicable, the "Standard: Sampling and surveys for CDM project activities and programme of activities"</p>	<p>PP has used the applied methodology ACM0002 to calculate the baseline emissions, project emissions and leakage emissions including monitoring plan. The validation opinion is detailed in Appendix 8 of this report.</p>
<p>118. The DOE shall apply a three-step process to meet the above requirement:</p> <p>(a) To assess compliance of the monitoring plan with the applied methodologies, the applied standardized baselines and the other applied methodological regulatory documents, the DOE shall:</p> <p>(i) Identify the list of parameters required by the applied methodologies, the applied standardized baselines and the other applied methodological regulatory documents by means of document review;</p> <p>(ii) Confirm that the description of the monitoring plan contains all necessary parameters, that they are described, and that the means of monitoring described in the monitoring plan comply with the requirements of the applied methodologies, the applied standardized baselines and the other applied methodological regulatory documents;</p>	<p>PP has used the applied methodology ACM0002 to calculate the baseline emissions, project emissions and leakage emissions including monitoring plan. The validation opinion is detailed in Appendix 8 of this report.</p>
<p>(b) To assess the feasibility of the monitoring plan, the DOE shall, by means of review of the documented procedures, interviews with relevant personnel, project plans and, where conducted in accordance with paragraph 30 or 31 above, any on-site inspection of the proposed CDM project activity, assess whether:</p> <p>(i) The monitoring arrangements described in the monitoring plan are feasible within the project design;</p> <p>(ii) The means of implementation of the monitoring plan, including the data management and quality assurance and quality control procedures, are sufficient to ensure that GHG emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified;</p>	<p>PP has used the applied methodology ACM0002 to calculate the baseline emissions, project emissions and leakage emissions including monitoring plan. The validation opinion is detailed in Appendix 8 of this report.</p>
<p>(c) To determine whether the proposed sampling plan provides parameter value estimates in an unbiased and reliable manner, where the project</p>	<p>PP has used the applied methodology ACM0002 to calculate the baseline emissions, project emissions and leakage emissions including monitoring plan. PP has not</p>

participants applied a sampling approach to determine data and parameters, the DOE shall assess the proposed sampling plan in accordance with the "Standard: Sampling and surveys for CDM project activities and programme of activities".	proposed to use sampling plan. The validation opinion is detailed in Appendix 8 of this report.
119. The DOE shall: (a) State its opinion on the compliance of the monitoring plan with the requirements of the applied methodologies, the applied standardized baselines and the other applied methodological regulatory documents and, where applicable, the "Standard: Sampling and surveys for CDM project activities and programme of activities"; (b) Describe the steps undertaken to assess whether the monitoring arrangements described in the monitoring plan are feasible within the project design; (c) State its opinion on the project participants' ability to implement the monitoring plan.	PP has used the applied methodology ACM0002 to calculate the baseline emissions, project emissions and leakage emissions including monitoring plan. PP has not proposed to use sampling plan. The validation opinion is detailed in Appendix 8 of this report.
7.6.6.3. Delayed validation of monitoring plan 120. The DOE shall confirm whether the project participants chose to delay the submission of the monitoring plan for the proposed CDM project activity	PP did not opt to delay the submission of monitoring plan.
121. The DOE shall determine whether the relevant sections for the monitoring plan in the PDD do not contain the information related to the monitoring plan and clearly state that the delayed submission of the monitoring plan has been chosen by the project participants.	PP did not opt to delay the submission of monitoring plan.
122. The DOE shall document the decision taken by the project participants to delay the submission of the monitoring plan.	PP did not opt to delay the submission of monitoring plan.
7.7. Start date, crediting period type and duration 123. The DOE shall determine whether the project participants specified the following on the start date and crediting period type and duration of the proposed CDM project activity in accordance with relevant requirements in the "CDM project standard for project activities": (a) Start date of the proposed CDM project activity; (b) Expected operational lifetime; (c) Type and duration of the crediting period; (d) Start date of the crediting period.	As per Glossary of CDM terms ^{/16/} v10.0, for a CDM project activity (non-A/R), start date is the date on which the project participants commit to making expenditures for the construction of the main equipment or facility for the CDM project activity. Where a contract is signed for such expenditures, it is the date on which the contract is signed. The validation team has reviewed the offshore equipment supply contract ^{/7/} (dated 24 th October 2016) signed between the current PP and POSCO Engineering Co Ltd. It includes supply of hydraulic turbines, generators, transformers etc. Since signing of supply contract indicates the commitment to making expenditure, the validation team has accepted this date as start date of the project. As per the final PDD ^{/3/} , the lifetime is 30 years. As per the power purchase agreement, the lifetime of the project is 30 years. As per the agreement, PP is obliged to deliver electricity for the lifetime of 30 years. The equipment manufacturer also confirms the same. PP has selected fixed crediting period of 10 years. The crediting period starts from the date of registration of the project as CDM project.
124. The DOE shall assess the start date and crediting period type and duration specified in the PDD by means of a document review, use of	It is already validated as above.

official sources and its local and sectoral expertise, interviews with relevant personnel and/or, where conducted in accordance with paragraph 30 or 31 above, on-site inspection(s).	
125. The DOE shall describe the steps taken to assess and state its opinion on the start date and crediting period type and duration specified in the PDD with the relevant requirements in the "CDM project standard for project activities".	It is already validated as above.
7.8. Environmental impacts 126. The DOE shall determine whether the project participants conducted an analysis of the environmental impacts of the proposed CDM project activity, including transboundary impacts, and whether those impacts are considered significant by the project participants or by the host Party.	Under Indonesian legislation the Project is required to undertake an Analisis Mengenai Dampak Lingkungan (AMDAL) to satisfy Indonesian legislative requirements. An AMDAL was completed in November 2014 and approved by the Ministry of Environment in February 2015. Under the IFC PS the Project is classified as Category A (Projects with potential significant adverse social or environmental impacts). This classification requires the Project to develop a full ESIA and develop environmental & social (E&S) management plans to meet the IFC PS.
127. The DOE shall also determine whether the project participants conducted an environmental impact assessment, if considered significant by the project participants or by the host Party, in accordance with the host Party's procedures.	PP has conducted ESIA study ^{18/} prepared by Mott MacDonald. The validation team has reviewed the same and accepted.
128. The DOE shall assess the above requirements by means of a document review and/or using local official sources and expertise.	PP has conducted ESIA study ^{18/} prepared by Mott MacDonald. The validation team has reviewed the same and accepted.
129. The DOE shall state whether the project participants have undertaken an analysis of environmental impacts and, if considered significant by the project participants or by the host Party, an environmental impact assessment in accordance with procedures as required by the host Party.	Under Indonesian legislation the Project is required to undertake an Analisis Mengenai Dampak Lingkungan (AMDAL) to satisfy Indonesian legislative requirements. An AMDAL was completed in November 2014 and approved by the Ministry of Environment in February 2015. Under the IFC PS the Project is classified as Category A (Projects with potential significant adverse social or environmental impacts). This classification requires the Project to develop a full ESIA and develop environmental & social (E&S) management plans to meet the IFC PS.
7.9. Local stakeholder consultation 130. The DOE shall determine whether the project participants have completed the local stakeholder consultation in accordance with the relevant requirements in the "CDM project standard for project activities".	The validation team has confirmed that PP had completed LSC meeting in line with requirements of PS-PA v2.0.
131. The DOE shall determine whether there are applicable host Party rules on local stakeholder consultation. Where such rules exist, the DOE shall, by means of document review and interviews with local stakeholders and/or the DNA, as appropriate, determine whether the local stakeholder consultation was conducted in accordance with the rules.	Under Indonesian EIA legal requirements, consultation with the public is conducted throughout the project development process at the following stages: 1.Pre-arrangement stage of the project (before Analisis Mengenai Dampak Lingkungan (AMDAL) documents are prepared) – public are informed of the project by the competent authority. 2.AMDAL Terms of Reference (KA-ANDAL) preparation – public have 10 working days to provide opinions before the preparation of the KA-ANDAL, and can also comment on the draft KA-ANDAL.
132. If applicable host Party rules on local stakeholder consultation do not exist, the DOE shall, by means of document review and interviews with local stakeholders and/or the DNA as appropriate, determine whether the local stakeholder consultation was conducted in accordance with the requirements in the "CDM	It is already validated in Appendix 5 of this report.

<p>project standard for project activities” pertaining to:</p> <p>(a) Scope of local stakeholder consultation;</p> <p>(b) Minimum group of stakeholders to be involved;</p> <p>(c) Means for inviting stakeholders’ participation;</p> <p>(d) Information to be made available to stakeholders;</p> <p>(e) Conduct of consultation;</p> <p>(f) Summary of comments received;</p> <p>(g) Consideration of comments received;</p> <p>(h) Timing of local stakeholder consultation.</p>	
<p>133. If the DOE used interviews with local stakeholders and/or the DNA as a means of validation as referred to in paragraphs 131 and 132 above, and if the local stakeholders and/or the DNA provided no response to the DOE’s request for an interview within 14 days of the request being made, the DOE may proceed with the information available.</p>	<p>The validation team has interviewed the local stakeholders during the skype meeting conducted on 16th June 2020. There was no comment from them.</p>
<p>134. If the DOE, after the completion of the local stakeholder consultation, receives complaints from local stakeholders on the handling of the outcome of the consultation forwarded by the DNA in accordance with the “CDM project standard for project activities”, it shall promptly forward them to the project participants and thereafter determine whether the project participants have duly taken them into account.</p> <p>The DOE may proceed with the validation with the complaints received within 14 days of the request for forwarding, if any.</p>	<p>The validation team has interviewed the local stakeholders during the skype meeting conducted on 16th June 2020. There was no comment from them.</p>
<p>135. The DOE shall determine whether changes to the PDD are made after the local stakeholder consultation.</p> <p>If the DOE identifies such changes, it shall assess whether:</p> <p>(a) The comments received through the local stakeholder consultation are still valid;</p> <p>(b) The scope of the local stakeholders engaged is still valid.</p>	<p>There was no change in design after the LSC meeting.</p>
<p>136. If significant changes to the project design occurs after the local stakeholder consultation, the DOE shall determine whether a new local stakeholder consultation was conducted with relevant stakeholders in accordance with paragraphs 131 and 132 above.</p>	<p>There was no change in design after the LSC meeting.</p>
<p>137. The DOE shall:</p> <p>(a) Describe the steps taken to assess the adequacy of the local stakeholder consultation;</p> <p>(b) State its opinion on the adequacy of the local stakeholder consultation</p>	<p>The validation team has confirmed that LSC meeting complying with all the requirements of PS-PA v2.0</p>
<p>7.10. Sustainable development co-benefits</p> <p>138. The DOE shall state whether a document</p>	<p>PP mentioned the environmental and social –economic benefits of the project activity in the section A.1 of final</p>

describing how the project participants intend to monitor sustainable development co-benefits of the proposed CDM project activity was developed by the project participants separately from the monitoring plan.	PDD ^{/3/} . But it intends not to monitor separately. PP has not developed any document describing how they intend to monitor sustainable development co-benefits. Since this is not a mandatory requirement, the validation team has accepted it.
7.11. Approval and authorization 7.11.1. Approval 139. The DOE shall determine whether the designated national authority (DNA) of each Party indicated in the PDD as being involved in the proposed CDM project activity has provided a written letter of approval.	There is one party involved in this project activity. Host party is Indonesia. PT. Binsar Natorang Energi, the PP, has obtained LoA letter ^{/4/} from Ministry of Environment and Forestry –Directorate General of Climate Change.
140. The DOE shall determine whether each letter provided by the DNA of each Party involved in the proposed CDM project activity confirms that: (a) The Party is a Party to the Kyoto Protocol; (b) The participation in the CDM project activity is voluntary; (c) In the case of the host Party, the CDM project activity contributes to achieving the sustainable development of the country; (d) It refers to the precise title of the CDM project activity in the PDD being submitted for registration (i.e. there shall be no difference between the title in the letter and that in the PDD).	The validation team has reviewed the LoA letter. Ministry of Environment and Forestry –Directorate General of Climate Change has issued the LoA (Ref no:S305/PPC/MS2R/KLN.0/10/2020 dated 26 th October 2020) wherein the following was confirmed. 1. Republic of Indonesia is party to the Kyoto protocol by ratifying it on 28 th July 2004. 2. The participation of Republic of Indonesia in the proposed CDM project is voluntary 3. LoA letter ^{/4/} confirms that proposed CDM project activity assists the host Party in achieving sustainable development. 4. The LoA letter ^{/4/} refers to the proposed Project activity.
141. The DOE shall determine whether the letter of approval is unconditional with respect to paragraph 140(a)–(d) above.	The validation team has reviewed the LoA letter. There is no condition attached to it.
142. The DOE shall determine whether the letter of approval indicates that a proposed CDM project activity or proposed bundled small-scale CDM project activities have only one host Party in which the project activity(ies) are located, as set out in the PDD.	There is one party involved in this project activity. Host party is Indonesia. LoA letter ^{/4/} confirms this.
143. The DOE shall determine whether the letter of approval has been issued by the respective Party's DNA and is valid for the proposed CDM project activity under validation. Note: A list of DNAs is available on the UNFCCC CDM website	The validation team has reviewed the CDM website ^{/8/} https://cdm.unfccc.int/DNA/index.html and confirmed that DNA of party giving approval is correct.
144. If the DOE doubts the authenticity of the letter of approval, it shall verify with the DNA that the letter of approval is authentic.	The validation team has confirmed the authenticity of the LoA letter ^{/4/} .
145. The DOE shall, for each Party involved: (a) Indicate whether a letter of approval has been received, referencing the letter itself and any supporting documentation; (b) Indicate whether the DOE received the letter of approval from the project participants, or directly from the DNA; (c) Indicate the means of validation employed to assess the authenticity of the letter of approval if paragraph 144 above applies; (d) Include a statement on whether the letter of approval meets the requirements referred to in	The validation team has reviewed the LoA letter ^{/4/} . Ministry of Environment and Forestry –Directorate General of Climate Change has issued the LoA (Ref no:S305/PPC/MS2R/KLN.0/10/2020 dated 26 th October 2020) wherein the following was confirmed. 1. Republic of Indonesia is party to the Kyoto protocol by ratifying it on 28 th July 2004. 2. The participation of Republic of Indonesia in the proposed CDM project is voluntary 3. LoA letter ^{/4/} confirms that proposed CDM project activity assists the host Party in achieving sustainable development. 4. The LoA letter ^{/4/} refers to the proposed Project activity.

paragraphs 140–144 above, as applicable.	The validation team has received the LoA letter ^{/4/} from the PP. LoA meeting the requirements referred to in paragraphs 140–144 above.
146. If the letter of approval refers to a specific version of the validation report and the DOE therefore is unable to submit this precise version of the validation report, the DOE shall: (a) Insert a statement in the validation report to indicate that the final letter of approval has not been received and that a request for registration will not be submitted until it has been received; or (b) Update the validation report to reflect the receipt of the letter of approval. If this option is selected, the whole number of the version number of the validation report shall remain unchanged and the tens decimal place shall be increased (e.g. from 1.0 to 1.1). The DOE shall confirm in the validation report that the confirmation of the receipt of the letter of approval is the only change that has been made to the version referred to in the letter of approval.	LoA letter ^{/4/} does not refer to any validation report.
7.11.2. Authorization 147. The DOE shall determine whether each project participant of the proposed CDM project activity has been authorized to participate in the project activity by at least one Party involved in the letter of approval referred to in paragraph 139 above or in a separate authorization letter.	PT. Binsar Natorang Energi is the only PP. LoA letter ^{/4/} authorised by the host DNA to participate in the project activity.
148. The DOE shall confirm that the project participants of the proposed CDM project activity are listed in the PDD and that this information is consistent with the information provided in the section that contains the contact information of project participants.	The validation team has confirmed that PP is listed in the final PDD ^{/3/} and that this information is consistent with the information provided in the section (Section A.4 and Appendix 1 of final PDD ^{/3/}) that contains the contact information of PP.
149. The DOE shall confirm that no entities other than those authorized as the project participants of the proposed CDM project activity are included in these sections of the PDD.	There is no entity involved in the project.
150. The DOE shall confirm that the authorization has been issued from the relevant DNA, and if in doubt, shall verify with the DNA that the authorization is valid for the project participants of the proposed CDM project activity.	The validation team has confirmed that the LoA has been issued from the host country DNA only.
151. The DOE shall, for each project participant of the proposed CDM project activity: (a) Indicate whether the participation has been authorized by a Party to the Kyoto Protocol; (b) Describe the means of validation used to support the conclusions.	The validation team has reviewed the LoA letter ^{/4/} and confirmed that participation of the PP is authorized by the host party DNA which is a Party to the Kyoto Protocol (since 28 th July 2004).
7.12. Modalities of communication 7.12.1. General 152. The DOE shall validate the corporate identity of all project participants and focal points included in the Modalities of Communication (MoC) statement, as well as the personal identities, including specimen signatures and employment status, of their authorized signatories.	The validation team has confirmed corporate identity of the PP as well as the personal identities. PP is the sole focal point.
153. The DOE shall validate the identities referred to in paragraph 152 above through: (a) Directly checking evidence of corporate and	The validation team has confirmed from written confirmation from the PP.

<p>personal identities and other relevant documentation;</p> <p>(b) Notarized documentation; or</p> <p>(c) Written confirmation from the project participant that submits the MoC statement that all corporate and personal details, including specimen signatures, are valid and accurate.</p>			
154. When the DOE validates the identities by applying paragraph 153(c) above, the DOE shall ensure that the MoC statement is received from a project participant with whom the DOE has a contractual relationship.	MoC is received from the PP/focal point to whom EPIC is having the agreement.		
155. When the DOE validates the identities by applying paragraph 153(c) above, the DOE shall ensure that the official who submits the MoC statement to the DOE and the official who signed the written confirmation (if a different person) are duly authorized to do so on behalf of the respective project participant.	The validation team has confirmed only authorised personnel have concluded the MoC letter.		
156. If the DOE is unable to validate the requirements by applying paragraph 153(a), (b) or (c) above, the DOE may perform further validation activities in order to confirm that the corporate and personal details, employment status and specimen signatures included in the MoC statement are valid and accurate, and comply with the requirements in this section.	This is not applicable.		
157. The DOE shall state that it has performed due diligence on the MoC statement in accordance with the requirements in this section.	The validation team has confirmed it has performed due diligence on the MoC statement in accordance with the requirements in this section.		
<p>7.12.2. Modalities of the communication statement</p> <p>158. The DOE shall validate that the MoC statement has been correctly completed and duly authorized.</p>	The validation team has confirmed that MoC statement is correctly completed and duly authorized.		
<p>159. The DOE shall check that:</p> <p>(a) The valid version of the form "Modalities of Communication statement" (CDM-MOC-FORM) has been used;</p> <p>(b) The information required as per the CDM-MOC-FORM, including its annex 1, is correctly completed;</p> <p>(c) The project participants' authorized signatories signing the CDM-MOC-FORM correspond to the project participants' authorized signatories included in the CDM-MOC-FORM, annex 1.</p>	<p>PP has used latest version of MoC form (v3.0). https://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20170523143706239/Reg_Form19.doc</p> <p>The information required as per the MoC form including its annex 1, is correctly completed. PP's authorized signatories signing the MOC correspond to the PP's authorized signatories included in the MoC, annex 1.</p>		
160. The DOE shall state that the MoC statement was completed and duly authorized in accordance with the valid version of the form and the information required therein.	PP has used latest version of MoC form (v3.0). MoC form is duly completed and authorized.		
<p>7.17. Global stakeholder consultation</p> <p>254. The DOE shall determine whether authentic and relevant comments in the global stakeholder consultation were taken into due account in the PDD of the proposed CDM project activity.</p>	Date of CDM events	Validation opinion	
	Date of GSCP = 31 st January 2012 to 29 th February 2012	The project was first uploaded for GSCP from 31 st January 2012 to 29 th February 2012 by Bureau Veritas. PP at that time was E.ON Carbon Sourcing GmbH. There was no comment received.	

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	Date of 2 nd GSCP by EPIC=21 st Feb 2020 to 21 st March 2020	The validation team has reviewed the CDM website and confirmed. There was no comment received.
255. The DOE shall acknowledge receipt of all submitted comments on the PDD of the proposed CDM project activity.	This is not applicable.	
256. In case of doubt, the DOE shall determine the authenticity of the name and contact details of the individual or organization on whose behalf the comments have been submitted.	This is not applicable.	
257. Once the DOE has determined which submitted comments are authentic, it shall contact the secretariat to make them publicly available	This is not applicable.	
258. The DOE shall determine whether the authentic comments are relevant to the following defined scope of comments: (a) The comment discusses issues specific to the proposed CDM project activity; (b) The comment discusses issues related to the compliance with the relevant CDM rules and regulations.	This is not applicable.	
259. The DOE shall request the project participants to address all the comments that it determined to be authentic and relevant in accordance with paragraphs 256 and 258 above.	This is not applicable.	
260. If a comment indicates that the proposed CDM project activity does not comply with the CDM rules and requirements but are not substantiated, the DOE shall request a clarification from the entity that provided the comment. Upon receiving the clarification, the DOE shall determine whether a further clarification request is required. If no additional information or substantiation is provided within 14 days of the request for clarification being made, the DOE shall request the project participants to address the comments as originally provided.	This is not applicable.	
261. The DOE shall determine whether changes to the PDD have been made after the publication of the PDD for global stakeholder consultation.	There was no change in the PDD after GSCP.	
262. A DOE shall make the revised PDD publicly available for global stakeholder consultation in accordance with the "CDM project cycle procedure for project activities" if it determines that: (a) The project participants that have a contractual relationship with the DOE have been replaced; (b) Significant changes have been made to the project design; or (c) The selected methodologies, the selected standardized baselines and/or the combination thereof have been changed by the project participants, unless the change only involves the removal and no addition of methodologies and/or standardized baselines, and the removal of the methodologies and/or the standardized baselines does not affect the physical design of, and the end-	Date of CDM events	Validation opinion
	Date of validation contract signed between outgoing DOE and outgoing PP =10 th November 2011	The validation contract was first signed between E.ON Carbon Sourcing GmbH and Bureau Veritas.
	Date of GSCP = 31 st January 2012 to 29 th February 2012	The project was first uploaded for GSCP from 31 st January 2012 to 29 th February 2012 by Bureau Veritas. PP at that time was E.ON Carbon Sourcing GmbH
	Date of incoming DOE agreement =December 2019	PP and EPIC signed validation agreement dated December 2019.
	Date of 2 nd GSCP	The validation team has reviewed

use services provided by, the proposed CDM project activity.	<table border="1"> <tr> <td>by EPIC=21st Feb 2020 to 21st March 2020</td><td>the CDM website and confirmed.</td></tr> </table> <p>There was no change in the PDD after GSCP.</p>	by EPIC=21 st Feb 2020 to 21 st March 2020	the CDM website and confirmed.
by EPIC=21 st Feb 2020 to 21 st March 2020	the CDM website and confirmed.		
263. If the DOE determines that significant changes have been made to the project design, the DOE may seek guidance from the Board on whether the revised PDD shall be published for global stakeholder consultation in accordance with the "CDM project cycle procedure for project activities".	There was no change in the PDD after GSCP.		
<p>264. The DOE shall report the details of the actions taken to:</p> <p>(a) Authenticate the information on the submitters of the comments in case of doubt;</p> <p>(b) Determine the relevance of the authentic comments to the defined scope of comments;</p> <p>(c) Take due account of the authentic and relevant comments, including dates of receipt, responses by the project participants and responses by the DOE.</p>	This is not applicable.		
265. If the DOE identifies changes to the PDD after the publication of them for global stakeholder consultation, the DOE shall state its opinion on whether the publication of the revised PDD for global stakeholder consultation was necessary in accordance with paragraph 262 above	There was no change in the PDD after GSCP.		
<p>7.18. Validation status and outcomes, opinion and report</p> <p>7.18.1. Validation status and outcomes</p> <p>266. The DOE shall provide an update of the status of its validation activity in accordance with the "CDM project cycle procedure for project activities".</p>	EPIC has finalised a positive opinion.		
<p>7.18.2. Validation opinion</p> <p>267. The DOE shall include a statement on the likelihood of the proposed CDM project activity achieving the anticipated GHG emission reductions or net anthropogenic GHG removals stated in the PDD.</p>	The validation team has confirmed that proposed CDM project activity achieving the anticipated GHG emission reductions stated in the final PDD ^{/3/} .		
<p>268. The DOE shall notify the project participants of the validation outcome.</p> <p>The notification to the project participants shall include:</p> <p>(a) A confirmation of validation and date of submission of the validation report as part of the request for registration of the proposed CDM project activity to the Board; or</p> <p>(b) An explanation of reasons for non-acceptance if the proposed CDM project activity, as documented, is determined not to fulfil the requirements for validation.</p>	PP has been informed about the positive opinion of the project. The confirmation of positive validation and the date of submission of the validation report.		
<p>269. The DOE shall provide either:</p> <p>(a) A positive validation opinion in its validation report if the DOE determines that the proposed</p>	EPIC has provided positive validation opinion in its validation report as the validation team has determined that the proposed CDM project activity complies with the		

<p>CDM project activity complies with the applicable CDM rules and requirements; or</p> <p>(b) A negative validation opinion in its validation report explaining the reason for its opinion if the DOE determines that the proposed CDM project activity does not fulfil the applicable CDM rules and requirements.</p> <p>Note: This does not cover the case in which the project participants failed to inform the secretariat, or informed it but not within the required time frame, of the progress of the proposed CDM project activity every subsequent two years after the initial notification of prior consideration of the CDM in accordance with the "CDM project cycle procedure"</p>	<p>applicable CDM rules and requirements.</p>
<p>270. The DOE shall include the following in its opinion:</p> <p>(a) A summary of the validation method and process used and the validation criteria applied;</p> <p>(b) A description of project components or issues not covered by the validation process;</p> <p>(c) A summary of the validation conclusions;</p> <p>(d) A statement on the validation of the expected GHG emission reductions or net anthropogenic GHG removals;</p> <p>(e) A statement on whether the proposed CDM project activity meets the applicable CDM rules and requirements.</p>	<p>The validation report contains summary of the validation method and process used and the validation criteria applied, statement on whether the proposed CDM project activity meets the applicable CDM rules and requirements and validation conclusions.</p> <p>The validation team has provided validation method and processes involved in the appendices of this report. The validation process covered all the requirements of CDM rules. The expected GHG reductions from the project are 216,320 tCO₂e per year.</p> <p>The validation team has confirmed that proposed CDM project activity meets the applicable CDM rules and requirements.</p>
<p>7.18.3. Validation report</p> <p>271. The DOE shall report the results of its assessment in the validation report.</p>	<p>The validation team has confirmed that proposed CDM project activity meets the applicable CDM rules and requirements. Refer the appendices of this report for details.</p>
<p>272. In its validation report, the DOE shall provide the following:</p> <p>(a) A summary of the validation process and its conclusions;</p> <p>(b) Results of the dialogue between the DOE and the project participants, as well as any adjustments made to the project design following the stakeholder consultation.</p> <p>It shall reflect the responses to CARs and CLs, the identification of FARs, and discussions on and revisions to the project documentation;</p> <p>(c) All its applied approaches, findings and conclusions on the requirements set out in sections 7.2–7.17 above;</p> <p>(d) A validation opinion;</p> <p>(e) A list of interviewees, documents reviewed, sampling approaches used by the DOE and, where conducted in accordance with paragraph 30 or 31 above, outline of on-site inspections.</p> <p>Where the DOE applied a sampling approach to</p>	<p>The validation team has confirmed that proposed CDM project activity meets the applicable CDM rules and requirements. Refer the appendices of this report for details.</p> <p>Refer Appendix 4 of this report for CAR/CL/FAR resolution.</p> <p>Other details such as name of the interviewees, documents reviewed, details of validation team/TR team, quality control procedure is mentioned.</p>

<p>the on-site inspection, the DOE shall include a description of how the sample size was determined and how the field check was carried out;</p> <p>(f) Details of the validation team, technical experts and internal technical reviewers involved, together with their roles in the validation activity and, where conducted in accordance with paragraph 30 or 31 above, details of who conducted the on-site inspection;</p> <p>(g) Information on quality control within the team and in the validation process;</p> <p>(h) Appointment certificates or curricula vitae of the DOE's validation team members, technical experts and internal technical reviewers for the proposed CDM project activity.</p>	
<p>273. If the DNA has forwarded complaints from local stakeholders to the DOE during the validation in accordance with paragraph 134 above, the DOE shall, once the request for registration is published on the UNFCCC CDM website, inform the DNA and the complainants of the publication of the validation report.</p>	<p>This is not applicable.</p>

Appendix 7: PCP-PA v2.0 requirements

Requirements of PCP-PA v2.0 requirements	Validation opinion
<p>1. Introduction</p> <p>1.1. Background</p> <p>1. The Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (CMP), at its first session, established the basis of a regulatory framework of the clean development mechanism (CDM) to implement Article 12 of the Kyoto Protocol through the annex to decision 3/CMP.1, the annexes II, III and IV to decision 4/CMP.1, the annex to decision 5/CMP.1, the annex to decision 6/CMP.1 and the annex to decision 10/CMP.7.</p> <p>The CMP revised provisions in these decisions through new decisions in subsequent sessions and revoked annexes III and IV to decision 4/CMP.1.</p> <p>In addition, the Executive Board of the clean development mechanism (hereinafter referred to as the Board) operationalized the CDM process by adopting various standards, procedures and guidelines and revised them, as appropriate, with a view to improving the CDM process.</p>	<p>The validation team has understood the requirements of decision made during CMP meetings.</p>
<p>1.2. Objectives</p> <p>2. The objectives of the "CDM project cycle procedure for project activities" (hereinafter referred to as this procedure) are to:</p> <p>(a) Consolidate all provisions relating to the project cycle processes for CDM project activities, including their development, registration, post-registration changes and renewal of crediting period, as well as the issuance of certified emission reductions (CERs) resulting from the implementation of CDM project</p>	<p>The validation team has followed the objectives of the procedure during validation of the project.</p>

<p>activities;</p> <p>(b) Enhance the overall efficiency and integrity of the CDM.</p>							
<p>2. Scope, applicability and entry into force</p> <p>2.1. General</p> <p>3. This procedure describes the administrative steps to follow for project participants, designated operational entities (DOEs), other stakeholders, the Board and the UNFCCC secretariat (hereinafter referred to as the secretariat) for registration of a CDM project activity, issuance of CERs and related actions.</p> <p>2.2. Entry into force</p> <p>4. Version 02.0 of this procedure enters into force on 1 January 2019.</p> <p>3. Terms and definitions</p> <p>5. In addition to the definitions in the “Glossary of CDM terms”, the following terms apply in this procedure:</p> <p>(a) “Shall” is used to indicate requirements to be followed;</p> <p>(b) “Should” is used to indicate that among several possibilities, one course of action is recommended as particularly suitable;</p> <p>(c) “May” is used to indicate what is permitted</p>	<p>The validation team has used v2.0 of the PCP-PA^{/1/}. The validation team checked if PP has followed administrative steps for registration of a CDM project activity.</p>						
<p>4. Pre-registration activities</p> <p>4.1. Prior consideration of the clean development mechanism</p> <p>6. If the start date of a proposed CDM project activity, as determined in accordance with the “CDM project standard for project activities”, is prior to the date of publication of the project design document (PDD) for global stakeholder consultation referred to in paragraph 18 below, the project participants shall demonstrate that the CDM benefits were considered necessary in the decision to undertake the project as a project activity in accordance with paragraphs 7 or 12 below.</p> <p>If the start date of the project activity is on or after the date of publication of the PDD for global stakeholder consultation, such demonstration is not necessary.</p>	<table border="1"> <thead> <tr> <th>Date of CDM events</th><th>Validation opinion</th></tr> </thead> <tbody> <tr> <td>Date of GSCP = 31st January 2012 to 29th February 2012</td><td>The project was first uploaded for GSCP from 31st January 2012 to 29th February 2012 by Bureau Veritas. PP at that time was E.ON Carbon Sourcing GmbH</td></tr> <tr> <td>Start date of the project= 24th October 2016</td><td>As per glossary of CDM terms^{/16/} v10.0, For a CDM project activity, the date on which the PP commit to making expenditures for the construction of the main equipment or facility. The validation team has reviewed the offshore equipment supply contract^{/7/} signed between the current PP and POSCO Engineering Co Ltd. Since signing of supply contract indicates the commitment to making expenditure, the validation team has accepted this date as start date of the project. As per the final PDD^{/3/} start date of the project is 24th October 2016. Since</td></tr> </tbody> </table>	Date of CDM events	Validation opinion	Date of GSCP = 31 st January 2012 to 29 th February 2012	The project was first uploaded for GSCP from 31 st January 2012 to 29 th February 2012 by Bureau Veritas. PP at that time was E.ON Carbon Sourcing GmbH	Start date of the project= 24 th October 2016	As per glossary of CDM terms ^{/16/} v10.0, For a CDM project activity, the date on which the PP commit to making expenditures for the construction of the main equipment or facility. The validation team has reviewed the offshore equipment supply contract ^{/7/} signed between the current PP and POSCO Engineering Co Ltd. Since signing of supply contract indicates the commitment to making expenditure, the validation team has accepted this date as start date of the project. As per the final PDD ^{/3/} start date of the project is 24 th October 2016. Since
Date of CDM events	Validation opinion						
Date of GSCP = 31 st January 2012 to 29 th February 2012	The project was first uploaded for GSCP from 31 st January 2012 to 29 th February 2012 by Bureau Veritas. PP at that time was E.ON Carbon Sourcing GmbH						
Start date of the project= 24 th October 2016	As per glossary of CDM terms ^{/16/} v10.0, For a CDM project activity, the date on which the PP commit to making expenditures for the construction of the main equipment or facility. The validation team has reviewed the offshore equipment supply contract ^{/7/} signed between the current PP and POSCO Engineering Co Ltd. Since signing of supply contract indicates the commitment to making expenditure, the validation team has accepted this date as start date of the project. As per the final PDD ^{/3/} start date of the project is 24 th October 2016. Since						

CDM-VAL-FORM

		the start date of the project is after date of publication of the PDD for GSCP, prior consideration is not required.
	Date of 2 nd GSCP by EPIC=21 st Feb 2020 to 21 st March 2020	The validation team has reviewed the CDM website and confirmed.
<p>7. For a proposed CDM project activity with a start date on or after 2 August 2008, the project participants shall notify the designated national authority (DNA) of the host Party of the project activity, if the DNA exists, and the secretariat in writing of the commencement of the project activity and their intention to seek the CDM status for the project activity, or, through a DOE, publish the PDD for global stakeholder consultation in accordance with paragraphs 18–21 below, within 180 days of the start date of the project activity as defined in the “CDM project standard for project activities”, by using the “CDM project activity prior consideration form” (CDM-PC-FORM) or the relevant PDD form, respectively.</p>	Date of CDM events	Validation opinion
	Date of prior consideration letter to UNFCCC =15 th August 2011	The validation team has reviewed the CDM website ^{/13/} and confirmed the same. Prior consideration form also checked by the validation team and found to be acceptable.
	Date of GSCP = 31 st January 2012 to 29 th February 2012	The project was first uploaded for GSCP from 31 st January 2012 to 29 th February 2012 by Bureau Veritas. PP at that time was E.ON Carbon Sourcing GmbH. The project was published for GSCP before start date of the project. So the condition is satisfied.
	Date of prior consideration letter to UNFCCC by LGI (LGI being shareholder) =17 th June 2016	The validation team has reviewed the CDM website ^{/13/} and confirmed the date of receipt of prior consideration form.
	Start date of the project= 24 th October 2016 (after 2 nd August 2008)	As per the final PDD ^{/3/} , start date of the project is 24 th October 2016. Since the start date of the project is after date of publication of the PDD for GSCP, prior consideration is not required.
	Date of prior consideration letter to UNFCCC by PP =14 th May 2018	The validation team has reviewed the CDM website ^{/13/} and confirmed the date of receipt of progress prior consideration form.
	Date of 2 nd GSCP by EPIC=21 st Feb 2020 to 21 st March 2020	The validation team has reviewed the CDM website ^{/3/} and confirmed.
<p>8. The notification to be submitted according to paragraph 7 above shall include information on: the location of the proposed CDM project activity, indicating country, region and the precise geographical location(s) (geo-coordinates, or other adequate means to identify the project location); and the technology under consideration for the project activity.</p>	In view of the above CDM events, the validation team has accepted that sufficient steps were taken by the PP in receiving the CDM benefits.	
	The validation team has reviewed the prior consideration forms ^{/13/} wherein the location of the project, indicating country, region and the precise geographical location and the technology under consideration are mentioned.	
<p>9. The secretariat shall conduct a completeness check to determine whether the information</p>	It is already validated above.	

submitted by the project participant is complete. If the secretariat, during the completeness check, identifies that information is missing, the secretariat shall request this information from the project participants. The project participants shall submit the requested information within 14 days of receipt of the request. The secretariat shall notify the project participants whether the notification submitted is considered complete.			
10. Once the secretariat has determined that the notification is complete, it shall publish it on the UNFCCC CDM website.	It is already validated above.		
11. The project participants of project activities referred to in paragraph 8 above shall inform the secretariat of the progress of the proposed CDM project activity every two years after the initial notification, using the "CDM project activity prior consideration form" (CDM-PC-FORM) until the PDD regarding the project activity has been published for global stakeholder consultation.	Date of prior consideration letter to UNFCCC =15 th August 2011	The validation team has reviewed the CDM website ^{/13/} and confirmed the same. Prior consideration form also checked by the validation team and found to be acceptable.	
	Date of GSCP = 31 st January 2012 to 29 th February 2012	The project was first uploaded for GSCP from 31 st January 2012 to 29 th February 2012 by Bureau Veritas. PP at that time was E.ON Carbon Sourcing GmbH. The project was published for GSCP before start date of the project. So the condition is satisfied.	
	Date of prior consideration letter to UNFCCC by PP =14 th May 2018	The validation team has reviewed the CDM website ^{/13/} and confirmed the date of receipt of progress prior consideration form.	
12. For a proposed CDM project activity with a start date before 2 August 2008, for which the PDD has not been published for global stakeholder consultation in accordance with paragraphs 18–21 below or the start date is prior to the date of publication of the PDD for global stakeholder consultation, the project participants shall provide information to demonstrate that the CDM was seriously considered in the decision to implement the project activity in accordance with the "CDM project standard for project activities" to the DOE that performs validation of the project activity.	This is not applicable since start date is after 2 nd August 2008.		
4.3. Publication of project design document 4.3.1. Submission of project design document 17. The project participants of a proposed CDM project activity shall complete a PDD, in accordance with the "CDM project standard for project activities", and submit it together with supporting documentation to the DOE contracted by the project participants to perform validation of the project activity.	The validation contract was first signed between E.ON Carbon Sourcing GmbH and Bureau Veritas. The project was first uploaded for GSCP from 31 st January 2012 to 29 th February 2012 by Bureau Veritas. PP at that time was E.ON Carbon Sourcing GmbH. The project was again published for GSCP by EPIC from 21 st Feb 2020 to 21 st March 2020.		
18. The DOE shall make the PDD publicly available through a dedicated interface on the UNFCCC CDM	The project was first uploaded for GSCP from 31 st January 2012 to 29 th February 2012 by Bureau Veritas for		

<p>website for global stakeholder consultation. The duration of the period for submission of comments for the global stakeholder consultation shall be 30 days, except with respect to large-scale afforestation and reforestation (A/R) CDM project activities, for which the duration shall be 45 days.</p>	30 days.								
<p>19. When submitting the PDD through the dedicated interface, the DOE shall provide the following information to be made publicly available on the UNFCCC CDM website:</p> <p>(a) Reference to any previous publication of the PDD for public comments on the UNFCCC CDM website;</p> <p>(b) The summary report of the comments received from local stakeholders during the local stakeholder consultation and how they have been taken into account;</p> <p>(c) A summary of the environmental impact assessment report of the proposed CDM project activity, if the environmental impact assessment was conducted in accordance with the "CDM project standard for project activities".</p>	The validation team has been provided with LSC meeting report and ESIA report.								
<p>20. If the project participant prepares separate PDDs for a bundle of proposed small-scale CDM project activities in accordance with the "CDM project standard for project activities", the DOE shall make all PDDs publicly available at the same time for global stakeholder consultation.</p>	This is not applicable.								
<p>21. If the DOE is accredited for the validation function in all sectoral scope(s) to which the proposed CDM project activity is linked through the application of methodologies, the secretariat, through the CDM information system, shall make the PDD publicly available on the UNFCCC CDM website.</p> <p>The period for submission of comments for global stakeholder consultation on the PDD shall commence at midnight GMT subsequent to the publication of the PDD. The CDM information system shall inform the DOE of the location of the PDD on the UNFCCC CDM website and the opening and closing dates and time of the period for submission of comments.</p> <p>Note: There are 16 sectoral scopes in the CDM and these are used in the accreditation of DOEs. The list of sectoral scopes, the DOEs accredited in each scope as well as the approved methodologies linked with these sectoral scopes are given on the UNFCCC CDM website.</p>	<table border="1"> <tr> <td>Component</td><td>Methodology applied</td><td>Sector</td></tr> <tr> <td>Renewable energy</td><td>ACM002 v20.0</td><td>1</td></tr> </table>	Component	Methodology applied	Sector	Renewable energy	ACM002 v20.0	1		<p>As per this link https://cdm.unfccc.int/DOE/list/index.html, EPIC is accredited for all 16 sectors including sector 1.</p> <p>EPIC is signed an agreement for conducting the scope of PA validation with the PP.</p>
Component	Methodology applied	Sector							
Renewable energy	ACM002 v20.0	1							
<p>4.3.2. Changes after publication of project design document</p> <p>4.3.2.1. Change of project participants</p> <p>22. When submitting a request for registration of the proposed CDM project activity in accordance with paragraph 70 below, all project participants shall be listed in the PDD The list shall specify which project participants have a contractual relationship with the DOE for validation of the project activity.</p>	<table border="1"> <tr> <td>Date of CDM events</td><td>Validation opinion</td></tr> <tr> <td>Date of validation contract signed between outgoing DOE and outgoing PP = 10th November 2011</td><td>The validation contract was first signed between E.ON Carbon Sourcing GmbH and Bureau Veritas.</td></tr> <tr> <td>Date of GSCP = 31st January 2012 to 29th February</td><td>The project was first uploaded for GSCP from 31st January 2012 to</td></tr> </table>	Date of CDM events	Validation opinion	Date of validation contract signed between outgoing DOE and outgoing PP = 10 th November 2011	The validation contract was first signed between E.ON Carbon Sourcing GmbH and Bureau Veritas.	Date of GSCP = 31 st January 2012 to 29 th February	The project was first uploaded for GSCP from 31 st January 2012 to		
Date of CDM events	Validation opinion								
Date of validation contract signed between outgoing DOE and outgoing PP = 10 th November 2011	The validation contract was first signed between E.ON Carbon Sourcing GmbH and Bureau Veritas.								
Date of GSCP = 31 st January 2012 to 29 th February	The project was first uploaded for GSCP from 31 st January 2012 to								

	2012	29 th February 2012 by Bureau Veritas. PP at that time was E.ON Carbon Sourcing GmbH
	Date of current PP taking over the project from the outgoing PP=30 th September 2012	E.ON Carbon Sourcing withdrew from the project and the current PP took over.
	Date of contract termination from outgoing DOE =15 th January 2017	The contract with the Bureau Veritas was terminated on 15 January 2017. The validation team has reviewed the letter of termination ^{/5/} from Bureau Veritas addressed to the current PP.
	Date of incoming DOE agreement =11 th December 2019	PP and EPIC signed validation agreement dated December 2019.
	Date of EPIC as incoming DOE as reflected in the CDM website=4 th Feb 2020	The validation team has reviewed the CDM website and confirmed.
	Date of 2 nd GSCP by EPIC=21 st Feb 2020 to 21 st March 2020	The validation team has reviewed the CDM website and confirmed.
23. If all project participants that have a contractual relationship with the DOE for validation at the time of the publication of the PDD for global stakeholder consultation have been replaced, a revised PDD shall be published for global stakeholder consultation in accordance with paragraphs 18–21 above.	Since PP has been changed, the project was published for GSCP for the second time.	
4.3.2.2. Change of designated operational entity 24. If the project participants wish to change the DOE after the publication of the PDD, they shall notify the change to the secretariat by e-mail, providing the name of the newly appointed DOE before the submission of the request for registration of the proposed CDM project activity. The secretariat shall obtain a confirmation from both the outgoing and incoming DOEs. Upon receipt of the confirmation from both DOEs, the secretariat shall reflect the change on the UNFCCC CDM website.	The validating DOE also changed as above.	
25. From the date of change of the DOE reflected on the UNFCCC CDM website, the incoming DOE shall be responsible for all of the roles of a DOE in the validation, including requesting the withdrawal of a published PDD, if applicable. The incoming DOE shall have full responsibility for the validation outcome that will be submitted when requesting registration.	It is already validated as above.	
26. The incoming DOE will not need to republish the PDD in accordance with paragraphs 18–21 above but shall take into account the comments received	The project did not get any comments from 2 GSCPs.	

during the global stakeholder consultation of the PDD in its validation.	
<p>4.3.2.3. Change to design of project activity</p> <p>27. If the design of the proposed CDM project activity has undergone changes after the publication of the PDD for global stakeholder consultation, the DOE shall determine whether these changes are significant.</p> <p>If the changes are determined by the DOE as significant, the DOE shall make a revised PDD publicly available for global stakeholder consultation.</p> <p>The DOE may seek guidance from the Board on whether a revised PDD shall be published for global stakeholder consultation by submitting such a request to a specified UNFCCC e-mail account.</p>	There was no change in the project design.
<p>28. The Board shall expeditiously consider the case, through electronic means where possible, and provide guidance to the DOE.</p> <p>In doing so, the Board shall consider the significance of the changes in terms of the impact on the application of the applied methodologies, the applied standardized baselines and any other standards, methodologies, methodological tools and guidelines applied in accordance with the applied methodologies (hereinafter "any other standards, methodologies, methodological tools and guidelines (to be) applied in accordance with the selected(applied) methodologies" are collectively referred to as the other (applied) methodological regulatory documents) and local stakeholders.</p>	There was no change in the project design.
<p>29. For a proposed bundle of small-scale CDM project activities, if the DOE considers that major changes are required in any of the project activities in the bundle and that the change requires a new global stakeholder consultation, the DOE shall republish the revised PDD(s) and all other PDDs in the bundle at the same time for global stakeholder consultation in accordance with paragraphs 18–21 above.</p>	This is not applicable.
<p>4.3.2.4. Application of standardized baseline whose selection is mandatory</p> <p>30. If the PDD has been published for global stakeholder consultation when no applicable standardized baseline was valid, and an applicable standardized baseline whose selection is mandatory has become valid after the publication of the PDD for global stakeholder consultation, and if the request for registration of the proposed CDM project activity has not been submitted within 240 days after the standardized baseline became valid, the project participants shall revise the PDD applying the standardized baseline.</p> <p>In this case, the DOE shall publish the revised PDD for global stakeholder consultation in accordance with paragraphs 18–21 above.</p>	PP did not use any standardised baseline.
<p>4.3.2.5. Change of methodologies or standardized baselines</p> <p>31. If the project participant wishes to change the methodologies, standardized baselines and/or the combination of methodologies applied in the PDD that has already been published for global</p>	There was no change in applied methodology or standardised baseline.

<p>stakeholder consultation, then:</p> <p>(a) The project participants shall revise the PDD accordingly;</p> <p>(b) The DOE shall subsequently publish the revised PDD for global stakeholder consultation in accordance with paragraphs 18–21 above, except when the following conditions apply:</p> <p>(i) The change only involves the removal and no addition of methodologies and/or standardized baselines;</p> <p>(ii) The removal of the methodologies and/or the standardized baselines does not affect the physical design of, and the end-use services provided by, the proposed CDM project activity.</p>	
<p>32. If the PDD applies the previous version of a methodology, methodological tool and/or standardized baseline, and a request for registration of the proposed CDM project activity has not been submitted within the grace period for the use of the previous version as defined in the “Procedure: Development, revision and clarification of baseline and monitoring methodologies and methodological tools” and/or the “Procedure: Development, revision, clarification and update of standardized baselines”, the project participants shall revise the PDD, applying the valid version of the methodology, methodological tool and/or standardized baseline in its entirety or elements of it as required (e.g. in the case of an approved deviation).</p> <p>In this case, the DOE shall not publish the revised PDD for global stakeholder consultation, but shall submit it when it submits a request for registration in accordance with paragraph 70 below, unless otherwise decided by the Board when it approves the revised methodology, methodological tool and/or standardized baseline.</p>	<p>PP has used the latest version of applied methodology ACM002 v20.0.</p>
<p>4.3.3. Submission and treatment of public comments</p> <p>33. Parties, stakeholders and UNFCCC accredited observers may submit comments, in English, on the validation requirements for the proposed CDM project to the DOE via a dedicated interface on the UNFCCC CDM website.</p> <p>The submitters of the comments shall provide the name and contact details of the individual or organization on whose behalf the comments are submitted.</p> <p>Comments from stakeholders shall:</p> <p>(a) Be specific to the proposed CDM project activity;</p> <p>(b) Be related to the compliance with applicable CDM rules and regulations.</p> <p>Note: For the purpose of this procedure, all members of the public are considered to be stakeholders</p>	<p>There was no comments from GSCPs.</p>
<p>34. The secretariat shall make the comments</p>	<p>There was no comments from GSCPs.</p>

publicly available on the UNFCCC CDM website where the PDD is displayed, and shall remove those that the DOE has determined to be unauthentic in accordance with the “CDM validation and verification standard for project activities”.	
<p>35. After the completion of the local stakeholder consultation, local stakeholders may submit a complaint to the DNA(s) of the host Party(ies) if they find that the outcome of the local stakeholder consultation is not appropriately taken into account.</p> <p>The DOE shall request the DNA(s) to forward such complaints, if any, to the DOE and promptly forward them to the project participants during the validation in accordance with the “CDM validation and verification standard for project activities”.</p>	There was no such comments from local stakeholders.
<p>4.4. Reporting of validation status</p> <p>36. On the later of 30 June or 31 December, subsequent to the end of the period for submission of comments on the PDD, and on each 30 June and 31 December thereafter, the DOE shall provide, through a dedicated interface on the UNFCCC CDM website, an update on the status of its validation activity, until it submits a request for registration of the proposed CDM project activity in accordance with paragraph 70 below.</p> <p>The DOE shall include one of the following statuses in the update:</p> <p>(a) The validation contract has been terminated. In this case, the DOE shall also provide a reason for the termination on a confidential basis;</p> <p>(b) A revised PDD for the same project activity has been published;</p> <p>(c) The DOE has issued a negative validation opinion;</p> <p>(d) The DOE has raised one or more corrective action requests or clarification requests, to which no response has been received from the project participants or the DOE is seeking further clarification to the responses received from the project participants. In this case, the DOE shall also provide a summary of the issues raised;</p> <p>(e) The DOE has finalized a positive validation opinion with the exception of the receipt of a valid letter of approval from one or more Party(ies) involved.</p> <p>In this case, the DOE shall also indicate from which Party(ies) involved a valid letter of approval has not been received;</p> <p>(f) The DOE is performing validation activities and it has not yet sent any corrective action or clarification requests to the project participants. In this case, the DOE shall also provide an explanation on the length of time taken.</p>	The validation has finalised positive opinion and therefore updated the validation activity.
37. The secretariat shall inform the stakeholders, who submitted comments that were considered	This is not applicable.

authentic by the DOE during the global stakeholder consultation for the proposed CDM project activity, about the update provided by the DOE by sending them an e-mail to the addresses provided when they submitted the comments.	
4.5. Withdrawal of published project design document 38. At any time before the submission of a request for registration of the proposed CDM project activity in accordance with paragraph 70 below, the project participants may, through the DOE, withdraw the PDD published for global stakeholder consultation. In this case, the DOE shall submit a request for withdrawal of the PDD to the secretariat by using the "Project or programme design document withdrawal request form" (CDM-PW-FORM). If the form contains all required information, the PDD shall be considered withdrawn and the secretariat shall mark the PDD on the UNFCCC CDM website as "withdrawn".	It is already validated as above.
4.6. Modalities of communication 39. The project participants of the proposed CDM project activity shall designate one or more focal point entities (hereinafter referred to as focal points) to communicate on their behalf with the Board and the secretariat within the defined scopes of authority referred to in paragraph 42 below, and include this information in a modalities of communication (MoC) statement.	PP is the sole focal point as per the MoC form.
40. After the submission of a request for registration of the proposed CDM project activity in accordance with paragraph 70 below, all official communication between the project participants and the Board or the secretariat for the project activity shall be conducted in accordance with the MoC statement, with the exception of communications undertaken in accordance with paragraphs 158 and 170(b) below.	MoC form dated 8 th October 2020 is the latest one.
41. The project participants shall submit to the DOE at the time of validation of the proposed CDM project activity an MoC statement using the valid version of the "Modalities of communication statement form" (CDM-MOC-FORM), including its annex 1.	The validation team has reviewed the MoC form ^{/20/} .
42. The project participants shall grant the focal points the authority to: (a) Communicate in relation to requests for forwarding of CERs to individual accounts of the project participants (scope (a)); and/or (b) Communicate in relation to requests for addition and/or voluntary withdrawal of the project participants and focal points, as well as changes to company names, legal status, contact details and specimen signatures (scope (b)); and/or (c) Communicate on all other project-related matters not covered by (a) or (b) above (scope (c)).	PP is the sole focal point.
43. The project participants may designate separate entities for each scope of authority in a sole, shared or joint focal point role and shall designate two or more focal points for a shared or joint focal point	PP is the sole focal point.

role.	
44. The project participants and the focal points may designate one primary authorized signatory and one alternate authorized signatory. The signature of either the primary or alternate authorized signatory shall suffice for authenticating the project participant's or the focal point's consent or instruction(s).	PP is the sole focal point. However, there are two authorised signatories.
45. A project participant that is also a focal point for the same proposed CDM project activity may designate different authorized signatories for the project participant status and for the focal point status.	PP is the sole focal point.
46. The project participants may voluntarily indicate in the MoC statement the end-date of their participation in the proposed CDM project activity. The secretariat shall monitor the end-date of participation and mark the project participants as "withdrawn" on the UNFCCC CDM website on the day after the end-date, provided that at least one project participant authorized by the DNA of a host Party to participate in the project activity remains. The project participants whose participation in the project activity has ended may request inclusion as a project participant of the same project activity any time thereafter in accordance with paragraph 175(a) below.	The participation in the project activity is unlimited in time.
47. The project participants shall not include or refer to private contractual arrangements in the MoC statement, such as the establishment of conditions for the designation or change of focal points or the purchase and/or sale of CERs. The project participants and focal points shall be solely responsible for honouring such arrangements.	There is no such arrangements made in the MoC form.
48. The secretariat shall, when conducting the completeness check of the request for registration submission in accordance with paragraphs 77–79 below, consider the contact details included in the MoC statement to be the valid contact details of the project participants whenever such details differ from the details of the project participants and their representatives included in the PDD for the proposed CDM project activity.	This is not applicable for the DOE.
49. The secretariat shall publish the MoC statement on the respective CDM project activity webpage on the UNFCCC CDM website following the registration of the project activity.	This is not applicable for the DOE.
50. The secretariat shall not make available specimen signatures, contact details and other personal information to anyone other than members and alternate members of the Board, the project participants, the focal points and the DOE involved in the proposed CDM project activity.	This is not applicable for the DOE.

Appendix 8: Validation requirements of the applied methodology ACM002 v20.0

Requirements of applied methodology ACM002 v20.0	Validation opinion
1. Introduction	The project activity involves the construction and

<p>1. The following table describes the key elements of the methodology.</p> <p>Table 1. Methodology key elements</p> <p>Typical projects Retrofit, rehabilitation (or refurbishment), replacement or capacity addition of an existing power plant or construction and operation of a new power plant/unit that uses renewable energy sources and supplies electricity to the grid</p> <p>Type of GHG emissions mitigation action Renewable energy: Displacement of electricity that would be provided to the grid by more-GHG-intensive means</p>	<p>operation of 39 MW (13 MW x 3 units) large-scale run-of-river hydropower plant on a greenfield facility in Republic of Indonesia developed by the PP. The electricity thus generated will be sold to PT PLN (Indonesian State Owned Electricity Company) through regional electricity grid in Sumatera. The electricity thus displaces the equal amount of electricity that would be provided by the carbon intensive regional grid.</p>
<p>2. Scope, applicability, and entry into force</p> <p>2.1. Scope 2. This methodology applies to project activities that include retrofitting, rehabilitation (or refurbishment), replacement or capacity addition of an existing power plant or construction and operation of a Greenfield power plant.</p>	<p>The project activity involves the construction and operation of 39 MW (13 MW x 3 units) large-scale run-of-river hydropower plant on a greenfield facility in Republic of Indonesia developed by the PP.</p>
<p>2.2. Applicability 3. This methodology is applicable to grid-connected renewable energy power generation project activities that:</p> <p>(a) Install a Greenfield power plant;</p> <p>(b) Involve a capacity addition to (an) existing plant(s);</p> <p>(c) Involve a retrofit of (an) existing operating plants/units;</p> <p>(d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or</p> <p>(e) Involve a replacement of (an) existing plant(s)/unit(s).</p>	<p>The project activity involves the construction and operation of 39 MW (13 MW x 3 units) large-scale run-of-river hydropower plant on a greenfield facility in Republic of Indonesia developed by the PP. The electricity thus generated will be sold to PT PLN (Indonesian State Owned Electricity Company) through regional electricity grid in Sumatera. The electricity thus displaces the equal amount of electricity that would be provided by the carbon intensive regional grid. Hence clause a applies to the project activity.</p>
<p>4. The methodology is applicable under the following conditions:</p> <p>(a) The project activity may include renewable energy power plant/unit of one of the following types: hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit;</p>	<p>The project activity is installation of run of river renewable energy hydro power plant without a reservoir.</p>
<p>(b) In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects) the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.</p>	<p>This is greenfield project, the condition is not applicable.</p>
<p>5. In case of hydro power plants, one of the following conditions shall apply:</p> <p>(a) The project activity is implemented in existing</p>	<p>The proposed project is constructed as a run of river project. So there is no new reservoir or dam involved in the project.</p>

<p>single or multiple reservoirs, with no change in the volume of any of the reservoirs; or</p> <p>(b) The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density, calculated using equation (7), is greater than 4 W/m²; or</p> <p>(c) The project activity results in new single or multiple reservoirs and the power density, calculated using equation (7), is greater than 4 W/m²; or</p> <p>(d) The project activity is an integrated hydro power project involving multiple reservoirs, where the power density for any of the reservoirs, calculated using equation (7), is lower than or equal to 4 W/m², all of the following conditions shall apply:</p> <p>(i) The power density calculated using the total installed capacity of the integrated project, as per equation (8), is greater than 4 W/m²;</p> <p>(ii) Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity;</p> <p>(iii) Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m² shall be: a. Lower than or equal to 15 MW; and</p> <p>b. Less than 10 per cent of the total installed capacity of integrated hydro power project.</p> <p>Note: Project participants wishing to undertake a hydroelectric project activity that results in a new reservoir or an increase in the volume of an existing reservoir, in particular where reservoirs have no significant vegetative biomass in the catchments area, may request a revision to the approved consolidated methodology.</p>	
<p>6. In the case of integrated hydro power projects, project proponent shall:</p> <p>(a) Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or</p> <p>(b) Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs.</p> <p>The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output.</p> <p>This demonstration has to be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore, this water balance will take</p>	<p>This is not applicable as the project is not an integrated power project.</p>

into account seasonal flows from river, tributaries (if any), and rainfall for minimum of five years prior to the implementation of the CDM project activity.	
<p>7. The methodology is not applicable to:</p> <p>(a) Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site;</p> <p>(b) Biomass fired power plants/units.</p>	The project activity does not involve any switching of fossil fuels to renewable energy sources or biomass. This condition is not applicable.
8. In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance".	The project activity is greenfield project.
<p>9. In addition, the applicability conditions included in the tools referred to below apply.</p> <p>Note: The condition in "TOOL02: Combined tool to identify the baseline scenario and demonstrate additionality" that all potential alternative scenarios to the proposed project activity must be available options to project participants; does not apply to this methodology, as this methodology only refers to some steps of this tool.</p>	PP does not apply "TOOL02: Combined tool to identify the baseline scenario and demonstrate additionality" v7.0.
<p>2.3. Entry into force</p> <p>10. The date of entry into force is the date of the publication of the EB 105 meeting report on 28 November 2019.</p> <p>2.4. Applicability of sectoral scopes</p> <p>11. For validation and verification of CDM projects and programme of activities by a designated operational entity (DOE) using this methodology, application of sectoral scope 01 is mandatory</p>	<p>PP used methodologies ACM0002- Grid-connected electricity generation from renewable sources --- v20.0 adopted at EB105.</p> <p>Sector 1 is mandatory applicable conditions for this project.</p>
<p>3. Normative references</p> <p>12. This consolidated baseline and monitoring methodology is based on elements from the following proposed new methodologies:</p> <p>(a) "NM0001-rev: Vale do Rosario Bagasse Cogeneration (VRBC)" project in Brazil whose Baseline study, Monitoring and Verification Plan and Project Design Document were prepared by Econergy International Corporation;</p> <p>(b) "NM0012-rev: Wigton Wind Farm" project in Jamaica whose Baseline study, Monitoring and Verification Plan and Project Design Document were prepared by Ecoresurities Ltd;</p> <p>(c) "NM0023: El Gallo Hydroelectric" project, Mexico whose Baseline study, Monitoring and Verification Plan and Project Design Document were prepared by Prototype Carbon Fund (approved by the CDM Executive Board on 14 April 2004);</p> <p>(d) "NM0024-rev: Colombia: Jepirachi Windpower" project whose Baseline study, Monitoring and</p>	The validation team has reviewed the projects.

<p>Verification Plan and Project Design Document were prepared by Prototype Carbon Fund;</p> <p>(e) “NM0030-rev: Haidergarh Bagasse Based Co-generation Power” project in India whose Baseline study, Monitoring and Verification Plan and Project Design Document was submitted by Haidergarh Chini Mills, a unit of Balrampur Chini Mills Limited;</p> <p>(f) “NM0036: Zafarana Wind Power Plant” project in the Arab Republic of Egypt whose Baseline study, Monitoring and Verification Plan and Project Design Document were prepared by Mitsubishi Securities;</p> <p>(g) “NM0043: Bayano Hydroelectric Expansion and Upgrade” project in Panama whose Baseline study, Monitoring and Verification Plan and Project Design Document were prepared by Econergy International Corporation;</p> <p>(h) “NM0055: Darajat Unit III Geothermal” project in Indonesia whose Baseline study, Monitoring and Verification Plan and Project Design Document were prepared by URS Corporation and Amoseas Indonesia Inc.</p>	
<p>13. This methodology also refers to the latest approved versions of the following tools:</p> <p>(a) “TOOL01: Tool for the demonstration and assessment of additionality”;</p> <p>(b) “TOOL02: Combined tool to identify the baseline scenario and demonstrate additionality”;</p> <p>(c) “TOOL03: Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion”;</p> <p>(d) “TOOL05: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation”;</p> <p>(e) “TOOL07: Tool to calculate the emission factor for an electricity system”;</p> <p>(f) “TOOL10: Tool to determine the remaining lifetime of equipment”;</p> <p>(g) “TOOL11: Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period”;</p> <p>(h) “TOOL32: Positive lists of technologies”.</p> <p>Note: Available on the UNFCCC CDM website</p> <p>14. For more information regarding the proposed new methodologies and the tools as well as their consideration by the Executive Board (hereinafter referred to as the Board) of the clean development mechanism (CDM) please refer to <http://cdm.unfccc.int/goto/MPappmeth</p>	<p>The validation opinion of the tools is detailed below.</p> <p>However, the tools TOOL02: Combined tool to identify the baseline scenario and demonstrate additionality, TOOL11: Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period”; and “TOOL32: Positive lists of technologies are not applicable to the proposed project.</p>
<p>3.1. Selected approach from paragraph 48 of the CDM modalities and procedures</p> <p>15. “Existing actual or historical emissions, as</p>	<p>For the greenfield project, emissions from a technology that represents an economically attractive course of action, taking into account barriers to investment is applicable.</p>

<p>applicable”; or</p> <p>16. “Emissions from a technology that represents an economically attractive course of action, taking into account barriers to investment</p>	
<p>4. Definitions</p> <p>17. The definitions contained in the Glossary of CDM terms shall apply.</p> <p>18. For the purpose of this methodology, the following definitions apply:</p> <p>(a) Installed power generation capacity (or installed capacity or nameplate capacity) - the installed power generation capacity of a power unit is the capacity, expressed in Watts or one of its multiples, for which the power unit has been designed to operate at nominal conditions.</p> <p>The installed power generation capacity of a power plant is the sum of the installed power generation capacities of its power units;</p>	<p>The validation team has reviewed the nameplate details. The installed capacity of the project is 39 MW (13 MW x 3 units).</p>
<p>(b) Capacity addition - a capacity addition is an investment to increase the installed power generation capacity of existing power plants through:</p> <p>(i) the installation of a new power plants/units besides the existing power plants/units; or</p> <p>(ii) the installation of new power plants/units, additional to the existing power plants/units; or</p> <p>(iii) construction of a new reservoir along with addition of new power plants/units in case of integrated hydro power projects. The existing power plants/units in the case of capacity addition continue to operate after the implementation of the project activity;</p> <p>(c) Retrofit - is an investment to repair or modify existing operating power plants/units, with the purpose to increase the efficiency, performance or power generation capacity of the plants/units, without adding new power plants/units.</p> <p>A retrofit restores the installed power generation capacity to or above its original level. Retrofits shall only include measures that involve capital investments and not regular maintenance or housekeeping measures;</p> <p>(d) Rehabilitation (or refurbishment) - is an investment to restore the existing power plants/units that was severely damaged or destroyed due to foundation failure, excessive seepage, earthquake, liquefaction, or flood.</p> <p>The primary objective of rehabilitation or refurbishment is to restore the performances of the facilities. Rehabilitation may also lead to increase in efficiency, performance or power generation capacity of the power plants/units with/without adding new power plants/units;</p> <p>(e) Replacement - is an investment in new power plants/units that replaces one or several existing</p>	<p>The project activity is not a capacity addition or retrofit or rehabilitation or replacement project.</p>

units at the existing power plant. The new power plants/units have the same or a higher power generation capacity than the plants/units that were replaced;	
(f) Reservoir - a reservoir is a water body created in valleys to store water generally made by the construction of a dam;	Since the project is installed as a run of river project, there exists no reservoir.
(g) Existing reservoir - a reservoir is to be considered as an "existing reservoir" if it has been in operation for at least three years before the implementation of the project activity;	Since the project is installed as a run of river project, there exists no reservoir.
(h) Backup generator - a generator that is used in the event of an emergency, such as power supply outage due to either main generator failure or grid failure or tripping of generator units, to meet electricity demand of the equipment at power plants/units site during emergency;	Generally, backup generator is used when there is no primary energy generation or during start up operation. In this project, for start up energy will be supplied by PLN as import electricity, so no fossil fuel energy is involved. The DG is used as a backup generator when the energy for start-up is not available from PLN, and can therefore be neglected as per para 33 of the applied methodology
(i) Power plant/unit - a power plant/unit is a facility that generates electric power. Several power units at one site comprise one power plant, whereas a power unit is characterized by the fact that it can operate independently from other power units at the same site. Where several identical power units (i.e. with the same capacity, age and efficiency) are installed at one site, they may be considered as one single power unit;	In this project, three identical units with same capacity (13 MW each), age (30 years), water turbine efficiency (92.95% at full turbine load), generator efficiency (97% at full turbine load), unit efficiency (90.16% at turbine full load) are installed at the same site.
(j) Greenfield power plant - a new renewable energy power plant that is constructed and operated at a site where no renewable energy power plant was operated prior to the implementation of the project activity;	The validation team has checked the project site and confirmed that there was no renewable energy available. The validation team has reviewed the site survey before construction at the weir area, desander, tunnel boring, headrace channel, penstock area, power house area and found that there was no renewable energy power unit. The validation team has also reviewed the construction photos of the weir, tunnel, channel, head pond, penstock, powerhouse and switch yard.
(k) Integrated hydro power project - integration of multiple hydro power plants/units with single or multiple reservoirs designed to work together;	The project activity is not an integrated hydro power plant.
(l) Dry steam geothermal power plant - a geothermal technology that directly utilises dry steam that is piped from production wells to the plant and then to the turbine. Dry steam geothermal plants are categorised as open cycle technology; (m) Flash steam geothermal power plant - a geothermal technology that is used where water-dominated reservoirs have temperatures above 180°C. In these high-temperature reservoirs, the liquid water component boils, or "flashes", as pressure drops. Separated steam is piped to a turbine to generate electricity and the remaining hot water may be flashed again twice (double flash plant) or three	The project activity is not a geothermal power plant.

<p>times (triple flash) at progressively lower pressures and temperatures, to obtain more steam.</p> <p>Flash steam geothermal plants are categorised as open cycle technology;</p> <p>(n) Binary geothermal power plant - a geothermal technology that utilizes an organic Rankine cycle (ORC) or a Kalina cycle and typically operates with temperatures varying from as low as 73°C to 180°C.</p> <p>In these plants, heat is recovered from the geothermal fluid using heat exchangers to vaporise an organic fluid with a low boiling point (e.g. butane or pentane in the ORC cycle and an ammonia-water mixture in the Kalina cycle) and drive a turbine.</p> <p>Binary geothermal plants are categorised as closed cycle technology.</p>	
<p>19. In addition, the definitions in the latest approved version of "TOOL07: Tool to calculate the emission factor for an electricity system" apply.</p>	<p>The validation opinion is detailed in Appendix 10 of this report.</p>
<p>5. Baseline methodology 5.1. Project boundary 20. The spatial extent of the project boundary includes the project power plant/unit and all power plants/units connected physically to the electricity system that the CDM project power plant is connected to.</p> <p>Note: Refer to the latest approved version of "TOOL07: Tool to calculate the emission factor for an electricity system" for definition of an electricity system</p> <p>21. The greenhouse gases and emission sources included in or excluded from the project boundary are shown in Table 2.</p>	<p>The project consists of hydro power plant which is physically connected to the Sumatera regional grid. In the baseline, CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity is applicable.</p> <p>In the project boundary, PP has considered emissions of CH₄ from the reservoir and CO₂ emissions from the DG used as a backup generator.</p> <p>However, PP demonstrated that CH₄ emissions from the reservoir and CO₂ emissions from the DG is zero for this project.</p>
<p>5.2. Identification of the baseline scenario 5.2.1. Baseline scenario for Greenfield power plant 22. If the project activity is the installation of a Greenfield power plant, the baseline scenario is electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in "TOOL07: Tool to calculate the emission factor for an electricity system".</p>	<p>Since the project activity is the installation of a grid connected Greenfield hydro power plant, the baseline scenario is electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources. Hence Sumatra regional grid forms the baseline for this project.</p>
<p>5.2.2. Baseline scenario for capacity addition to an existing renewable energy power plant 23. If the project activity is a capacity addition to existing grid-connected renewable energy power plant/unit, the baseline scenario is the existing facility that would continue to supply electricity to the grid at historical levels, until the time at which the generation facility would likely be replaced or retrofitted (DATE_{BaselineRetrofit}), and electricity delivered to the grid by the added capacity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new</p>	<p>This is not applicable as this is not a capacity addition project.</p>

<p>generation sources, as reflected in the combined margin (CM) calculations described in "TOOL07: Tool to calculate the emission factor for an electricity system".</p> <p>From that point of time onwards, the baseline scenario is assumed to correspond to the project activity, and no emission reductions are assumed to occur.</p>	
<p>5.2.3. Baseline scenario for retrofit or rehabilitation or replacement of an existing power plant</p> <p>24. The following step-wise procedure to identify the baseline scenario shall be applied:</p> <p>5.2.3.1. Step 1: Identify realistic and credible alternative baseline scenarios for power generation</p> <p>25. Apply Step 1 of "TOOL02: Combined tool to identify the baseline scenario and demonstrate additionality".</p> <p>The options considered should include:</p> <p>(a) P1: The project activity not implemented as a CDM project;</p> <p>(b) P2: The continuation of the current situation, that is to use all power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance.</p> <p>The additional power generated under the project would be generated in existing and new grid-connected power plants in the electricity system; and</p> <p>(c) P3: All other plausible and credible alternatives to the project activity that provide an increase in the power generated at the site, which are technically feasible to implement.</p> <p>This includes, inter alia, different levels of replacement, retrofit and/or rehabilitation at the power plants/units.</p> <p>Only alternatives available to project participants should be taken into account.</p>	<p>This is not applicable as this is not a retrofit or rehabilitation or replacement project.</p>
<p>5.2.3.2. Step 2: Barrier analysis</p> <p>26. Apply Step 2 of "TOOL02: Combined tool to identify the baseline scenario and demonstrate additionality".</p>	<p>This is not applicable as this is not a retrofit or rehabilitation or replacement project.</p>
<p>5.2.3.3. Step 3: Investment analysis</p> <p>27. If this option is used, apply the following:</p> <p>(a) Apply an investment comparison analysis, as per Step 3 of "TOOL02: Combined tool to identify the baseline scenario and demonstrate additionality", if more than one alternative is remaining after Step 2 and if the remaining alternatives include scenarios P1 and P3;</p> <p>(b) Apply a benchmark analysis, as per Step 2b of "TOOL01: Tool for the demonstration and assessment of additionality", if more than one alternative is remaining after Step 2 and if the remaining alternatives include scenarios P1 and P2.</p>	<p>This is not applicable as this is not a retrofit or rehabilitation or replacement project.</p>
<p>5.3. Additionality</p>	<p>Since positive list (as prescribed in para 13 of</p>

<p>5.3.1. Simplified procedure to demonstrate additionality 28. For the simplified procedure to demonstrate additionality the project proponent shall refer to the methodological tool "TOOL32: Positive lists of technologies".</p>	<p>TOOL32: Positive lists of technologies v2.0) for the simplified procedure to demonstrate additionality does not contain hydro power plant, simplified procedure cannot be applied for this project.</p>
<p>5.3.2. Procedure to demonstrate additionality based on the "TOOL01: Tool for the demonstration and assessment of additionality" 29. The additionality of the project activity shall be demonstrated and assessed using the latest version of the "TOOL01: Tool for the demonstration and assessment of additionality".</p>	<p>The validation opinion of TOOL01: "Tool for the demonstration and assessment of additionality" v7.0 is detailed in Appendix 9 and Appendix 11 of this report.</p>
<p>30. In case of integrated hydro power project, the following shall be considered for the purpose of investment analysis:</p> <p>(a) Investment associated with the CDM project activity i.e. construction of a new reservoir and new power plants/units; and</p> <p>(b) Revenue due to net electricity generation ($EGPJ,y$) as determined using equation (10).</p>	<p>Since the project activity is not an integrated hydro power plant, this is not applicable.</p>
<p>5.4. Project emissions 31. For most renewable energy power generation project activities, $PE_y = 0$. However, some project activities may involve project emissions that can be significant.</p>	<p>The project emissions are calculated as follows. $PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y}$</p> <p>Where PE_y –Project emissions $PE_{FF,y}$ - Project emissions from fossil fuel consumption $PE_{GP,y}$ -Project emissions from the operation of dry, flash steam or binary geothermal power plants $PE_{HP,y}$ -Project emissions from water reservoirs of hydro power plants The validation opinion is detailed below.</p>
<p>5.4.1. Emissions from fossil fuel combustion ($PE_{FF,y}$) 32. For geothermal and solar thermal projects, which also use fossil fuels for electricity generation, CO2 emissions from the combustion of fossil fuels shall be accounted for as project emissions ($PE_{FF,y}$).</p>	<p>Since this is hydro power plant, this is not applicable.</p>
<p>33. For all renewable energy power generation project activities, emissions due to the use of fossil fuels for the backup generator can be neglected.</p>	<p>The validation team has confirmed that there is no DG set installed in the project boundary. Generally, backup generator is used when there is no primary energy generation or during start-up operation. In this project, for start-up energy will be supplied by PLN as import electricity, so no fossil fuel energy is involved. The DG is used as a backup generator when the energy for start-up is not available from PLN, and can therefore be neglected.</p>
<p>34. $PE_{FF,y}$ shall be calculated as per the latest version of "TOOL03: Tool to calculate project or leakage CO2 emissions from fossil fuel combustion".</p>	<p>Since this is no DG set available, this tool is not applicable.</p>
<p>5.4.2. Emissions from the operation of dry steam, flash steam and binary geothermal power plants due to non-condensable gases and/or working fluid ($PE_{GP,y}$) 35. For dry or flash steam geothermal project activities, project participants shall account emissions of CO2 and CH4 due to release of non-condensable gases from produced steam.</p> <p>Non-condensable gases in geothermal reservoirs</p>	<p>Since the project activity is hydro power plant, this is not applicable. Para 36 is not applicable.</p>

<p>usually consist mainly of CO₂ and H₂S.</p> <p>They also contain a small quantity of hydrocarbons, including predominantly CH₄.</p> <p>In dry or flash steam geothermal power projects, non-condensable gases flow with the steam into the power plant.</p> <p>A small proportion of the CO₂ is converted to carbonate/bicarbonate in the cooling water circuit. In addition, parts of the non-condensable gases are re-injected into the geothermal reservoir.</p> <p>However, as a conservative approach, this methodology assumes that all non-condensable gases entering the power plant in dry or flash steam geothermal technologies are discharged to atmosphere via the cooling tower.</p> <p>Fugitive CO₂ and CH₄ emissions due to well testing and well bleeding are not considered, as they are negligible.</p> <p>Note: In open cycle geothermal technologies, the underground geothermal fluid would come in touch with the atmosphere during the heat exchange process.</p> <p>In such process, non-condensable and other gases within the geothermal fluid are partially released to the atmosphere.</p> <p>In binary geothermal technologies, the underground fluid is re-injected back to the heat source without any exposure to the atmosphere.</p> <p>In this case, non-condensable and other gases within the geothermal fluid are kept within the outgoing geothermal fluid and sent back into the heat source.</p> <p>However, there may be some physical leakage from closed cycle pipes and wells.</p> <p>In the case of retrofit, rehabilitation or replacement projects at geothermal plants, this methodology does not account for baseline emissions from release of non-condensable gases from produced steam or fossil fuel combustion.</p> <p>Project proponents are welcome to propose revisions to this methodology to account for these baseline emissions</p>	
<p>5.4.3. Emissions from water reservoirs of hydro power plants (PEHP,y)</p>	<p>As per para 37 of the applied methodology, Power density is calculated as follows. $PD = (CAP_{PJ} - CAP_{BL}) / (A_{PJ} - A_{BL})$ Where CAP_{PJ} –Installed capacity of the hydro power plant after the implementation of the project activity CAP_{BL} –Installed capacity of the hydro power plant before the implementation of the project activity A_{PJ}–Area of the single or multiple reservoirs measured in the surface of the water, after the implementation of the project activity, when the</p>

	<p>reservoir is full Since there is no reservoir, this value is zero. A_{BL}-Area of the single or multiple reservoirs measured in the surface of the water, before the implementation of the project activity, when the reservoir is full This is new power plant, $A_{BL} = 0 \text{ m}^2$</p> <p>PD is works out to infinite. The validation opinion of the same is detailed below</p>
Installed capacity of the hydro power plant after the implementation of the project activity (CAP_{PJ}) =39 MW (monitored parameter number 2 as per the final PDD ^{3/})	The validation team has reviewed the manufacturer specification and confirmed that this is 39 MW.
Installed capacity of the hydro power plant before the implementation of the project activity (CAP_{BL}) =0 MW (ex-ante parameter number 2 as per the final PDD ^{3/})	Since the project is new greenfield project, $CAP_{BL} = 0$ MW
Area of the single or multiple reservoirs measured in the surface of the water, after the implementation of the project activity, when the reservoir is full (A_{PJ}) =0 m^2	This project is run of river project. Since there is no reservoir, this value is zero.
A_{BL} -Area of the single or multiple reservoirs measured in the surface of the water, before the implementation of the project activity, when the reservoir is full (A_{BL}) =0 m^2 (ex-ante parameter number 3 as per the final PDD ^{3/})	Since the project is new greenfield project, $A_{BL} = 0 \text{ m}^2$
Power density =infinite	<p>As per para 37 of the applied methodology, Power density is calculated as follows. $PD = (CAP_{PJ} - CAP_{BL}) / (A_{PJ} - A_{BL})$</p> <p>PD is works out to infinite.</p>
38. For hydro power project activities that result in new single or multiple reservoirs and hydro power project activities that result in the increase of single or multiple existing reservoirs, project proponents shall account for CH4 and CO2 emissions from the reservoirs.	As per para 38c of the applied methodology, if PD is more than 10 W/m^2 , $PE_{HP,y} = 0$
Project emissions (PE_y) =0 tCO2e per year	<p>The project emissions are calculated as follows. $PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y}$</p>
5.5. Baseline emissions 39. Baseline emissions include only CO2 emissions from electricity generation in fossil fuel fired 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.	<p>As per the final PDD^{3/}, baseline emissions included only CO₂ emissions from electricity generation in fossil fuel fired power plants from the Sumatra regional grid that are displaced due to the project activity.</p> <p>As per equation 11 of the applied methodology, $BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$ Where BE_y – Baseline emissions $EG_{PJ,y}$ -Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity $EF_{grid,CM,y}$ -Combined margin CO₂ emission factor for grid connected power generation The validation of the same is detailed below.</p>
5.5.1. Calculation of $EG_{PJ,y}$ 40. The calculation of $EG_{PJ,y}$ is different for Greenfield plants, capacity additions, retrofits, rehabilitations, and replacements.	<p>The project activity is greenfield project. Hence para 41 of the applied methodology is applicable. Since the project activity is the installation of a Greenfield power plant, then $EG_{PJ,y} = EG_{facility,y}$</p>

	<p>Where $EG_{\text{facility},y}$ -Quantity of net electricity generation supplied by the project plant/unit to the grid</p>
<p>Quantity of net electricity generation supplied by the project plant/unit to the grid ($EG_{\text{facility},y}$) =242,240 MWh per year</p> <p>Quantity of electricity supplied to the grid =242,240 MWh per year</p> <p>Quantity of electricity imported by the grid to the project =0 MWh per year</p> <p>(monitored parameter number 1 as per the final PDD^{3/})</p>	<p>As per the final PDD^{3/}, $EG_{\text{facility},y}$ is calculated continuously and recorded monthly. There will be main meter and check meter for export and import of electricity. These are located at the connection to the transmission lines and within the switchyard (grid interface) of the project site. This parameter is calculated as difference between quantity of electricity supplied to the grid and quantity of electricity imported by the grid to the project. Both parameters are measured by the export and import meters.</p> <p>QA/QC procedure: As the electricity meters are regulated, the electricity meter will be subject to regular maintenance and testing in accordance with the stipulation of the meter suppliers or as per the requirements set by the grid operator (PLN). The calibration of meters, including the frequency of calibration, will be done in accordance with requirements set by the meter supplier or requirements set by the grid operator (PLN). The accuracy class of the meters will be in accordance with the stipulation of the meter supplier (0.2 type) and/or as per the requirements set by the grid operators or national requirements.</p> <p>The meters are of 0.2 type measuring equipment and these will be calibrated annually by the third party PLN as per the requirements of PPA^{11/} signed with them by the PP. Therefore the validation team has confirmed that the monitoring plan is feasible and implemented during the crediting period.</p>
<p>Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity ($EG_{PJ,y}$) =242,240 MWh per year</p>	<p>The project activity is greenfield project. Hence para 41 of the applied methodology is applicable. Since the project activity is the installation of a Greenfield power plant, then $EG_{PJ,y} = EG_{\text{facility},y}$</p> <p>Where $EG_{\text{facility},y}$ -Quantity of net electricity generation supplied by the project plant/unit to the grid</p>
<p>Combined margin CO₂ emission factor for grid connected power generation ($EF_{\text{grid},CM,y}$) =0.893 tCO₂e per year (ex-ante parameter number 1 as per the final PDD^{3/})</p>	<p>The validation opinion of the same is detailed in Appendix 10 of this report</p>
<p>Baseline emissions (BE_y) =216,320 tCO₂e/year</p>	<p>As per the final PDD^{3/}, baseline emissions included only CO₂ emissions from electricity generation in fossil fuel fired power plants from the Sumatra regional grid that are displaced due to the project activity. As per equation 11 of the applied methodology, $BE_y = EG_{PJ,y} \times EF_{\text{grid},CM,y}$</p>
<p>5.5.1.2. Capacity addition to wind, solar, wave or tidal plant 42. In the case of wind, solar, wave or tidal power plants/units, it is assumed that the addition of new capacity does not significantly affect the electricity generated by existing plants/units. In this case, the electricity fed into the grid by the</p>	<p>This is not applicable as the project is not capacity addition project.</p>

<p>added power plants/units shall be directly metered and used to determine <i>EGPJ</i>,</p> <p>Note: In this case of wind power capacity additions, some shadow effects can occur, but are not accounted under this methodology</p>	
<p>5.5.1.3. Capacity addition to hydro or geothermal power plant</p> <p>43. In the case of hydro or geothermal power plants/units, the addition of new power plants/units may significantly affect the electricity generated by the existing plants/units.</p> <p>For example, a new hydro turbine installed at an existing dam may affect the power generation by the existing turbines.</p> <p>Therefore, the approach as in section 5.5.1.4 below for retrofit or rehabilitation or replacement projects shall be used for hydro power plants and geothermal power plants. <i>EGfacility,y</i> corresponds to the net electricity generation supplied to a grid by the existing plants/units and the added plants/units together constituting "project plants/units". A separate metering of electricity supplied to a grid by the added plants/units is not necessary under this option.</p>	<p>This is not applicable as the project is not capacity addition project.</p>
<p>5.5.1.4. Retrofit or rehabilitation or replacement of an existing renewable energy power plant</p> <p>44. If the project activity is the retrofit or rehabilitation or replacement of an existing grid-connected renewable energy power plant, the methodology uses historical electricity generation data to determine the electricity generation by the existing plant in the baseline scenario, assuming that the historical situation observed prior to the implementation of the project activity would continue.</p> <p>45. The power generation from renewable energy power projects can vary significantly from year to year, due to natural variations in the availability of the renewable source (e.g. varying rainfall, wind speed or solar radiation).</p> <p>The use of few historical years to establish the baseline electricity generation can therefore involve a significant uncertainty.</p> <p>The methodology addresses this uncertainty by adjusting the historical electricity generation by its standard deviation.</p> <p>This ensures that the baseline electricity generation is established in a conservative manner and that the calculated emission reductions are attributable to the project activity.</p> <p>Without this adjustment, the calculated emission reductions could mainly depend on the natural variability observed during the historical period rather than the effects of the project activity</p> <p>Note: As an alternative approach for hydropower plants, the baseline electricity generation could be established as a function of the water availability.</p> <p>In this case, the baseline electricity generation would be established ex post based on the water availability monitored during the crediting period.</p> <p>Project participants are encouraged to consider such</p>	<p>This is not applicable as the project is not retrofit or rehabilitation or replacement project.</p> <p>Hence para 47 to 52 of the applied methodology is not applicable.</p>

approaches and submit the related request for a revision to this methodology.	
5.6. Leakage 53. No other leakage emissions are considered. The emissions potentially arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport etc.) are neglected	There is no leakage emissions.
Leakage emissions (LE_y)=0 tCO ₂ e per year	There is no leakage emissions.
5.7. Emission reductions Emission reduction (ER_y) =216,320 tCO ₂ e per year	As per para 54 of the applied methodology, $ER_y = BE_y - PE_y - LE_y$ Where BE _y -Baseline emissions PE _y -Project emissions LE _y -Leakage emissions
5.7.1. Estimation of emissions reductions prior to validation 55. Project participants shall prepare as part of the CDM-PDD an estimate of likely emission reductions from the proposed project activity during the crediting period. This estimate should, in principle, employ the same methodology as selected above. Where the grid emission factor ($EF_{CM,grid,y}$) is determined ex post during monitoring, project participants may use models or other tools to estimate the emission reductions prior to validation.	As per equation 11 of the applied methodology, $BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$ And as per equation of the applied methodology, $EG_{PJ,y} = EG_{facility,y}$ As an ex-ante estimation, $EG_{facility,y}$ is taken from Power Purchase Agreement. As per the final PDD ^{/3/} , $EF_{CM,grid,y}$ is determined ex-ante parameter.
5.8. Changes required for methodology implementation in 2nd and 3rd crediting periods 56. Project participants shall refer to "TOOL11: Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period	This is validation project. So this is not applicable.
6. Monitoring methodology 64. All data collected as part of monitoring should be archived electronically and be kept at least for two years after the end of the last crediting period. One hundred per cent of the data should be monitored if not indicated otherwise in the tables below. All measurements should be conducted with calibrated measurement equipment according to relevant industry standards.	As per the final PDD ^{/3/} , monitoring data would be kept at least for two years after the end of the last crediting period.
65. In addition, the monitoring provisions in the tools referred to in this methodology apply. Accordingly, $EG_{facility,y}$ and $EG_{PJ_Add,y}$ should be determined as per "TOOL05: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation", and $EF_{grid,CM,y}$ and $PE_{FF,y}$ should be determined as per "TOOL07: Tool to calculate the emission factor for an electricity system" and "TOOL03: Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion" respectively. When applying the tool, requirement for the $EG_{PJ,grid,y}$ should apply to parameters $EG_{facility,y}$ and $EG_{PJ_Add,y}$	$EG_{facility,y}$ is calculated as per TOOL05: Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation v3.0. $EF_{grid,CM,y}$ is calculated as per TOOL07: Tool to calculate the emission factor for an electricity system v7.0. The validation opinion is detailed as per Appendix 10 of this report

Requirements of Methodological tool: Tool for the demonstration and assessment of additionality	Validation opinion
<p>1. Introduction</p> <p>1. The tool provides a step-wise approach to demonstrate and assess the additionality of a CDM project.</p> <p>These steps are:</p> <p>(a) Step 0 Demonstration whether the proposed project activity is the first-of-its-kind;</p> <p>(b) Step 1 Identification of alternatives to the project activity;</p> <p>(c) Step 2 Investment analysis;</p> <p>(d) Step 3 Barriers analysis; and</p> <p>(e) Step 4 Common practice analysis.</p>	<p>The validation opinion of the step wise approach followed by the PP in demonstrating the additionality is detailed below.</p>
<p>2. Scope, applicability, and entry into force</p> <p>2.1. Scope</p> <p>2. This tool provides for a step-wise approach to demonstrate and assess additionality.</p> <p>These steps include:</p> <p>(a) Demonstration whether the proposed project activity is the first-of-its-kind;</p> <p>(b) Identification of alternatives to the project activity;</p> <p>(c) Investment analysis to determine that the proposed project activity is either:</p> <p>1) not the most economically or financially attractive,</p> <p>or</p> <p>2) not economically or financially feasible;</p> <p>(d) Barriers analysis; and</p> <p>(e) Common practice analysis.</p>	<p>The validation opinion of the step wise approach followed by the PP in demonstrating the additionality is detailed below. PP has demonstrated that the proposed project activity is not economically or financially feasible.</p>
<p>3. Based on the information about activities similar to the proposed project activity, the common practice analysis is to complement and reinforce the investment and/or barriers analysis.</p> <p>The steps are summarized in Figure 1.</p> <p>Note: Project participants can use either investment analysis or barrier analysis step. They may, if they so wish, use both investment and barrier analysis step.</p>	<p>PP has demonstrated project activity is not a common practice in Indonesia. PP has used investment analysis alone.</p>
<p>4. The document provides a general framework for demonstrating and assessing additionality and is applicable to a wide range of project types. Some project types may require adjustments to this general framework.</p>	<p>Project type is hydro power plant. So the general framework for demonstrating additionality is applicable. The validation opinion of the step wise approach followed by the PP in demonstrating the additionality is detailed below.</p>
<p>5. This tool does not replace the need for the baseline methodology to provide a step-wise approach to identify the baseline scenario. Project participants that propose new baseline methodologies shall ensure consistency between</p>	<p>The applied methodology has predefined baseline scenario for greenfield project. So the PP did not use "Combined tool to identify the baseline scenario and demonstrate additionality" v7.0.</p>

the determination of additionality of a project activity and the determination of a baseline scenario. Project participants can also use the “Combined tool to identify the baseline scenario and demonstrate additionality”, which provides a procedure for baseline scenario identification as well as additionality demonstration.	
6. In validating the application of this tool, Designated Operation Entities (DOEs) shall carefully assess and verify the reliability and creditability of all data, rationales, assumptions, justifications and documentation provided by project participants to support the demonstration of additionality. The elements checked during this assessment and the conclusions shall be documented transparently in the validation report.	The validation team has assessed the reliability and creditability of all data, rationales, assumptions, justifications and documentation provided by the PP to support the demonstration of additionality.
7. Project activities with a start date before the date of validation shall specifically take into account the guidance provided in Chapter B “Specific guidelines for completing the Project Design Document (CDM-PDD)” section B, sub-section B-5. The “start date of a project activity” is as defined in paragraph 76 of thirty-third report of the Board. Note: The Board agreed to clarify that the primary purpose of defining the start date of a project activity is to ensure that project activities submitted for registration comply with the requirements of paragraph 13 of Decision 17/CP.7. In this context, it has always been the Board’s view that the start date of a CDM project activity is the earliest of the dates at which the implementation or construction or real action of the project activity begins.	The validation team has taken the guidance provided in PDD template in validating the additionality. As per glossary of CDM terms ^{/16/} v10.0, For a CDM project activity, the date on which the PP commit to making expenditures for the construction of the main equipment or facility. The validation team has reviewed the offshore equipment supply contract ^{7/} signed between the current PP and POSCO Engineering Co Ltd dated 24 th October 2016. Since signing of supply contract indicates the commitment to making expenditure, the validation team has accepted this date as start date of the project.
8. Project activities that apply this tool in context of approved consolidated methodology ACM0002, only need to identify that there is at least one credible and feasible alternative that would be more attractive than the proposed project activity.	The applied methodology has predefined baseline scenario for greenfield project. PP has demonstrated by means of benchmark analysis that post tax project IRR is less than the WACC. The proposed activity is not the financially attractive one.
2.2. Applicability 9. The use of the “Tool for the demonstration and assessment of additionality” is not mandatory for project participants when proposing new methodologies. Project participants may propose alternative methods to demonstrate additionality for consideration by the Executive Board. They may also submit revisions to approved methodologies using the additionality tool.	PP has applied this additionality tool in demonstrating additionality.
10. Once the additionally tool is included in an approved methodology, its application by project participants using this methodology is mandatory.	PP has complied with the requirements of the additionality tool.
2.3. Entry into force 11. Immediately upon adoption of the tool at the seventieth meeting of the Board (23 November 2012).	PP has used the latest version of the additionality tool v7.0.
3. Definitions	PP has chosen entire host country Indonesia.

<p>12. The definitions contained in the "Glossary of CDM terms" shall apply.</p> <p>13. For the purpose of this tool, the following definitions apply: (a) Applicable geographical area should be the entire host country. If the project participants opt to limit the applicable geographical area to a specific geographical area (such as province, region, etc.) within the host country, then they shall provide justification on the essential distinction between the identified specific geographical area and the rest of the host country.</p>	
<p>(b) Measure (for emission reduction activities) is a broad class of greenhouse gas emission reduction activities possessing common features.</p> <p>Four types of measures are currently covered in the framework:</p> <p>Note: Identified measures do not cover industrial gases, transport and afforestation/reforestation projects</p> <p>(i) Fuel and feedstock switch (example: switch from naphtha to natural gas for energy generation, or switch from limestone to gypsum in cement clinker production);</p> <p>(ii) Switch of technology with or without change of energy source including energy efficiency improvement as well as use of renewable energies (example: energy efficiency improvements, power generation based on renewable energy);</p> <p>(iii) Methane destruction (example: landfill gas flaring);</p> <p>(iv) Methane formation avoidance (example: use of biomass that would have been left to decay in a solid waste disposal site resulting in the formation and emission of methane, for energy generation).</p>	<p>The project activity involved the construction and operation of 39 MW (13 MW x 3 units) large-scale run-of-river hydropower plant (renewable energy source) in Republic of Indonesia. So the measure is Switch of technology with or without change of energy source including energy efficiency improvement as well as use of renewable energies is accepted by the validation team.</p> <p>Fuel & feedstock, methane destruction or methane formation avoidance is not applicable.</p>
<p>(c) Output is good/services produced by the project activity including, among other things, heat steam, electricity, methane, and biogas unless otherwise specified in the applied methodology.</p>	<p>The project activity involved 39 MW large-scale run-of-river hydropower plant. As per the final PDD^{/3/}, net electricity generated from the project is 242,240 MWh per year.</p>
<p>4. Methodology procedure 4.1. Step 0: Demonstration whether the proposed project activity is the first-of-its-kind</p> <p>14. This step is optional.</p> <p>If it is not applied it shall be considered that the proposed project activity is not the first-of-its-kind.</p> <p>15. This step serves for the demonstration of additionality by means of the first-of-its-kind.</p> <p>16. If the proposed CDM project activity(ies) apply measure(s) that are listed in the definitions section above, the latest version of the "Guidelines on additionality of first-of-its-kind project activities" available on the UNFCCC website shall be applied to demonstrate that the project activity is the first-</p>	<p>PP did not select this option. Therefore it can be considered that the proposed project activity is not the first-of-its-kind in the host country.</p> <p>Outcome of Step 0: The proposed project is not the first-of-its-kind.</p>

<p>of-its-kind.</p> <p>17. If the proposed CDM project activity(ies) apply other measure(s) than those identified in the definitions section above, the project proponents shall propose approach for demonstrating that a project is a "first-of-its-kind".</p> <p>18. Outcome of Step 0: If the proposed project is the first-of-its-kind, its additionality is demonstrated; otherwise, proceed to Step 1.</p>	
<p>4.2. Step 1: Identification of alternatives to the project activity consistent with current laws and regulations</p> <p>19. Define realistic and credible alternatives to the project activity(s) through the following Sub-steps: Note: Reference to "alternatives" throughout this document denotes "alternative scenarios".</p>	<p>The validation of identification of alternative is detailed below.</p>
<p>4.2.1. Sub-step 1a: Define alternatives to the project activity</p> <p>20. Identify realistic and credible alternative(s) available to the project participants or similar project developers that provide outputs or services comparable with the proposed CDM project activity.</p> <p>These alternatives are to include:</p> <p>(a) The proposed project activity undertaken without being registered as a CDM project activity;</p> <p>(b) Other realistic and credible alternative scenario(s) to the proposed CDM project activity scenario that deliver outputs services (e.g. cement) or services (e.g. electricity, heat) with comparable quality, properties and application areas, taking into account, where relevant, examples of scenarios identified in the underlying methodology;</p> <p>(c) If applicable, continuation of the current situation (no project activity or other alternatives undertaken).</p> <p>Note: For example, a coal-fired power station or hydropower may not be an alternative for an independent power producer investing in wind energy or for a sugar factory owner investing in a co-generation, but may be an alternative for a public utility. Alternatives are, therefore, related to technology and circumstances as well as to the investor.</p> <p>Note: For example:</p> <p><input type="checkbox"/> In the case of a project reducing emissions in the aluminium or cement production, the output provided by the alternative scenarios should be the production of the same quality of aluminium or the production of a cement type that can be used in the same applications as the cement type produced by the project activity;</p> <p><input type="checkbox"/> In the case of a project improving the energy</p>	<p>As per the final PDD^{3/}, there are 3 alternatives defined by the PP.</p> <p>a.The proposed project activity undertaken without being registered as a CDM project activity This was considered as a realistic alternative hence accepted by the validation team.</p> <p>b.Other alternatives such as 39 MW diesel power plant, 39 MW gas power plant, 39 MW biomass power plant, 39 MW geothermal power plant, 39 MW coal power plant of etc.</p> <p>Since the PP is the independent power producer (being a private entity) which is producing only hydro power plants in Indonesia, these alternatives are not realistic.</p> <p>c.Continuation of the current situation (no project activity or other alternatives undertaken)</p> <p>The current scenario is 39 MW would be generated in the Sumatra regional grid. In the absence of the project, the same amount of electricity would be drawn from the grid only. Therefore this is considered as realistic and credible alternative.</p>

<p>efficiency of motors in a facility, the service provided is mechanical energy.</p> <p>Different scenarios to produce the same quantity of mechanical energy should be considered;</p> <p><input type="checkbox"/> In the case of a landfill gas capture project, the service provided by the project includes operation of a landfill.</p> <p>Alternatives scenarios to the project could include different ways to operate the landfill, such as no capture of methane, capture and flaring of the methane or capture and combustion of the methane for energy generation.</p>	
<p>21. If the proposed CDM project activity includes several different facilities, technologies, outputs or services, alternative scenarios for each of them should be identified separately.</p> <p>Realistic combinations of these should be considered as possible alternative scenarios to the proposed project activity.</p> <p>Note: For example</p> <p><input type="checkbox"/> In case of a cogeneration project activity, alternative scenarios for heat and electricity generation should be established separately;</p> <p><input type="checkbox"/> In case of a project that improves energy efficiency in several boilers with rather different characteristics (e.g. size, technology, age, etc.), alternative scenarios should be established for each boiler or for types of boilers with broadly similar characteristics.</p>	<p>The project activity included one facility, technology and output only.</p>
<p>22. For the purpose of identifying relevant alternative scenarios, the project participant should include the technologies or practices that provide outputs (e.g. cement) or services (e.g. electricity, heat) with comparable quality, properties and application areas as the proposed CDM project activity and that have been implemented previously or are currently being introduced in the relevant country/region.</p>	<p>PP has considered other alternatives such as 39 MW diesel power plant, 39 MW gas power plant, 39 MW biomass power plant, 39 MW geothermal power plant, 39 MW coal power plant of etc. These type of power plants are operational in Indonesia.</p> <p>Since the PP is the independent power producer (being a private entity) which is producing only hydro power plants in Indonesia, these alternatives are not realistic.</p>
<p>23. Outcome of Step 1a: Identified realistic and credible alternative scenario(s) to the project activity.</p>	<p>Outcome of sub step 1a:</p> <p>Alternatives are</p> <ol style="list-style-type: none"> 1.The proposed project activity undertaken without being registered as a CDM project activity 2. Continuation of the current situation
<p>4.2.2. Sub-step 1b: Consistency with mandatory laws and regulations</p> <p>24. The alternative(s) shall be in compliance with all mandatory applicable legal and regulatory requirements, even if these laws and regulations have objectives other than GHG reductions, e.g. to mitigate local air pollution.</p> <p>(This sub-step does not consider national and local policies that do not have legally-binding status).</p>	<p>1.The proposed project activity undertaken without being registered as a CDM project activity</p> <p>PP is the independent power producer in Indonesia. The validation has checked that there is no current law that mandates an independent power producer (IPP) or any potential power producers to develop hydroelectric power plants in Indonesia; however as per the national policy (Presidential Regulation (2006; Regulation no: 05/2006) Kebijakan Energi Nasional (National Energy Policy) document^{5/}, the government does aim to increase the usage of both coal fired and renewable energy plants (including Hyo power plants) in national</p>

	<p>Energy mix. However there are no incentives or special schemes available for setting up of a hydro power plant. The validation team has also reviewed the Indonesia President Decree No. 4/2010^{/5/}, Indonesia President Decree No. 48/2011^{/5/} and Indonesia President Decree No. 194/2014^{/5/} and found that the government has introduced various fast-track programs to accelerate power generation, with the fast track II program having a specific focus on renewable energy. Hence these can be considered as E- policy since these Government programs give comparative advantage to less emission intensive technologies or fuels such as hydro power plants. The impacts of these policies thus excluded in establishing the baseline scenario as they have been implemented since the adoption of the Marrakesh Accords (11/11/2001). However, the fast track program is voluntary and as such, there are no legal or regulatory requirements that prevent the project activity from occurring or mandates switching over from energy intensive power plant to Hydro power plant in Indonesia. The validation team has found that there are no financial incentives such as government subsidy available to hydro power projects in Indonesia. No national or sectoral policies were found relevant to the project activity and hence have not been considered.</p> <p>Therefore the validation team has confirmed that proposed project activity without CDM has compliance with the national regulations.</p> <p>2. Continuation of the current situation Since Sumatra grid is currently in operational in Indonesia, validation team has confirmed that this alternative has compliance with the national regulations</p>
<p>25. If an alternative does not comply with all mandatory applicable legislation and regulations, then show that, based on an examination of current practice in the country or region in which the law or regulation applies, those applicable legal or regulatory requirements are systematically not enforced and that noncompliance with those requirements is widespread in the country. If this cannot be shown, then eliminate the alternative from further consideration.</p>	<p>This is not applicable as both alternatives comply with the national regulations.</p>
<p>26. If the proposed project activity is the only alternative amongst the ones considered by the project participants that is in compliance with mandatory regulations with which there is general compliance, then the proposed CDM project activity is not additional.</p>	<p>There are 2 alternatives that is in compliance with mandatory regulations</p>
<p>27. Outcome of Step 1b: Identified realistic and credible alternative scenario(s) to the project activity that are in compliance with mandatory legislation and regulations taking into account the enforcement in the region or country and EB decisions on national and/or sectoral policies and regulations.</p>	<p>Outcome of sub step 1a:</p> <p>Realistic and credible alternative scenarios to the project activity that are in compliance with mandatory legislation</p> <p>1.The proposed project activity undertaken without being registered as a CDM project activity</p> <p>2. Continuation of the current situation</p>
<p>28. "Proceed to Step 2 (Investment analysis) or</p>	<p>As per the final PDD^{/3/}, PP has selected step 2 –</p>

Step 3 (Barrier analysis). (Project participants may also select to complete both Steps 2 and 3)"	Investment analysis.
4.3. Step 2: Investment analysis 29. Determine whether the proposed project activity is not: (a) The most economically or financially attractive; or (b) Economically or financially feasible, without the revenue from the sale of certified emission reductions (CERs).	PP has determined that project is not economically feasible without the revenue from the sale of certified emission reductions.
30. Please note that the latest version of the "Guidelines on the assessment of investment analysis", available on the UNFCCC website, shall be taken into account when applying this step.	PP has used Tool-Investment analysis v10.0. The validation opinion of the same is detailed in Appendix 11 of this report.
31. To conduct the investment analysis, use the following sub-steps: 4.3.1. Sub-step 2a: Determine appropriate analysis method 32. Determine whether to apply simple cost analysis, investment comparison analysis or benchmark analysis (Sub-step 2b). If the CDM project activity and the alternatives identified in Step 1 generate no financial or economic benefits other than CDM related income, then apply the simple cost analysis (Option I). Otherwise, use the investment comparison analysis (Option II) or the benchmark analysis (Option III).	As per the power purchase agreement, the project is earning USD 0.089917/kWh for the first 15 years and USD 0.057121/kWh for the next 15 years. Since project is generating financial benefits other the CDM related income, simple cost cannot be applied. Therefore, PP has applied benchmark analysis (Option III).
4.3.2. Sub-step 2b: Option I. Apply simple cost analysis 33. Document the costs associated with the CDM project activity and the alternatives identified in Step 1 and demonstrate that there is at least one alternative which is less costly than the project activity. 34. "If it is concluded that the proposed CDM project activity is more costly than at least one alternative then proceed to Step 4 (Common practice analysis)".	As per the power purchase agreement, the project is earning USD 0.089917/kWh for the first 15 years and USD 0.057121/kWh for the next 15 years. Since project is generating financial benefits other the CDM related income, simple cost cannot be applied.
4.3.3. Sub-step 2b: Option II. Apply investment comparison analysis 35. Identify the financial indicator, such as IRR, NPV, cost benefit ratio, or unit cost of service (e.g. levelized cost of electricity production in \$/kWh or levelized cost of delivered heat in \$/GJ) most suitable for the project type and decision-making context.	As per para 19 of Guidelines on the assessment of investment analysis v5.0, if the proposed baseline scenario leaves the project participant no other choice than to make an investment to supply the same (or substitute) products or services, a benchmark analysis is not appropriate and an investment comparison analysis shall be used. If the alternative to the project activity is the supply of electricity from a grid this is not to be considered an investment and a benchmark approach is considered appropriate. As per para 19, if the proposed baseline scenario leaves the project participant no other choice than to make an investment to supply the same product, an investment comparison analysis shall be used. This is not the case as the PP (being a private Hydro based IPP) cannot investment in power plants such as coal, diesel, wind, or gas power plants. So investment comparison analysis (option II) cannot be applied.
4.3.4. Sub-step 2b: Option III. Apply benchmark analysis	Since the baseline is the supply of electricity from the Sumatra grid that is not to be considered an

<p>36. Identify the financial/economic indicator, such as IRR, most suitable for the project type and decision context.</p> <p>37. When applying Option II or Option III, the financial/economic analysis shall be based on parameters that are standard in the market, considering the specific characteristics of the project type, but not linked to the subjective profitability expectation or risk profile of a particular project developer.</p> <p>Only in the particular case where the project activity can be implemented by the project participant, the specific financial/economic situation of the company undertaking the project activity can be considered.</p> <p>Note: For example, when the project activity upgrades an existing process or uses a resource (i.e. some waste) available on the project site and that is not traded.</p>	<p>investment, benchmark approach (option III) is considered appropriate. This is accepted by the validation team.</p> <p>PP has selected post tax project IRR as financial indicator which is appropriate to the project type (debt:equity ratio being 70%:30%) and decision context of the PP.</p> <p>Since the project activity can be implemented by the PP, the specific financial/economic situation of the company undertaking the project activity can be considered. This is accepted by the validation team.</p>
<p>38. Discount rates and benchmarks shall be derived from:</p> <p>(a) Government bond rates, increased by a suitable risk premium to reflect private investment and/or the project type, as substantiated by an independent (financial) expert or documented by official publicly available financial data;</p> <p>(b) Estimates of the cost of financing and required return on capital (e.g. commercial lending rates and guarantees required for the country and the type of project activity concerned), based on bankers views and private equity investors/funds' required return on comparable projects;</p> <p>(c) A company internal benchmark (weighted average capital cost of the company), only in the particular case referred to above in paragraph 5. The project developers shall demonstrate that this benchmark has been consistently used in the past, i.e. that project activities under similar conditions developed by the same company used the same benchmark;</p> <p>(d) Government/official approved benchmark where such benchmarks are used for investment decisions;</p> <p>(e) Any other indicators, if the project participants can demonstrate that the above Options are not applicable and their indicator is appropriately justified.</p>	<p>Since the project that could be developed by any entity, WACC is based on parameters that are standard in the market. As the parameters used to calculate WACC are based on the standard values in the market. The validation team has observed that parameters are market specific and not project specific one.</p> <p>Cost of equity = 10.24% as per the investment analysis sheet^{3/}.</p> <p>PP has selected option a- default values provided in the appendix of tool-Investment analysis v10.0</p> <p>Cost of debt = 11.64%</p> <p>This is based on Investment lending rate from Central bank of Indonesia (Year to investment decision date average). This is sourced from https://www.bi.go.id/id/statistik/sdds/Pages/default.aspx</p> <p>As the commercial lending rate in the country is considered as cost of debt, the validation team has accepted.</p> <p>Since the benchmark is based on parameters that are standard in the market, the validation team has accepted.</p>
<p>4.3.5. Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II and III):</p> <p>39. Calculate the suitable financial indicator for the proposed CDM project activity and, in the case of Option II above, for the other alternatives.</p> <p>Include all relevant costs (including, for example, the investment cost, the operations and maintenance costs), and revenues (excluding CER revenues, but possibly including inter alia</p>	<p>PP has selected post tax project IRR as financial indicator which is appropriate to the project type. The input parameters considered are project cost (EPC cost and non-EPC cost), O&M fixed costs including insurance costs, O&M variable costs, revenues from selling electricity, depreciation, insurance, interest on loan, income tax etc. The validation team has accepted these parameters in calculating the project IRR as correct.</p>

<p>subsidies/fiscal incentives, ODA, etc., where applicable), and, as appropriate, non-market cost and benefits in the case of public investors if this is standard practice for the selection of public investments in the host country.</p> <p>Note: See EB guidance on the consideration of national/local/sectoral policies and measures for the baseline setting.</p>	
<p>40. Present the investment analysis in a transparent manner and provide all the relevant assumptions, preferably in the CDM-PDD, or in separate annexes to the CDM-PDD, so that a reader can reproduce the analysis and obtain the same results.</p> <p>Refer to all critical techno-economic parameters and assumptions (such as capital costs, fuel prices, lifetimes, and discount rate or cost of capital).</p> <p>Justify and/or cite assumptions in a manner that can be validated by the DOE.</p> <p>In calculating the financial/economic indicator, the project's risks can be included through the cash flow pattern, subject to project-specific expectations and assumptions (e.g. insurance premiums can be used in the calculation to reflect specific risk equivalents).</p>	<p>PP has submitted additionality spreadsheet for validation. The input parameters considered are project cost (EPC cost and non-EPC cost), O&M fixed costs including insurance costs, O&M variable costs, revenues from selling electricity, depreciation, insurance, interest on loan, income tax, period of assessment, benchmark.</p>
<p>41. Assumptions and input data for the investment analysis shall not differ across the project activity and its alternatives, unless differences can be well substantiated.</p>	<p>This is not applicable for benchmark analysis.</p>
<p>42. Present in the CDM-PDD submitted for validation a clear comparison of the financial indicator for the proposed CDM activity and:</p> <p>(a) The alternatives, if Option II (investment comparison analysis) is used.</p> <p>If one of the other alternatives has the best indicator (e.g. highest IRR), then the CDM project activity cannot be considered as the most financially attractive;</p> <p>(b) The financial benchmark, if Option III (benchmark analysis) is used. If the CDM project activity has a less favourable indicator (e.g. lower IRR) than the benchmark, then the CDM project activity cannot be considered as financially attractive.</p>	<p>PP has used benchmark analysis (option III). PP has demonstrated that post tax project IRR of the project activity is less than the WACC. Therefore the project activity cannot be considered as financially attractive. The validation opinion of the input parameters are detailed in Appendix 11 of this report</p>
<p>4.3.6. Sub-step 2d: Sensitivity analysis (only applicable to Options II and III)</p> <p>43. Include a sensitivity analysis that shows whether the conclusion regarding the financial/economic attractiveness is robust to reasonable variations in the critical assumptions. The investment analysis provides a valid argument in favour of additionality only if it consistently supports (for a realistic range of assumptions) the conclusion that the project activity is unlikely to be the most financially/economically attractive (as per Step 2c) or is unlikely to be</p>	<p>PP has taken investment cost, PLF, electricity tariff and O&M costs for sensitivity analysis. Based on this analysis, the validation team has confirmed that lack of economic attractiveness of the project is robust to reasonable variations in the critical assumptions. Therefore, it is confirmed that the project activity is not economically attractive.</p>

financially/economically attractive (as per Step 2c).	
<p>44. Outcome of Step 2: If after the sensitivity analysis it is concluded that:</p> <p>(1) the proposed CDM project activity is unlikely to be the most financially/economically attractive (as per Step 2c) or</p> <p>(2) is unlikely to be financially/economically attractive (as per Step 2c), then proceed to Step 4 (Common practice analysis).</p> <p>Note: If the project participants so wish, they may apply the Step 3 (Barrier analysis) as well .</p>	<p>Outcome of step 2:</p> <p>The proposed CDM project activity is unlikely to be economically attractive.</p> <p>PP has skipped barrier analysis.</p>
45. Otherwise, unless barrier analysis below is undertaken and indicates that the proposed project activity faces barriers that do not prevent at least one alternative from occurring, the project activity is considered not additional.	This is not applicable.
<p>4.4. Step 3: Barrier analysis</p> <p>46. This step serves to identify barriers and to assess which alternatives are prevented by these barriers.</p> <p>Please note that the latest approved version of the "Guidelines for objective demonstration and assessment of barriers", available on the UNFCCC website, shall be taken into account when applying this step.</p>	PP has skipped this step.
<p>47. If this step is used, determine whether the proposed project activity faces barriers that:</p> <p>(a) Prevent the implementation of this type of proposed project activity; and</p> <p>(b) Do not prevent the implementation of at least one of the alternatives.</p>	PP has skipped this step.
48. The identified barriers are only sufficient grounds for demonstration of additionality if they would prevent potential project proponents from carrying out the proposed project activity undertaken without being registered as a CDM project activity.	PP has skipped this step.
49. If the CDM does not alleviate the identified barriers that prevent the proposed project activity from occurring, then the project activity is not additional.	PP has skipped this step.
<p>50. Use the following sub-steps:</p> <p>4.4.1. Sub-step 3a: Identify barriers that would prevent the implementation of the proposed CDM project activity</p> <p>51. Establish that there are realistic and credible barriers that would prevent the implementation of the proposed project activity from being carried out if the project activity was not registered as a CDM activity.</p> <p>Such realistic and credible barriers may include, among others:</p> <p>(a) Investment barriers, other than the economic/financial barriers in Step 2 above, inter alia:</p> <p>(i) For alternatives undertaken and operated by private entities:</p>	PP has skipped this step. Investment barrier does not include economic barrier as considered in step 2.

<p>Similar activities have only been implemented with grants or other non-commercial finance terms.</p> <p>Similar activities are defined as activities that rely on a broadly similar technology or practices, are of a similar scale, take place in a comparable environment with respect to regulatory framework and are undertaken in the relevant country/region;</p> <p>(ii) No private capital is available from domestic or international capital markets due to real or perceived risks associated with investment in the country where the proposed CDM project activity is to be implemented, as demonstrated by the credit rating of the country or other country investments reports of reputed origin.</p>	
<p>(b) Technological barriers, inter alia:</p> <p>(i) Skilled and/or properly trained labour to operate and maintain the technology is not available in the relevant country/region, which leads to an unacceptably high risk of equipment disrepair and malfunctioning or other underperformance;</p> <p>(ii) Lack of infrastructure for implementation and logistics for maintenance of the technology (e.g. natural gas cannot be used because of the lack of a gas transmission and distribution network);</p> <p>(iii) Risk of technological failure: the process/technology failure risk in the local circumstances is significantly greater than for other technologies that provide services or outputs comparable to those of the proposed CDM project activity, as demonstrated by relevant scientific literature or technology manufacturer information;</p> <p>(iv) The particular technology used in the proposed project activity is not available in the relevant region;</p> <p>(c) Other barriers, preferably specified in the underlying methodology as examples.</p>	PP has skipped this step.
<p>52. Outcome of Step 3a: Identified barriers that may prevent one or more alternative scenarios to occur or conclusion that the project is additional.</p>	PP has skipped this step.
<p>4.4.2. Sub-step 3b: Show that the identified barriers would not prevent the implementation of at least one of the alternatives (except the proposed project activity)</p> <p>53. If the identified barriers also affect other alternatives, explain how they are affected less strongly than they affect the proposed CDM project activity.</p> <p>In other words, demonstrate that the identified barriers do not prevent the implementation of at least one of the alternatives.</p> <p>Any alternative that would be prevented by the barriers identified in Sub-step 3a is not a viable alternative, and shall be eliminated from consideration.</p>	PP has skipped this step.
<p>54. In applying Sub-steps 3a and 3b, provide transparent and documented evidence, and offer conservative interpretations of this documented evidence, as to how it demonstrates the existence</p>	PP has skipped this step.

<p>and significance of the identified barriers and whether alternatives are prevented by these barriers.</p> <p>Anecdotal evidence can be included, but alone is not sufficient proof of barriers.</p> <p>The type of evidence to be provided should include at least one of the following:</p> <p>(a) Relevant legislation, regulatory information or industry norms;</p> <p>(b) Relevant (sectoral) studies or surveys (e.g. market surveys, technology studies, etc.) undertaken by universities, research institutions, industry associations, companies, bilateral/multilateral institutions, etc.;</p> <p>(c) Relevant statistical data from national or international statistics;</p> <p>(d) Documentation of relevant market data (e.g. market prices, tariffs, rules);</p> <p>(e) Written documentation of independent expert judgments from industry, educational institutions (e.g. universities, technical schools, training centres), industry associations and others.</p>	
<p>55. Outcome of Step 3: If both Sub-steps 3a – 3b are satisfied, proceed to Step 4 (Common practice analysis).</p>	<p>PP has skipped this step.</p>
<p>56. If one of the Sub-steps 3a – 3b is not satisfied, the project activity is not additional.</p>	<p>PP has skipped this step.</p>
<p>4.5. Step 4: Common practice analysis</p> <p>57. The above generic additionality tests shall be complemented with an analysis of the extent to which the proposed project type (e.g. technology or practice) has already diffused in the relevant sector and region.</p> <p>This test is a credibility check to complement the investment analysis (Step 2) or barrier analysis (Step 3).</p> <p>Identify and discuss the existing common practice through the following sub-steps.</p> <p>If the proposed CDM project activity(ies) applies measure(s) that are listed in the definitions section above proceed to Sub-step 4a; otherwise, proceed to Sub-step 4b.</p>	<p>To complement investment analysis, the PP has conducted common practice analysis to determine the rate of penetration of hydro power plants in the host country Indonesia.</p> <p>Since the measure applied for this project is Switch of technology with or without change of energy source including energy efficiency improvement as well as use of renewable energies which is being listed in the definitions section above, the validation accepted that sub-step 4a can be applied.</p>
<p>4.5.1. Sub-step 4a: The proposed CDM project activity(ies) applies measure(s) that are listed in the definitions section above</p> <p>58. The latest version of the “Guidelines on common practice” available on the UNFCCC website shall be applied.</p> <p>59. Proceed directly to the outcome of Step 4.</p>	<p>The validation opinion of tool-Common practice v3.1 can be applied.</p>
<p>4.5.2. Sub-step 4b: The proposed CDM project activity(ies) does not apply any of the measures that are listed in the definitions section above</p> <p>60. Provide an analysis to which extent similar</p>	<p>Since PP has applied sub step 4a, this step is not applicable.</p>

<p>activities to the proposed CDM project activity have been implemented previously or are currently underway.</p> <p>Similar activities are defined as activities (i.e. technologies or practices) that are of similar scale, take place in a comparable environment, inter alia, with respect to the regulatory framework and are undertaken in the applicable geographical area, as defined above.</p> <p>Other CDM project activities (registered project activities and project activities which have been published on the UNFCCC website for global stakeholder consultation as part of the validation process) are not to be included in this analysis.</p> <p>Provide documented evidence and, where relevant, quantitative information.</p> <p>On the basis of that analysis, describe whether and to which extent similar activities have already diffused in the applicable geographical area.</p>	
<p>61. If similar activities to the proposed project activity are identified, then compare the proposed project activity to the other similar activities and assess whether there are essential distinctions between the proposed project activity and the similar activities.</p> <p>If this is the case, point out and explain the essential distinctions between the proposed project activity and the similar activities and explain why the similar activities enjoyed certain benefits that rendered them financially attractive (e.g., subsidies or other financial flows) and which the proposed project activity cannot use or why the similar activities did not face barriers to which the proposed project activity is subject.</p>	This is not applicable.
<p>62. Essential distinctions may include a serious change in circumstances under which the proposed CDM project activity will be implemented when compared to circumstances under which similar projects were carried out.</p> <p>For example, new barriers may have arisen, or promotional policies may have ended, leading to a situation in which the proposed CDM project activity would not be implemented without the incentive provided by the CDM.</p> <p>The change must be fundamental and verifiable.</p>	This is not applicable.
<p>63. The proposed project activity is regarded as “common practice” if similar activities can be observed and essential distinctions between the proposed CDM project activity and similar activities cannot be identified.</p>	This is not applicable.
<p>64. Outcome of Step 4: If outcome of Step 4 is that the proposed project activity is not regarded as “common practice”, then the proposed project activity is additional.</p>	The validation opinion of the common practice is detailed in Appendix 12 of this report. Since proposed project activity is not regarded as “common practice”, the proposed project activity is additional.
<p>65. If outcome of Step 4 is that the proposed project activity is regarded as “common practice”</p>	This is not applicable.

then the proposed CDM project activity is not additional.	
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Appendix 10: Requirements of Tool to calculate the emission factor of an electrical system v7.0.

Requirements of Tool to calculate the emission factor of an electrical system v7.0.	Validation opinion
1. Introduction 1. This methodological tool determines the CO ₂ emission factor for the displacement of electricity generated by power plants in an electricity system, by calculating the “combined margin” emission factor (CM) of the electricity system.	All grid emission factor calculations are taken from the calculations done by Direktorat Jenderal Ketenagalistrikan (Directorate General of Electricity). The Indonesian DNA used this calculation as their official grid emission factor for the Sumatera grid. The validation team has reviewed the letter ^{/10/} of the Directorate General of Electricity dated 15 th July 2020. PP has referred this letter in the calculation of combined margin emission factor.
2. Scope, applicability, and entry into force 2.1. Scope 2. The CM is the result of a weighted average of two emission factors pertaining to the electricity system: the “operating margin” (OM) and the “build margin” (BM). The operating margin is the emission factor that refers to the group of existing power plants whose current electricity generation would be affected by the proposed CDM project activity. The build margin is the emission factor that refers to the group of prospective power plants whose construction and future operation would be affected by the proposed CDM project activity.	The validation opinion of calculation of OM, BM and CM is detailed below.
2.2. Applicability 3. This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects).	The project activity involved the construction and operation of 39 MW (13 MW x 3 units) large-scale run-of-river hydropower plant in Republic of Indonesia. The electricity thus generated will be sold to PT PLN (Indonesian State Owned Electricity Company) through regional electricity grid in Sumatera. In the absence of the project activity, the same amount of electricity (grid electricity) would be generated in the Sumatera regional grid. Therefore combined margin calculation applies to the Sumatera regional grid.
4. Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants. In the latter case, two sub-options under the step 2 of the tool are available to the project participants, i.e. option IIa and option IIb. If option IIa is chosen, the conditions specified in “Appendix 1: Procedures related to off-grid power generation” should be met. Namely, the total capacity of off-grid power plants (in MW) should be at least 10 per cent of the total capacity of grid power plants in the electricity system; or the total electricity generation by off-grid power	PP has opted for grid power plants only by referring the letter ^{/10/} of the Directorate General of Electricity dated 15 th July 2020. Off grid power plants are not taken into consideration. This is accepted by the validation team.

plants (in MWh) should be at least 10 per cent of the total electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity.	
5. In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country.	The electricity thus generated will be sold (100%) to PT PLN (Indonesian State Owned Electricity Company) through regional electricity grid in Sumatera. Since the project electricity system is located in Indonesia which is not an Annex I country, the validation team has accepted.
6. Under this tool, the value applied to the CO2 emission factor of biofuels is zero.	CO2 emission factor of biofuels never considered.
2.3. Entry into force 7. The date of entry into force is the date of the publication of the EB 100 meeting report on 31 August 2018.	PP has used the latest version of the emission factor tool v.7.0 by referring the letter ^{/10/} of the Directorate General of Electricity dated 15 th July 2020.
3. Normative references 8. This tool refers to the latest approved versions of the TOOL09: Determining the baseline efficiency of thermal or electric energy generation systems". This tool is also referred to in the TOOL05 "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" for the purpose of calculating baseline, project and leakage emissions in case where a project activity consumes electricity from the grid or results in increase of consumption of electricity from the grid outside the project boundary. 4. Definitions 9. The definitions contained in the Glossary of CDM terms shall apply.	The validation team confirmed PP had referred to TOOL05 "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation" v3.0.
10. For the purpose of this tool, the following definitions apply: (a) Power plant/unit - a power plant/unit is a facility that generates electric power. Several power units at one site comprise one power plant, whereas a power unit is characterized by the fact that it can operate independently from other power units at the same site. Where several identical power units (i.e. with the same capacity, age and efficiency) are installed at one site, they may be considered as one single power unit;	PP (by referring the letter ^{/10/} of the Directorate General of Electricity dated 15 th July 2020) has used the definition of power plant/unit while identifying the power plants for the calculation of OM&BM.
(b) Grid power plant/unit - a power plant/unit that supplies electricity to an electricity grid and, if applicable, to specific consumers. This means that power plants supplying electricity to the grid and specific captive consumers at the project are considered as a grid power plant/unit, while power plants that serve only captive consumers and do not supply electricity to the grid are not considered as a grid power plant/unit;	PP (by referring the letter ^{/10/} of the Directorate General of Electricity dated 15 th July 2020) has used the definition of grid power plant/unit while identifying the power plants for the calculation of OM, BM. Those power plants supplying electricity to the grid and specific captive consumers at the project are considered while identifying the power plants for the calculation of OM&BM. Power plants that serve only captive consumers and do not supply electricity to the grid are not considered.
(c) Off-grid power plant/unit - a power plant/unit that supplies electricity to specific consumers through a dedicated distribution network which is not	PP (by referring the letter ^{/10/} of the Directorate General of Electricity dated 15 th July 2020) did not consider off grid power plants.

<p>used by any other power plants.</p> <p>For a power plant to be categorized as off-grid, the following conditions need be fulfilled:</p> <p>(i) A contract specifying the service between the power plant and the isolated user (indicating time of service and conditions of supply);</p> <p>(ii) A grid (or grids) capable of supplying power to the specific consumer(s) to which the off-grid facility is connected, must exist;</p> <p>(iii) The off-grid facility is not connected to the grid(s) and cannot supply power to the grid(s), but only to the consumer(s) to which it is connected;</p> <p>(iv) Under normal conditions, the consumer(s) are supplied their power requirements from the grid only, that is the off-grid plant(s) which is connected to the consumer(s) is a standby on-site facility(ies) that is only used when power supply from the grid fails (or in many cases, when the quality of power supply to the end-user is below acceptable quality);</p> <p>(v) To ensure a proper shift from the grid supply to the off-grid supply, the consumer has in place a change-over-switch system (which may be manual or automatic);</p>	
<p>(d) Net electricity generation - refers to the difference between the total quantity of electricity generated by the power plant/unit and the auxiliary electricity consumption (also known as parasitic load) of the power plant/unit (e.g. for pumps, fans, controlling etc.);</p>	<p>PP (by referring the letter^{10/} of the Directorate General of Electricity dated 15th July 2020) had considered net electricity generation (gross electricity minus auxiliary electricity consumption) of the power plants for the calculation of OM and BM.</p>
<p>(e) Project electricity system - is defined by the spatial extent of the power plants that are physically connected through transmission and distribution lines to the project activity (e.g. the renewable power plant location or the consumers where electricity is being saved) and that are covered by either single or layered dispatch area;</p>	<p>PP (by referring the letter^{10/} of the Directorate General of Electricity dated 15th July 2020) had considered the definition of project electricity system while identifying the power plants.</p>
<p>(f) Isolated grid system - is an electricity system supplying electricity to household users, and if applicable, industries and commercial areas that is not connected to any other electrical network (e.g. national/regional or interconnected power system) and meet one of the following conditions:</p> <p>(i) Any grid located in a Least Developed Country (LDC) or small island development State (SIDS) where at least 65 per cent of the power installed capacity is based on fossil fuel sources - solid, liquid or gaseous;</p> <p>(ii) Any grid where 65 per cent of the power installed capacity is based on liquid fossil fuel sources;</p> <p>(iii) Any grid with a maximum power installed capacity of 1000 MW and at least 80 per cent of the power installed capacity is based on fossil fuel sources - solid, liquid or gaseous;</p>	<p>PP (by referring the letter^{10/} of the Directorate General of Electricity dated 15th July 2020) did not consider isolated grid system.</p>
<p>(g) Connected electricity system - is an electricity system that is connected by transmission lines to the</p>	<p>PP had considered the definition of connected electricity system while identifying the power plants.</p>

project electricity system;	There are 26 interconnected systems in Indonesia. North Sumatera province in which the project is located falls under Sumatra grid.
(h) Dispatch centre – is an entity responsible for keeping the electricity system synchronized within its dispatch area. The dispatch centre responsibilities include scheduling generation and dispatching electricity from power plants to customers and, where applicable, to the connected electricity system(s);	Dispatch Centres' means PLN's control and dispatching centre located at Sumatera Load Centre (P38S), designated by PLN from time to time in writing as being the primary PLN control point for Dispatch instructions. The validation team has confirmed that Perusahaan Listrik Negara (PLN), the State Owned Electricity Company is the dispatch centre for Indonesia.
(i) Dispatch area – is an electricity system or a part of the electricity system controlled by a dispatch centre. A national electricity system could be controlled by more than one dispatch centre, that are either organized into a layered dispatch area or into independent dispatch areas. An example of a layered dispatch area is where regional dispatch centres are required to comply with orders of the national dispatch centre;	Sumatra region is the dispatch area.
(j) Low-cost/must-run (LCMR) resources - are defined as power plants with low marginal generation costs or dispatched independently of the daily or seasonal load of the grid. They include hydro, geothermal, wind, low-cost biomass, nuclear and solar generation. If a fossil fuel plant is dispatched independently of the daily or seasonal load of the grid and if this can be demonstrated based on the publicly available data, it should be considered as a low-cost/must-run. Electricity imports shall be treated as one LCMR power plant;	The validation team has confirmed that there are six types of primary energy used for electricity generation in Indonesia, namely, coal, oil and diesel, natural gas, hydro, geothermal, and solar power. The validation team has observed based on (Data source: Directorate General of Electricity, Ministry of Energy and Mineral Resources, 2015) that the electricity generation from hydro, geothermal, and solar power plants are deemed as low cost/must run (LCMR) power sources in Indonesia. However, average OM was used to calculate the OM and therefore all the power plants including the LCMR power plants (at the aggregate level) are included in the calculation of OM and BM. There are no energy imports for the Sumatra grid.
(k) Load shedding program - is a planned action that consist in the deliberate switching off of electrical supply to parts of the electricity system. Switching off is required when there is an imbalance between electricity demand and electricity supply;	PP had considered the definition of load shedding program.
(l) Lowest annual system load (LASL) – is the minimum recorded value of hourly load in MW in a grid over a calendar year;	PP (by referring the letter ^{10/} of the Directorate General of Electricity dated 15 th July 2020) has considered the definition of LASL while calculating OM.
(m) Highest annual system load (HASL) – is the maximum recorded value of hourly load in MW in a grid over a calendar year.	PP (by referring the letter ^{10/} of the Directorate General of Electricity dated 15 th July 2020) has considered the definition of HASL while calculating OM.
5. Parameters 11. This tool provides procedures to determine the following parameters $EF_{grid,CM,y}$, $EF_{grid,BM,y}$ and $EF_{grid,OM,y}$	The validation opinion of OM, BM and CM is detailed below.
12. This tool provides different methods to determine OM and BM. The key data requirement for applying the methods is summarized in the table 2 of the tool. 13. No methodology-specific parameters are required.	PP (by referring the letter ^{10/} of the Directorate General of Electricity dated 15 th July 2020) has used average OM method is calculating the operating margin. Therefore Power generation aggregated-Option B prescribed under the Simple OM and Fuel consumption aggregated Option B prescribed under the Simple OM are required for the calculating on

	average OM. Since PP had used this data, the validation team has accepted.
<p>6. Baseline methodology procedure</p> <p>14. Project participants shall apply the following six steps:</p> <p>(a) Step 1: Identify the relevant electricity systems;</p> <p>(b) Step 2: Choose whether to include off-grid power plants in the project electricity system (optional);</p> <p>(c) Step 3: Select a method to determine the operating margin (OM);</p> <p>(d) Step 4: Calculate the operating margin emission factor according to the selected method;</p> <p>(e) Step 5: Calculate the build margin (BM) emission factor;</p> <p>(f) Step 6: Calculate the combined margin (CM) emission factor</p>	<p>PP (by referring the letter^{/10/} of the Directorate General of Electricity dated 15th July 2020) has followed all the steps. The validation opinion of each is detailed below.</p>
<p>6.1. Step 1: Identify the relevant electricity systems</p> <p>15. For determining the electricity emission factors, the project participants shall identify the relevant project electricity system.</p>	<p>The power systems in Indonesia are divided into two types: interconnected systems and isolated systems. The power systems which are interconnected are the Java-Bali system and the Sumatra system, while the rest are still isolated. There are 26 interconnected systems in Indonesia. North Sumatra province in which the project is located falls under Sumatra grid.</p>
<p>16. Similarly, the project participants shall identify any connected electricity systems. If a connected electricity system is located partially or totally in Annex I countries, then the emission factor of that connected electricity system should be considered zero.</p>	<p>There are 26 interconnected systems in Indonesia. North Sumatra province in which the project is located falls under Sumatra grid. The connected electricity system is located in Indonesia only which is not an Annex I country.</p>
<p>17. Project participants may delineate the project electricity system using any of the following options:</p> <p>(a) Option 1. A delineation of the project electricity system and connected electricity systems published by the DNA or the group of the DNAs of the host country(ies). In case a delineation is provided by a group of DNAs, the same delineation should be used by all the project participants applying the tool in these countries;</p>	<p>PP (by referring the letter^{/10/} of the Directorate General of Electricity dated 15th July 2020) has used option 1. The Directorate General of Electricity (DGE) under the Ministry of Energy and Mineral Resources (MEMR) is primarily responsible for formulating electricity policies and regulations. As per Country power profiles^{/10/} 2018, it has defined the project electricity systems.</p>
<p>(b) Option 2. A delineation of the project electricity system defined by the dispatch area of the dispatch centre responsible for scheduling and dispatching electricity generated by the project activity. Where the dispatch area is controlled by more than one dispatch centre, i.e. layered dispatch area, the higher level area shall be used as a delineation of the project electricity system (e.g. where regional dispatch centres are required to comply with dispatch orders of the national dispatch centre then area controlled by the national dispatch centre shall be used);</p>	<p>PP (by referring the letter^{/10/} of the Directorate General of Electricity dated 15th July 2020) did not use this option.</p>
<p>(c) Option 3. A delineation of the project electricity system defined by more than one independent dispatch areas, e.g. multi-national power pools.</p>	<p>PP (by referring the letter^{/10/} of the Directorate General of Electricity dated 15th July 2020) did not use this option.</p>
<p>18. In case of option 3, transmission lines between dispatch areas included in the proposed delineation shall be checked for the existence or non-existence of transmission constraints following the paragraph</p>	<p>This is not applicable.</p>

<p>19 below.</p> <p>Note:</p> <p>If it is demonstrated that there are no significant transmission constraints between the “project electricity system” and “connected electricity system”, then both the electricity systems together represent a single project electricity system and a common grid emission factor can be developed.</p> <p>When transmission constraints exist, no common grid emission factor can be developed and according to paragraph 23 “electricity transfers from a connected electricity systems to the project electricity system are defined as electricity imports while electricity transfers from the project electricity system to connected electricity systems are defined as electricity exports.”</p>	
<p>19. There are no transmission constraints if any one of the following criteria is met:</p> <p>(a) In case of electricity systems with spot markets for electricity: there are differences in electricity prices (without transmission and distribution costs) of less than five per cent between the two electricity systems at least during 90 per cent of the hours of the most recent year for which information is available (at least one year data is required); or</p> <p>(b) The transmission line(s) is operated at 75 per cent or less of its rated capacity during 90 per cent or more of the hours of the most recent year for which information is available (at least one year data is required) using the algorithm below:</p> <p>(i) For every hour of the year check whether the transmission line is operated at 75 per cent or less of its rated capacity;</p> <p>(ii) Each hour of the year when the transmission line was operated at 75 per cent or less of its rated capacity should be counted as zero;</p> <p>(iii) Each hour of the year when the transmission line was operated at 75 per cent or more of its rated capacity should be counted as one</p> <p>(iv) There is no transmission constraint if the total sum is less than ten per cent of the hours of the year (e.g. 876 for even year and 878 for leap year);</p> <p>(v) The algorithm can be illustrated by the following equation:</p> <p>(vi) The maximum line’s load capacity should be based on official information (e.g. from the operator of the system);</p> <p>Note: As an example, if one of the criteria is met, then a project participant intending to use a multi-country project electricity system would be able to justify that choice instead of using the national electricity grid as the project electricity system.</p>	<p>This is not applicable for option 1.</p>

<p>Note that project participants may propose other criteria or submit proposals for revision of these criteria for consideration by the Board.</p> <p>In case where the transmission line is operated at more than 75 per cent but below 90 per cent of its rated capacity at least during 90 per cent or less of the hours and the project proponent wishes to consider there exists no transmission constraint (e.g. due to other operation conditions), proper justification shall be provided and documented transparently in the PDD.</p> <p>(c) The transmission capacity of the transmission line(s) that is connecting electricity systems is more than 10 per cent of the installed capacity either of the project electricity system or of the connected electricity system, whichever is smaller.</p>	
<p>20. In addition, in cases involving international interconnection (i.e. transmission line is between different countries and the project electricity system covers national grids of interconnected countries) it should be further verified that there are no legal restrictions for international electricity exchange.</p> <p>Note: For example, a legal agreement between the country that transmits electricity and the recipient country to reduce electricity transmission over time, while transmission capacity of the transmission line(s) remains the same should be considered as the significant transmission constraint.</p>	<p>Sumatra grid is located in Indonesia and there is no international interconnection involved.</p>
<p>21. If the information required to demonstrate transmission constraints (or not) is not publicly available or where the application of these criteria does not result in a clear grid boundary, project participants shall use a regional (i.e. sub-national) grid definition in the case of large countries with layered dispatch areas (e.g. provincial/regional/national).</p>	<p>This is not applicable.</p>
<p>22. A provincial grid definition may indeed in many cases be too narrow given significant electricity trade among provinces that might be affected, directly or indirectly, by a CDM project activity. In other countries, the national (or other larger) grid definition should be used by default. The project participant shall document the geographical extent of the project electricity system transparently and identify all grid power plants/units connected to the system.</p>	<p>Since the Sumatra grid delineation is provided by The Directorate General of Electricity (DGE) under the Ministry of Energy and Mineral Resources (MEMR). The validation team has accepted.</p>
<p>23. For the purpose of this tool, the reference system is the project electricity system. Hence electricity transfers from a connected electricity systems to the project electricity system are defined as electricity imports while electricity transfers from the project electricity system to connected electricity systems are defined as electricity exports.</p>	<p>This is not applicable as there is no energy import.</p>
<p>24. For the purpose of determining the build margin emission factor, the spatial extent is limited to the project electricity system, except where recent or likely future additions to the transmission capacity</p>	<p>PP (by referring the letter^{10/} of the Directorate General of Electricity dated 15th July 2020) has considered Sumatra grid only for the calculation of BM.</p>

enable significant increases in imported electricity. In such cases, the transmission capacity may be considered a build margin source.	
25. For the purpose of determining the operating margin emission factor, use one of the following options to determine the CO ₂ emission factor(s) for net electricity imports from a connected electricity system: (a) 0 t CO ₂ /MWh; or (b) The simple operating margin emission rate of the exporting grid, determined as described in Step 4 section 6.4.1, if the conditions for this method, as described in Step 3 below, apply to the exporting grid; or (c) The simple adjusted operating margin emission rate of the exporting grid, determined as described in Step 4 section 6.4.2 below; or (d) The weighted average operating margin (OM) emission rate of the exporting grid, determined as described in Step 4 section 6.4.4 below	There is no import from the connected electricity system.
26. For imports from connected electricity systems located in Annex I country(ies), the emission factor is 0 tons CO ₂ per MWh.	There is no imports from connected electricity systems located in Annex I country.
27. Electricity exports should not be subtracted from electricity generation data used for calculating and monitoring the electricity emission factors.	PP (by referring the letter ^{10/} of the Directorate General of Electricity dated 15 th July 2020) has not subtracted electricity exports from electricity generation data while determining OM and BM.
6.2. Step 2: Choose whether to include off-grid power plants in the project electricity system (optional) 28. Project participants may choose between the following two options to calculate the operating margin and build margin emission factor. 6.2.1. Option I: 29. Only grid power plants are included in the calculation.	PP (by referring the letter ^{10/} of the Directorate General of Electricity dated 15 th July 2020) has chosen option 1-only grid power are included in the calculation.
6.2.2. Option II: 30. Both grid power plants and off-grid power plants are included in the calculation.	PP (by referring the letter ^{10/} of the Directorate General of Electricity dated 15 th July 2020) did not select this option.
31. Option II provides the option to include off-grid power generation in the grid emission factor. Option II aims to reflect that in some countries off-grid power generation is significant and can partially be displaced by CDM project activities that are if off-grid power plants are operated due to an unreliable and unstable electricity grid. Option II may be selected only for determining the operating margin emission factor or for determining both the build margin and the operating margin emission factor, but not for determining the build margin emission factor only. Two alternative approaches are provided to determine the electricity generation by the off-grid power plants and CO ₂ emission factor.	PP (by referring the letter ^{10/} of the Directorate General of Electricity dated 15 th July 2020) did not select this option. This is not applicable.
6.2.3. Option IIa: 32. Option IIa requires collecting data on off-grid power generation as per appendix 1 and can only be	PP (by referring the letter ^{10/} of the Directorate General of Electricity dated 15 th July 2020) did not select this option. This is not applicable.

used if the conditions outlined therein are met.	
33. If Option IIa is selected, off-grid power plants should be classified as per the guidance in appendix 1, that is in different off-grid power plants classes. Each off-grid power plant class should be considered as one power plant <i>j, k, m or n</i> .	
6.2.4. Option IIb: 34. As an alternative approach, the default CO ₂ emission factor and the default value of the electricity generated by the off-grid power plants can be applied for the first crediting period. The following conditions apply to this option: (a) The project activity is located in (i) a Least Developed Country (LDC); or (ii) a Small Island Developing States (SIDS) or in (iii) a country with less than 10 registered CDM projects at the starting date of validation; and (b) The project activities consist of grid-connected renewable power generation; and (c) It can be demonstrated that there is a load shedding program in place to compensate the deficit of the generation capacities.	PP (by referring the letter ^{10/} of the Directorate General of Electricity dated 15 th July 2020) did not select this option. This is not applicable.
35. For the off-grid power plants that choose Option IIb the default value of 0.8 tCO ₂ /MWh can be used for the CO ₂ emission factor.	PP (by referring the letter ^{10/} of the Directorate General of Electricity dated 15 th July 2020) did not select this option. This is not applicable.
36. The following default values can be used to determine EG _{m,y} for the off-grid plants: (a) The value of 10 per cent of the total electricity generation by grid power plants in the electricity system for the purpose of the operating margin determination; (b) The value of 10 per cent of the electricity generation by grid power plants included in the sample group as per Step 5 for the purpose of the build margin determination.	PP (by referring the letter ^{10/} of the Directorate General of Electricity dated 15 th July 2020) did not select this option. This is not applicable.
37. The following flow chart provides an overview on the requirement to include off-grid power plants in the project electricity system described under Step 2, Option II.	PP (by referring the letter ^{10/} of the Directorate General of Electricity dated 15 th July 2020) did not select this option. This is not applicable.
6.3. Step 3: Select a method to determine the operating margin (OM) 38. The calculation of the operating margin emission factor (EF _{grid,OM,y}) is based on one of the following methods, which are described under Step 4: (a) Simple OM; or (b) Simple adjusted OM; or (c) Dispatch data analysis OM; or (d) Average OM.	PP (by referring the letter ^{10/} of the Directorate General of Electricity dated 15 th July 2020) had used average OM method in calculation of operating margin. The validation opinion of the calculation of average OM is detailed below.
39. The following flow chart provides an overview of OM methods, including data requirement for each method and important conditions that should be met	Simple OM (option a): As per the letter dated 15 th July 2020, the Directorate General of Electricity stated that only average OM

<p>to apply a specific OM method.</p>	<p>can be used. As there is no data on LCMR for the recent 5 years for the power plant/unit level, simple OM cannot be used. The validation team has accepted.</p> <p>Simple adjusted OM (option b): As per the letter dated 15th July 2020, the Directorate General of Electricity stated that only average OM can be used and there is no operational data on LCMR resources at the power plant/unit level, maximum hourly load in the Sumatra grid or minimum hourly load in the grid are not available to the directorate. So simple adjusted OM cannot be used. The validation team has accepted.</p> <p>Dispatch data analysis OM (option c): As per the letter, hourly data from each power plant on power generation and fuel type and fuel consumption for Sumatra grid is not available. So dispatch data analysis OM cannot be used. The validation team has accepted.</p> <p>Average OM (option d): Since Annual aggregated data from the Sumatra grid on power generation, fuel type and fuel consumption are only available to the directorate. So average OM is calculated. The validation team has accepted.</p>
<p>40. The simple OM method (Option a in paragraph 38) can only be used if any one of the following requirements is satisfied:</p> <p>(a) Low-cost/must-run resources constitute less than 50 per cent of total grid generation (excluding electricity generated by off-grid power plants) in:</p> <ol style="list-style-type: none"> 1) average of the five most recent years, and the average of the five most recent years shall be determined by using one of the approaches described below; or 2) based on long-term averages for hydroelectricity production (minimum time frame of 15 years): <p>(b) The average amount of load (MW) supplied by low-cost/must-run resources in a grid in the most recent three year is less than the average of the lowest annual system loads (LASL) in the grid of the same three years</p> <p>Note: $EG_{LCMR,y}$, $EG_{LCMR,y-1}$, $EG_{LCMR,y-2}$ is the total energy generation (MWh) by all LCMR sources in year y, $y-1$ and $y-2$ respectively</p>	<p>Simple OM: As per the letter^{/10/} dated 15th July 2020, the Directorate General of Electricity stated that only average OM can be used. As there is no data on LCMR for the recent 5 years, simple OM cannot be used. The validation team has accepted.</p>
<p>41. The dispatch data analysis (Option c) cannot be used if off-grid power plants are included in the project electricity system as per Step 2 above.</p>	<p>Dispatch data analysis OM (option c): As per the letter, hourly data from each power plant on power generation and fuel type and fuel consumption for Sumatra grid is not available. So dispatch data analysis OM cannot be used. The validation team has accepted.</p>
<p>42. For the simple OM, the simple adjusted OM and the average OM, the emissions factor can be calculated using either of the two following data vintages:</p> <p>(a) Ex ante option: if the ex-ante option is chosen, the emission factor is determined once at the validation stage, thus no monitoring and recalculation of the emissions factor during the</p>	<p>PP had selected ex-ante option. This is determined once at the validation stage (fixed for the crediting period) and no monitoring and recalculation of the emissions factor during the crediting period is required.</p> <p>As per the letter^{/10/} dated 15th July 2020, the Directorate General of Electricity used the date for 2016 to 2018. This is based on the recent data</p>

crediting period is required. For grid power plants use a 3-year generation-weighted average, based on the most recent data available at the time of submission of the CDM-PDD to the DOE for validation. For off-grid power plants, use a single calendar year within the five most recent calendar years prior to the time of submission of the CDM-PDD for validation;	available at the time of submission of the final version of PDD ^{/3/} to the validation team. PP has used only grid power plants in the Sumatra grid.
(b) Ex post option: if the ex post option is chosen, the emission factor is determined for the year in which the project activity displaces grid electricity, requiring the emissions factor to be updated annually during monitoring. If the data required to calculate the emission factor for year <i>y</i> is usually only available later than six months after the end of year <i>y</i> , alternatively the emission factor of the previous year <i>y-1</i> may be used. If the data is usually only available 18 months after the end of year <i>y</i> , the emission factor of the year proceeding the previous year <i>y-2</i> may be used. The same data vintage (<i>y</i> , <i>y-1</i> or <i>y-2</i>) should be used throughout all crediting periods.	PP did not select this option.
43. For the dispatch data analysis OM, use the year in which the project activity displaces grid electricity and update the emission factor annually during monitoring.	PP (by referring the letter ^{/10/} of the Directorate General of Electricity dated 15 th July 2020) did not select dispatch data analysis OM.
44. The data vintage chosen should be documented in the CDM-PDD and should not be changed during the crediting period.	This is not applicable for ex-post option.
45. Power plants registered as CDM project activities should be included in the sample group that is used to calculate the operating margin if the criteria for including the power source in the sample group apply.	All power plants registered (CDM or non-CDM) project activities are included in the sample group that is used to calculate the operating margin. This was confirmed from the letter ^{/10/} from Directorate General of Electricity dated 15 th July 2020.
6.4. Step 4: Calculate the operating margin emission factor according to the selected method 6.4.1. Simple OM 46. The simple OM emission factor is calculated as the generation-weighted average CO2 emissions per unit net electricity generation (tCO2/MWh) of all generating power plants serving the system, not including low-cost/must-run power plants/units.	This is not applicable for average OM method.
47. The simple OM may be calculated by one of the following two options: (a) Option A: Based on the net electricity generation and a CO2 emission factor of each power unit; or (b) Option B: Based on the total net electricity generation of all power plants serving the system and the fuel types and total fuel consumption of the project electricity system. Option B can only be used if: (i) The necessary data for Option A is not available; and (ii) Only nuclear and renewable power generation are considered as low-cost/must-run power sources and the quantity of electricity supplied to the grid by these sources is known; and	This is not applicable for average OM method.

<p>(iii) Off-grid power plants are not included in the calculation (i.e. if Option I has been chosen in Step 2).</p> <p>Note: Power units should be considered if some of the power units at the site of the power plant are low-cost/must-run units and some are not.</p> <p>Power plants can be considered if all power units at the site of the power plant belong to the group of low-cost/must-run units or if all power units at the site of the power plant do not belong to the group of low-cost/must-run units.</p>	
<p>6.4.1.1. Option A: Calculation based on average efficiency and electricity generation of each plant</p> <p>48. Under this option, the simple OM emission factor is calculated based on the net electricity generation of each power unit and an emission factor for each power unit.</p>	This is not applicable for average OM method.
<p>6.4.1.1.1. Determination of $EF_{EL,m,y}$</p> <p>49. The emission factor of each power unit m should be determined as follows:</p> <p>(a) Option A1 - If for a power unit m data on fuel consumption and electricity generation is available, the emission factor ($EF_{EL,m,y}$) should be determined.</p> <p>(b) Option A2 - If for a power unit m only data on electricity generation and the fuel types used is available, the emission factor should be determined based on the CO₂ emission factor of the fuel type used and the efficiency of the power unit,</p>	This is not applicable for average OM method.
<p>50. Where several fuel types are used in the power unit, use the fuel type with the lowest CO₂ emission factor for $EF_{CO_2,m,i,y}$.</p> <p>(a) Option A3 - If for a power unit m only data on electricity generation is available, an emission factor of 0 tCO₂/MWh can be assumed as a simple and conservative approach.</p>	This is not applicable for average OM method.
<p>6.4.1.1.2. Determination of $EG_{m,y}$</p> <p>51. For grid power plants, $EG_{m,y}$ should be determined as per the provisions in the monitoring tables.</p>	This is not applicable for average OM method.
<p>52. For off-grid power plants, $EG_{m,y}$ can be determined using one of the following options: (a) Option 1 - $EG_{m,y}$ is determined based on (sampled) data on the electricity generation of off-grid power plants, as per the guidance in appendix 1;</p> <p>(b) Option 2 - $EG_{m,y}$ is determined based on (sampled) data on the quantity of fuels combusted in the class of off-grid power plants m, as per the guidance in appendix 1, and the default efficiencies provided in Table 2, Appendix of TOOL09: "Determining the baseline efficiency of thermal or electric energy generation systems"</p> <p>(c) Option 3 - $EG_{m,y}$ is estimated based on the capacity of off-grid electricity generation in that class and a default plant load factor.</p>	This is not applicable for average OM method.
<p>53. The default plant load factor for off-grid generation ($PLF_{default,off-grid,y}$) should be determined using one of the following two options: (a) Use a conservative default value of 300 hours per year,</p>	This is not applicable for average OM method.

<p>assuming that the off-grid power plants would at least operate for one hour per day at six days at full capacity (i.e. $PLF_{default, off-grid, y} = 300/8760$); or</p> <p>(b) Calculate the default plant load factor based on the average grid availability and a default factor of 0.5, assuming that off-grid power plants are operated at full load during approximately half of the time that the grid is not available.</p>	
<p>6.4.1.2. Option B: Calculation based on total fuel consumption and electricity generation of the system</p> <p>54. Under this option, the simple OM emission factor is calculated based on the net electricity supplied to the grid by all power plants serving the system, not including low-cost/must-run power plants/units, and based on the fuel type(s) and total fuel consumption of the project electricity system, as follows:</p>	This is not applicable for average OM method.
<p>55. For this approach (simple OM) to calculate the operating margin, the subscript m refers to the power plants/units delivering electricity to the grid, not including low-cost/must-run power plants/units.</p>	This is not applicable for average OM method.
<p>6.4.2. Simple adjusted OM</p> <p>56. The simple adjusted OM emission factor ($EF_{grid, OM-adj, y}$) is a variation of the simple OM, where the power plants/units (including imports) are separated in low-cost/must-run power sources (k) and other power sources (m).</p> <p>As under Option A of the simple OM, it is calculated based on the net electricity generation of each power unit and an emission factor for each power unit.</p>	This is not applicable for average OM method.
<p>57. $EF_{EL, m, y}$, $EF_{EL, k, y}$, $EG_{m, y}$ and $EG_{k, y}$ should be determined using the same procedures as those for the parameters $EF_{EL, m, y}$ and $EG_{m, y}$ in Option A of the simple OM method above.</p>	This is not applicable for average OM method.
<p>58. If off-grid power plants are included in the operating margin emission factor, off-grid power plants should be treated as other power units m, where $EG_{m, y}$ and $EF_{EL, m, y}$ should be determined using approach outlined under the section "Simple OM".</p>	This is not applicable for average OM method.
<p>59. The parameter λ_y is defined as follows. λ_y = Number of hours low-cost/must-run are the margin/8760</p>	This is not applicable for average OM method.
<p>60. There are two approaches to determine λ_y</p>	This is not applicable for average OM method.
<p>60. There are two approaches to determine λ_y:</p> <p>61. Approach 1. Use default values of λ_y from Table 1 appendix 2 based on the share of electricity generation from low-cost/must-run in total generation derived using</p> <p>1) average of the five most recent years, or</p> <p>2) based on long-term averages for hydroelectricity production.</p> <p>Approach 1 can only be applied if the LASL is not less than one-third of the HASL in a project electricity/ grid system demonstrated based on the yearly data for the years used to determine the OM</p>	This is not applicable for average OM method.

emission factor.	
62. Approach 2. Lambda (λ_y) should be determined by applying the step wise procedure provided in appendix 3.	
6.4.3. Dispatch data analysis OM 63. The dispatch data analysis OM emission factor ($EF_{grid,OM-DD,y}$) is determined based on the grid power units that are actually dispatched at the margin during each hour h where the project is displacing grid electricity. This approach is not applicable to historical data and, thus, requires annual monitoring of $EF_{grid,OM-DD,y}$.	This is not applicable for average OM method.
64. The emission factor is calculated based on Electricity displaced by the project activity in hour h CO2 emission factor for grid power units in the top of the dispatch order in hour h and Total electricity displaced by the project activity .	This is not applicable for average OM method.
65. If hourly fuel consumption data is available, then the hourly emissions factor is determined based on Amount of fuel type i consumed by grid power unit n in hour h , Net calorific value (energy content) of fuel type i in year y , CO2 emission factor of fuel type i in year y and Electricity generated and delivered to the grid by grid power unit n in hour h	This is not applicable for average OM method.
66. Otherwise, the hourly emission factor is calculated based on the energy efficiency of the grid power unit and the fuel type used.	This is not applicable for average OM method.
67. The CO2 emission factor of the grid power units n ($EF_{EL,n,y}$) should be determined as per the guidance for the simple OM, using the Options A1, A2 or A3. 68. To determine the set of grid power units n that are in the top of the dispatch, obtain from a national dispatch centre: (a) The grid system dispatch order of operation for each grid power unit of the system including power units from which electricity is imported; and (b) The amount of power (MWh) that is dispatched from all grid power units in the system during each hour h that the project activity is displacing electricity. 69. At each hour h , stack each grid power unit's electricity generation using the merit order. The group of grid power units n in the dispatch margin includes the units in the top x per cent of total electricity dispatched in the hour h , where x per cent is equal to the greater of either: (a) 10 per cent (if 10 per cent falls on part of the generation of a unit, the generation of that unit is fully included in the calculation); or (b) The quantity of electricity displaced by the project activity during hour h divided by the total electricity generation by grid power plants during that hour h .	This is not applicable for average OM method.
6.4.4. Average OM 70. The average OM emission factor ($EF_{grid,OM-ave,y}$) is calculated as the average emission rate of all power plants serving the grid, using the methodological	Based on the this para and para 46 of this emission factor tool, average OM factor is calculated as the generation-weighted average CO2 emissions per unit net electricity generation (tCO2/MWh) of all

<p>guidance as described under Step 4 (section 6.4.1) above for the simple OM, but also including the low-cost/must-run power plants in all equations.</p>	<p>generating power plants serving the system, including low-cost/must-run power plants/units.</p> <p>As per the para 47 of this emission factor tool, PP has selected option A- Calculation based on average efficiency and electricity generation of each plant for the calculation of average OM.</p> <p>As per para 48 of this emission factor tool, the average OM emission factor is calculated based on the net electricity generation of each power unit and an emission factor for each power unit, as follows.</p> $EF_{grid,OM,average,y} = \sum(EG_{m,y} \times EF_{EL,m,y}) / \sum EG_{m,y}$ <p>Where</p> <p>$EG_{m,y}$ -Net quantity of electricity generated and delivered to the grid by power unit m in year y</p> <p>$EF_{EL,m,y}$ -CO₂ emission factor of power unit m in year y</p> <p>m-All power units serving the grid in year y including low-cost/must-run power units</p> <p>y-Relevant year as per the data vintage chosen</p> <p>The validation of the same is detailed below.</p>								
<p>All power units serving the grid in year y including low-cost/must-run power units (m)</p>	<p>Based on the this para and para 46 of this emission factor tool, average OM factor is calculated as the generation-weighted average CO₂ emissions per unit net electricity generation of all generating power plants serving the Sumatra grid, including low-cost/must-run power plants/units.</p>								
<p>Relevant year as per the data vintage chosen (y)</p>	<p>As per para 42 of the emission factor tool, PP had selected ex-ante option. For grid power plants, 3-year generation-weighted average, based on the most recent data available at the time of submission of the CDM-PDD to the DOE for validation to be used. PP has used only grid power plants in the Sumatra grid.</p> <p>As per the letter^{/10/} dated 15th July 2020, the Directorate General of Electricity used the date for 2016 to 2018. This is based on the recent data available at the time of submission of the final version of PDD^{/3/} to the validation team.</p>								
<p>Net quantity of electricity generated and delivered to the grid by power unit m in year y ($EG_{m,y}$)</p> <table border="1"> <thead> <tr> <th>y</th><th>$EG_{m,y}$ (aggregated)</th></tr> </thead> <tbody> <tr> <td>2016</td><td>31,547,919.59 MWh</td></tr> <tr> <td>2017</td><td>31,311,996.73 MWh</td></tr> <tr> <td>2018</td><td>32,783,819.87 MWh</td></tr> </tbody> </table>	y	$EG_{m,y}$ (aggregated)	2016	31,547,919.59 MWh	2017	31,311,996.73 MWh	2018	32,783,819.87 MWh	<p>As per para 51 of this emission factor tool, for grid power plants, $EG_{m,y}$ should be determined as per the provisions in the monitoring tables. As per Data/Parameter table 4 of this tool, it is sourced from Utility or government records or official publications. Under ex-ante option, it is to be calculated once for each crediting period using the most recent three historical years for which data is available at the time of submission of the PDD to the DOE for validation.</p> <p>As per the letter^{/10/} dated 15th July 2020, the Directorate General of Electricity had provided net quantity of electricity generated and delivered to the grid by power unit m in year y. The validation team has accepted.</p>
y	$EG_{m,y}$ (aggregated)								
2016	31,547,919.59 MWh								
2017	31,311,996.73 MWh								
2018	32,783,819.87 MWh								
<p>CO₂ emission factor of power unit m in year y ($EF_{EL,m,y}$)</p>	<p>As per 49 of this emission factor tool, under option A1, if for a power unit m data on fuel consumption and electricity generation is available, the emission factor ($EF_{EL,m,y}$) should be determined as follows.</p> $EF_{EL,m,y} = \sum(FC_{i,m,y} \times NCV_{i,y} \times EF_{CO2,i,y}) / EG_{m,y}$ <p>Where</p> <p>$FC_{i,m,y}$ -Amount of fuel type i consumed by power unit</p>								

	<p>m in year y</p> <p>$NCV_{i,y}$ -Net calorific value (energy content) of fuel type i in year y</p> <p>$EF_{CO2,i,y}$ -CO2 emission factor of fuel type i in year y</p> <p>$EG_{m,y}$ -Net quantity of electricity generated and delivered to the grid by power unit m in year y</p> <p>m-All power units serving the grid in year y including low-cost/must-run power units</p> <p>y-Relevant year as per the data vintage chosen</p> <p>i-All fuel types combusted in power unit m in year y</p> <p>The validation opinion of the same is detailed below.</p>								
Amount of fuel type i consumed by power unit m in year y ($FC_{i,m,y}$) (aggregated)	<p>As per Data/Parameter table 1 of this emission factor tool, it is sourced from Utility or government records or official publications. Under ex-ante option, it is to be calculated once for each crediting period using the most recent three historical years for which data is available at the time of submission of the PDD to the DOE for validation.</p> <p>As per the letter^{/10/} dated 15th July 2020, the Directorate General of Electricity had provided CO2 emission factor of power unit m in year y directly. The validation team has accepted.</p>								
Net calorific value (energy content) of fuel type i in year y ($NCV_{i,y}$)	<p>As per Data/Parameter table 2 of this emission factor tool, it is sourced from fuel suppliers, national/regional data, IPCC 2006 value. Under ex-ante option, it is to be calculated once for each crediting period using the most recent three historical years for which data is available at the time of submission of the PDD to the DOE for validation.</p> <p>As per the letter^{/10/} dated 15th July 2020, the Directorate General of Electricity had provided CO2 emission factor of power unit m in year y directly. The validation team has accepted.</p>								
CO2 emission factor of fuel type i in year y	<p>As per Data/Parameter table 3 of this emission factor tool, it is sourced from fuel suppliers, national/regional data, IPCC 2006 value. Under ex-ante option, it is to be calculated once for each crediting period using the most recent three historical years for which data is available at the time of submission of the CDM-PDD to the DOE for validation.</p> <p>As per the letter^{/10/} dated 15th July 2020, the Directorate General of Electricity had provided CO2 emission factor of power unit m in year y directly. The validation team has accepted.</p>								
<p>Net quantity of electricity generated and delivered to the grid by power unit m in year y ($EG_{m,y}$)</p> <table border="1"> <thead> <tr> <th>y</th><th>$EG_{m,y}$ (aggregated)</th></tr> </thead> <tbody> <tr> <td>2016</td><td>31,547,919.59 MWh</td></tr> <tr> <td>2017</td><td>31,311,996.73 MWh</td></tr> <tr> <td>2018</td><td>32,783,819.87 MWh</td></tr> </tbody> </table>	y	$EG_{m,y}$ (aggregated)	2016	31,547,919.59 MWh	2017	31,311,996.73 MWh	2018	32,783,819.87 MWh	It is already validated.
y	$EG_{m,y}$ (aggregated)								
2016	31,547,919.59 MWh								
2017	31,311,996.73 MWh								
2018	32,783,819.87 MWh								
<p>CO2 emission factor of power unit m in year y ($EF_{EL,m,y}$)</p> <table border="1"> <thead> <tr> <th>y</th><th>$EF_{EL,m,y}$</th></tr> </thead> <tbody> <tr> <td>2016</td><td>0.77</td></tr> <tr> <td>2017</td><td>0.72</td></tr> <tr> <td>2018</td><td>0.73</td></tr> </tbody> </table>	y	$EF_{EL,m,y}$	2016	0.77	2017	0.72	2018	0.73	<p>As per 49 of this emission factor tool, under option A1, if for a power unit m data on fuel consumption and electricity generation is available, the emission factor ($EF_{EL,m,y}$) should be determined as follows.</p> $EF_{EL,m,y} = \sum (FC_{i,m,y} \times NCV_{i,y} \times EF_{CO2,i,y}) / EG_{m,y}$
y	$EF_{EL,m,y}$								
2016	0.77								
2017	0.72								
2018	0.73								
Average OM emission factor ($EF_{grid,OM-ave,y}$) =0.74 tCO2/MWh	Based on the this para 70 and para 46 of this emission factor tool, average OM factor is calculated as the generation-weighted average CO2 emissions								

	<p>per unit net electricity generation (tCO₂/MWh) of all generating power plants serving the system, including low-cost/must-run power plants/units.</p> <p>As per the para 47 of this emission factor tool, PP has selected option A- Calculation based on average efficiency and electricity generation of each plant for the calculation of average OM.</p> <p>As per para 48 of this emission factor tool, the average OM emission factor is calculated based on the net electricity generation of each power unit and an emission factor for each power unit, as follows.</p> $EF_{\text{grid,OM,average,y}} = \frac{\sum (EG_{m,y} \times EF_{EL,m,y})}{\sum EG_{m,y}}$ <p>As per the letter dated 15th July 2020, the Directorate General of Electricity had provided Average OM emission factor directly. The validation team has accepted.</p>
71. When following the guidance of calculation of the simple OM, Option B should only be used if the necessary data for Option A is not available.	Since PP has used option A, this is not applicable.
<p>6.5. Step 5: Calculate the build margin (BM) emission factor</p> <p>72. In terms of vintage of data, project participants can choose between one of the following two options:</p> <p>(a) Option 1 - for the first crediting period, calculate the build margin emission factor ex ante based on the most recent information available on units already built for sample group m at the time of CDM-PDD submission to the DOE for validation.</p> <p>For the second crediting period, the build margin emission factor should be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the DOE.</p> <p>For the third crediting period, the build margin emission factor calculated for the second crediting period should be used.</p> <p>This option does not require monitoring the emission factor during the crediting period;</p>	<p>PP (by referring the letter^{10/} of the Directorate General of Electricity dated 15th July 2020) has selected this option (option 1).</p> <p>This option does not require monitoring the emission factor during the crediting period. It is based on the most recent information available (2018) on units already built for sample group m at the time of PDD submission to the DOE for validation</p>
<p>(b) Option 2 - For the first crediting period, the build margin emission factor shall be updated annually, ex post, including those units built up to the year of registration of the project activity or, if information up to the year of registration is not yet available, including those units built up to the latest year for which information is available.</p> <p>For the second crediting period, the build margin emissions factor shall be calculated ex ante, as described in Option 1 above.</p> <p>For the third crediting period, the build margin emission factor calculated for the second crediting period should be used.</p>	PP did not use this option.
73. The option chosen should be documented in the CDM-PDD.	Ex-ante option is documented in the final PDD ^{3/} . This was verified by the validation team.
74. Capacity additions from retrofits of power plants should not be included in the calculation of the build margin emission factor.	Capacity additions from retrofits of power plants are not included in the calculation of the build margin emission factor.

<p>75. The sample group of power units m used to calculate the build margin should be determined as per the following procedure, consistent with the data vintage selected above:</p> <p>(a) Identify the set of five power units, excluding power units registered as CDM project activities, that started to supply electricity to the grid most recently ($SET_{5 \text{ units}}$) and determine their annual electricity generation ($AEG_{SET-5-units}$, in MWh);</p>	<p>As per the letter^{/10/} dated 15th July 2020, the Directorate General of Electricity, it had identified 5 most recent power units (that excluding power units registered as CDM project activities) that started to supply electricity to the Sumatra grid.</p> <p>As per the letter^{/10/} dated 15th July 2020, the Directorate General of Electricity has mentioned $AEG_{SET-5-units} = 412.48$ MWh</p>
<p>(b) Determine the annual electricity generation of the project electricity system, excluding power units registered as CDM project activities (AEG_{total}, in MWh).</p> <p>Identify the set of power units, excluding power units registered as CDM project activities, that started to supply electricity to the grid most recently and that comprise 20 per cent of AEG_{total} (if 20 per cent falls on part of the generation of a unit, the generation of that unit is fully included in the calculation) ($SET_{\geq 20 \text{ per cent}}$) and determine their annual electricity generation ($AEG_{SET-\geq 20 \text{ per cent}}$, in MWh);</p>	<p>As per the letter dated 15th July 2020, the Directorate General of Electricity has mentioned Annual electricity generation for the year 2018 in the Sumatra grid is $AEG_{total} = 32,783,819,87$ MWh</p> <p>As per the letter dated 15th July 2020, the Directorate General of Electricity, it had identified 39 most recent power units (that excluding power units registered as CDM project activities) that started to supply electricity to the Sumatra grid and that comprising 20% of the total annual electricity generation. $AEG_{SET-\geq 20 \text{ per cent}} = 6,666,456.29$ MWh (20.33%) The validation team has observed that 20% falls on 39th power plant, hence annual generation of that unit is also fully included in the sample.</p>
<p>(c) From $SET_{5-units}$ and $SET_{\geq 20 \text{ per cent}}$ select the set of power units that comprises the larger annual electricity generation (SET_{sample});</p> <p>Identify the date when the power units in SET_{sample} started to supply electricity to the grid.</p> <p>If none of the power units in SET_{sample} started to supply electricity to the grid more than 10 years ago, then use SET_{sample} to calculate the build margin.</p> <p>In this case ignore Steps (d), (e) and (f).</p>	<p>Since $AEG_{SET-\geq 20 \text{ per cent}}$ is larger than $AEG_{SET-5-units}$, SET_{sample} includes those 39 power plants.</p> <p>Commissioning date of the most recent power plant in the sample set is on 31st December 2018 and the earliest one is on 1st May 2016.</p> <p>Since none of the power plants in the sample set are started to supply electricity to the Sumatra grid more than 10 years, those 39 power plants forms the sample set for the calculation of build margin. So the steps d,e,f can be ignored.</p>
<p>Otherwise:</p> <p>(d) Exclude from SET_{sample} the power units which started to supply electricity to the grid more than 10 years ago.</p> <p>Include in that set the power units registered as CDM project activities, starting with power units that started to supply electricity to the grid most recently, until the electricity generation of the new set comprises 20 per cent of the annual electricity generation of the project electricity system (if 20 per cent falls on part of the generation of a unit, the generation of that unit is fully included in the calculation) to the extent is possible. Determine for the resulting set ($SET_{sample-CDM}$) the annual electricity generation ($AEG_{SET-sample-CDM}$, in MWh);</p> <p>If the annual electricity generation of that set is comprises at least 20 per cent of the annual electricity generation of the project electricity system (i.e. $AEG_{SET-sample-CDM} \geq 0.2 \times AEG_{total}$), then use the sample group $SET_{sample-CDM}$ to calculate the build margin.</p> <p>Ignore Steps (e) and (f).</p>	<p>This is not applicable.</p>
<p>Otherwise:</p> <p>(e) Include in the sample group $SET_{sample-CDM}$ the power units that started to supply electricity to the</p>	<p>This is not applicable.</p>

grid more than 10 years ago until the electricity generation of the new set comprises 20 per cent of the annual electricity generation of the project electricity system (if 20 per cent falls on part of the generation of a unit, the generation of that unit is fully included in the calculation);	
(f) The sample <i>group of power units m</i> used to calculate the build margin is the resulting set (<i>SETsample-CDM->10yrs</i>).	This is not applicable.
76. The following diagram summarizes the procedure above: Figure 4. Procedure to determine the sample group of power units <i>m</i> used to calculate the build margin	The calculation of sample set is already detailed as above.
77. The build margin emissions factor is the generation-weighted average emission factor of all power units <i>m</i> during the most recent year <i>y</i> for which electricity generation data is available.	The build margin emissions factor is the generation-weighted average emission factor of all power units <i>m</i> during the most recent year <i>y</i> for which electricity generation data available is calculated as follows. $EF_{grid,BM,y} = \frac{\sum(EG_{m,y} \times EF_{EL,m,y})}{\sum EG_{m,y}}$ Where <i>m</i> -Power units included in the build margin <i>y</i> -Most recent historical year for which electricity generation data is available $EG_{m,y}$ -Net quantity of electricity generated and delivered to the grid by power unit <i>m</i> in year <i>y</i> $EF_{EL,m,y}$ -CO2 emission factor of power unit <i>m</i> in year <i>y</i> The validation opinion of the same is detailed below.
Power units included in the build margin (<i>m</i>)	As already validated, those 39 power plants are included for the calculation of build margin.
Most recent historical year for which electricity generation data is available <i>y</i> =2018	As per the letter ^{/10/} dated 15 th July 2020, the Directorate General of Electricity used the data for 2018. This is based on the recent data available at the time of submission of the final version of PDD ^{/3/} to the validation team.
Net quantity of electricity generated and delivered to the grid by power unit <i>m</i> in year <i>y</i> ($\sum EG_{m,y}$)= 6,666,456.29 MWh	As per the letter ^{/10/} dated 15 th July 2020, the Directorate General of Electricity used the Net quantity of electricity generated and delivered to the Sumatra grid by sampled set in 2018. This is based on the recent data available at the time of submission of the final version of PDD ^{/3/} to the validation team.
CO2 emission factor of power unit <i>m</i> in year <i>y</i>	As per the letter ^{/10/} dated 15 th July 2020, the Directorate General of Electricity did not specify this value separately.
$\sum(EG_{m,y} \times EF_{EL,m,y}) = 6,973,040.66$	As per the letter ^{/10/} dated 15 th July 2020, the Directorate General of Electricity did specify this value. The validation team has accepted.
Build margin emissions =1.046 tCO2/MWh	The build margin emissions factor is the generation-weighted average emission factor of all power units <i>m</i> during the most recent year <i>y</i> for which electricity generation data available is calculated as follows. $EF_{grid,BM,y} = \frac{\sum(EG_{m,y} \times EF_{EL,m,y})}{\sum EG_{m,y}}$
78. The CO2 emission factor of each power unit <i>m</i> ($EF_{EL,m,y}$) should be determined as per the guidance in Step 4 section 6.4.1 for the simple OM, using Options A1, A2 or A3, using for <i>y</i> the most recent historical year for which electricity generation data is available, and using for <i>m</i> the power units included in the build margin.	The validation team has confirmed that PP has used the value based on step 4 option A1.

79. If the power units included in the build margin m correspond to the sample group $SET_{sample-CDM- >10yrs}$, then, as a conservative approach, only Option A2 from guidance in Step 4 section 6.4.1 can be used and the default values provided in Table 2, Appendix of TOOL09: "Determining the baseline efficiency of thermal or electric energy generation systems" shall be used to determine the parameter $\eta_{m,y}$ for the power units that started to supply electricity to the grid more than 10 years ago.	This is not applicable as build margin sample set power plants started to supply to deliver electricity not 10 years ago.
80. For off-grid power plants, $EG_{m,y}$ should be determined as per the guidance in Step 4.	This is not applicable as off grid power plants are not opted for by the PP.
6.6. Step 6: Calculate the combined margin emissions factor 81. The calculation of the combined margin (CM) emission factor ($EF_{grid,CM,y}$) is based on one of the following methods: (a) Weighted average CM; or (b) Simplified CM.	PP has used option a-weighted average CM option.
82. The flow chart below provides an overview of options available to determine the CM emission factor. Figure 5. Flow chart: Determination of CM emission factor	Since data to calculate OM and BM available, option a-weighted average OM can be used by the PP. This is acceptable to the validation team.
83. The weighted average CM method (Option a) should be used as the preferred option.	This is the preferred option.
84. The simplified CM method (Option b, as described under 6.6.2 below) can only be used if the data requirements for the application of Step 5 above cannot be met.	This option can be used only if data requirements for the application of step 5 is not available. But since data requirements for OM and BM as per the application of step 5 is available, PP did not use this option b.
6.6.1. Weighted average CM 85. The combined margin emissions factor is calculated as follows. (ex-ante parameter number 1 as per the final PDD ^{3/})	Combined margin emission factor is calculated as follows. $EF_{grid,CM,y} = EF_{grid,OM,y} \times \omega_{OM} \times EF_{grid,BM,y} \times \omega_{BM}$ Where $EF_{grid,OM,y}$ -Operating margin CO2 emission factor in year y $EF_{grid,BM,y}$ -Build margin CO2 emission factor ω_{OM} -Weighting of operating margin emissions factor ω_{BM} -Weighting of build margin emissions factor PP has used the correct application of the OM, BM and weightages in the calculation of CM $EF_{grid,CM,y} = 0.893 \text{ tCO}_2/\text{MWh}$
86. The following default values should be used for w_{OM} and w_{BM} : (a) Wind and solar power generation project activities: $w_{OM} = 0.75$ and $w_{BM} = 0.25$ (owing to their intermittent and non-dispatchable nature) for the first crediting period and for subsequent crediting periods; (b) All other projects: $w_{OM} = 0.5$ and $w_{BM} = 0.5$ for the first crediting period, and $w_{OM} = 0.25$ and $w_{BM} = 0.75$ for the second and third crediting period, unless otherwise specified in the approved methodology which refers to this tool. Note: Project participants can submit alternative proposal,	As per this para for projects other than wind and solar, $w_{OM} = 0.5$ and $w_{BM} = 0.5$ for the first crediting period is used. This value is used for weighting.

for revision of tool or the methodology or deviation from its use, if the weightage does not reflect their situation with an explanation for the alternative weights.	
87. Alternative weights can be proposed, as long as $wOM + wBM = 1$, for consideration by the Board, taking into account the guidance as described below. The values for $wOM + wBM$ applied by project participants should be fixed for a crediting period and may be revised at the renewal of the crediting period.	This is not applicable.
6.6.1.1. Guidance on selecting alternative weights 88. The following guidance provides a number of project-specific and context-specific factors for developing alternative operating and build margin weights to the above defaults. It does not, however, provide specific algorithms to translate these factors into quantified weights, nor does it address all factors that might conceivably affect these weights. In this case, project participants are suggested to propose specific quantification methods with justifications that are consistent with the guidance provided below. 89. Given that it is unlikely that a project will impact either the OM or BM exclusively during the first crediting period, it is suggested that neither weight exceed 75 per cent during the first crediting period.	This is not applicable.
6.6.2. Simplified CM 90. If the project activity is located in: (i) a Least Developed Country (LDC); or in (ii) a country with less than 10 registered CDM projects at the starting date of validation; or (iii) a Small Island Developing States (SIDS), the combined margin calculated using equation (16) above with the following conditions: (a) $wBM = 0$; (b) $wOM = 1$;	PP did not select this option.
91. If the project activity is located in a country other than those mentioned in paragraph 90, the combined margin may be calculated using equation (16) above with the following provisions: (a) Case 1: If the share of renewable energy in total installed capacity in a grid/project electricity system is less than or equal to 20 per cent take the default values of: $EF_{grid,BM,y} = 0.326 \text{ tCO}_2/\text{MWh}$ (NG-fired CCGT, based on best available technology) - if natural gas has been used for electricity production in country/region in which project is implemented; or $EF_{grid,BM,y} = 0.568 \text{ tCO}_2/\text{MWh}$ (oil-fired CCGT based on best available technology) - if natural gas has not been used for electricity production in country/region in which project is implemented (b) Case 2: If the share of renewable energy in total installed capacity in a grid/project electricity system is more than or equal to 20 per cent, take the default	

<p>values for BM emission factor as zero.</p> <p>92. Under the simplified CM, the operating margin emission factor ($EF_{grid,OM,y}$) must be calculated using the average OM (Option (d) in Step 3).</p>	
<p>6.6.3. Simplified combined margin emission factor approach for isolated grid system</p> <p>93. The following options are applicable only if the total fuel consumption and/or the commissioning dates of the plants in isolated grids are not available. If total generation and total fuel consumption data are available, these should be used to calculate the emission factor (i.e. Simplified CM = Average OM, calculated using Simple OM, Option B).</p> <p>6.6.3.1. Isolated grid system with a single diesel/fuel oil generator power plant</p> <p>94. For system with the single diesel/fuel oil generator plant, the options are as follows (a) Option 1: The simplified CM emission factor is the average emissions factor corresponding to most recently built plant (less than 10 years old) with similar technology in the country. This can be calculated using simple OM method;</p> <p>(b) Option 2: Use 0.79 tCO₂/MWh as OM emission factor, 0.58 tCO₂/MWh as BM emission factor and estimate weighted average CM following procedure provided under section 6.6.1.</p> <p>6.6.3.2. Isolated grid system with multiple power plants</p> <p>6.6.3.2.1. Case 1: Isolated grid system with only liquid fuel power plant</p> <p>95. For systems with only liquid fuel power plants, the options to calculate the simplified CM are as follows:</p> <p>(a) Option 1: Weighted average emission factor calculated using the procedure contained in appendix 4;</p> <p>(b) Option 2: Use 0.79 tCO₂/MWh as OM emission factor, 0.58 tCO₂/MWh as BM emission factor and estimate weighted average CM following procedure provided under section 6.6.1.</p> <p>6.6.3.2.2. Case 2: Isolated grid systems with multiple fuel and technology types without combined cycle power plants</p> <p>96. The options below to calculate the simplified CM only apply for isolated systems with multiple fuel and technology types without combined cycle power plants:</p> <p>(a) Option 1: Weighted average emission factor calculated using the procedure contained in appendix 4;</p> <p>(b) Option 2: Use 0.40 tCO₂/MWh if there are no gaseous fuel power plants, otherwise use 0.32 tCO₂/MWh.¹¹</p> <p>6.6.3.2.3. Case 3: Isolated grid systems with multiple fuel and technology types with</p>	<p>This is not applicable.</p>

<p>combined cycle power plants</p> <p>97. The options below to calculate the simplified CM only apply for isolated systems with multiple fuel and technology types and with at least one combined cycle power plants:</p> <p>(a) Option 01: Weighted average emission factor calculated using the procedure contained in appendix 4;</p> <p>(b) Option 02: Use 0.27 tCO₂/MWh if there are no gaseous fuel-based combined cycle power plants, otherwise use 0.20 tCO₂/MWh.</p> <p>6.7. Data and parameters not monitored</p> <p>98. Included in the monitoring methodology.</p>	
<p>6.8. Project activity under a programme of activities</p> <p>99. When applying this tool for a programme of activities (PoA), the steps defined above shall be applied to each component project activity (CPA) of the PoA for determining the CO₂ emission factor for an electricity system.</p> <p>100. The CME shall describe in the CDM-PoA-DD the following information: (a) Electricity system(s) covered by the PoA (e.g. the name of the grid(s) connected to the CPAs); and</p> <p>(b) Sources of data used to determine the emission factor(s) for all electricity system(s) to be covered in the PoA (e.g. the yearbook of the electricity/energy sector); and</p> <p>(c) Equations and options used to calculate the emission factor (e.g. ex-ante or ex-post, various options used for determining the OM and BM).</p> <p>101. The choice of which option to use (i.e. ex ante or ex post, options used for determining the OM and BM) shall be determined and documented in the CDM-PoA-DD, and the selected options shall be consistently applied to all CPAs connected to a given electricity system.</p> <p>The CME may however select different options for different electricity systems in the case of a PoA covering more than one electricity systems</p>	This is not applicable for the project activity.
<p>7. Monitoring methodology</p> <p>102. All data collected as part of monitoring should be archived electronically and be kept for at least two years after the end of the last crediting period.</p> <p>One hundred per cent of the data should be monitored if not indicated otherwise in the tables below.</p> <p>All measurements should be conducted with calibrated measurement equipment according to relevant industry standards.</p>	The data collected will be archived electronically and be kept for at least two years after the end of the last crediting period
<p>103. Some parameters listed below under "data and parameters" either need to be monitored continuously during the crediting period or need to be calculated only once for the crediting period, depending on the data vintage chosen, following the provisions in the baseline methodology procedure</p>	PP had used ex-ante options for the calculation of OM, BM and CM.

outlined above and the guidance on “monitoring frequency” for the parameter.	
<p>104. The calculation of the operating margin and build margin emission factors should be documented electronically in a spread sheet that should be attached to the CDM-PDD.</p> <p>This should include all data used to calculate the emission factors, including:</p> <p>(a) The following information for each grid-connected power plant/unit:</p> <ul style="list-style-type: none"> (i) Information to clearly identify the plant; (ii) The date of commissioning; (iii) The capacity (MW); (iv) The fuel type(s) used; (v) The quantity of net electricity generation in the relevant year(s); (vi) If applicable: the fuel consumption of each fuel type in the relevant year(s); (vii) In cases where the simple OM or the simple adjusted operating margin is used: Information whether the plant/unit is a low-cost/must-run plant/unit; <p>(b) Net calorific values used;</p> <p>(c) CO2 emission factors used;</p> <p>(d) Plant efficiencies used;</p> <p>(e) Identification of the plants included in the build margin and the operating margin during the relevant time year(s);</p> <p>(f) In case the simple adjusted operating margin is used: load data (typically in MW) for each hour of the year y;</p> <p>(g) In case the dispatch data operating margin is used: for each hour h where the project plant is displacing grid electricity:</p> <ul style="list-style-type: none"> (i) The dispatch order of all grid-connected power plants; (ii) The total grid electricity demand; (iii) The quantity of electricity displaced by the project activity; (iv) Identification of the plants that are in the top of the dispatch and for each plant information on electricity generation and, where hourly fuel consumption data is available, data on the types and quantities of fuels consumed during that hour. 	<p>PP has provided spreadsheets for the calculation of OM and BM.</p> <p>As per the letter dated 15th July 2020, the Directorate General of Electricity, all data is available to the PP.</p>
105. In case off-grid power plants are included, the guidance for monitoring data and parameters related to off-grid plants provided in appendix 1 should also be followed.	This is not applicable.

106. The data should be presented in a manner that enables reproducing of the calculation of the build margin and operating margin grid emission factor.	
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Appendix 11: Requirements of tool-investment analysis v10.0

1. Introduction 1.1. Background 1. In consideration of issues identified through requests for review and reviews of requests for registration the CDM Executive Board (hereinafter referred to as the Board) considers it necessary to provide project participants and designated operational entities (DOEs) with requirements on the preparation, presentation and validation of investment analysis.	PP has complied with the requirements of the investment analysis tool.
2. Scope, applicability, and entry into force 2.1. Scope and applicability 2. This methodological tool is applicable to project activities that apply the methodological tool "Tool for the demonstration and assessment of additionality", the methodological tool "Combined tool to identify the baseline scenario and demonstrate additionality", the guidelines "Non-binding best practice examples to demonstrate additionality for SSC project activities", or baseline and monitoring methodologies that use the investment analysis for the demonstration of additionality and/or the identification of the baseline scenario.	PP has used Tool for the demonstration and assessment of additionality ^{/2/} v7.0 to prove additionality. Therefore this tool is applicable for the PP to use.
3. In case the applied approved baseline and monitoring methodology contains requirements for the investment analysis that are different from those described in this methodological tool, the requirements contained in the methodology shall prevail.	PP has fully complied with the applied methodology and the investment analysis tool ^{/2/} .
2.2. Entry into force 4. The date of entry into force is the date of the publication of the EB 105 meeting report on 28 November 2019. 3. Definitions 5. The definitions contained in the Glossary of CDM terms shall apply.	PP has used the latest version v10.0 of the investment analysis tool.
4. General issues in calculation and presentation 6. The period of assessment should not be limited to the proposed crediting period of the CDM project activity. Both project internal rate of return (IRR) and equity IRR calculations should reflect the period of expected operation of the underlying project activity (technical lifetime) and if a shorter period than the technical lifetime is chosen, the investment analysis shall be conducted for at least 10 years and include the fair value of the project activity assets at the end of the assessment period. The IRR calculation may include the cost of major maintenance and/or rehabilitation if these are expected to be incurred during the period of assessment. Rationale: The purpose of undertaking an	The validation team checked the input value against this which stipulates that the period of assessment shall at least be in tune with the life time of the project activity. PP has taken the period of assessment of financial indicator (i.e post-tax project IRR) in tune with the operational lifetime of the project. Lifetime of the project is 30 years. By considering the period of assessment of 30 years, the input value is satisfying this requirement. The validation team accepted the input value as appropriate. PP has considered all the major maintenance costs in the investment analysis.

<p>investment analysis is to determine whether or not the project activity would be financially viable without the incentive of the CDM.</p> <p>The actual project activity is not limited in time to the crediting period being requested.</p>	
<p>7. The fair value of any project activity assets at the end of the assessment period shall be included as a cash inflow in the final year.</p> <p>The fair value should be calculated in accordance with local accounting regulations where available, or international best practice.</p> <p>It is expected that such fair value calculations will include both the book value of the asset and the reasonable expectation of the potential profit or loss on the realization of the assets.</p> <p>Rationale: Net Present Value (NPV) or Internal Rate of Return (IRR) calculations are designed to calculate the return on the cost of investment, in cases where the capital expenditures have not been fully devalued this should be reflected as a cash inflow.</p> <p>Not to apply a residual value would imply that the project must repay the full value of the capital expenditure before the value of this expenditure had been consumed.</p>	<p>As per the additionality sheet, residual value is 5% on total EPC cost. This is based on Circular Letter^{21/} No 55/PJ.6/1993 dated 08/10/1993 regarding the Guidelines decree from the Ministry of Finance No 174/KMK.04/1993 dated 23rd February 1993, especially about the machinery as stated in Attachment I point IV of the Circular Letter from Director General of Taxation No. SE-40/PJ.6/1993 dated 21st July 1993. Hence accepted. Since depreciation is applied to the tangible EPC costs only, the validation team has accepted.</p> <p>By calculation, fair value at the end of assessment = USD 5,639,000. This is accepted by the validation team. This fair value is included as cash inflow in the calculation in the final year. Hence accepted.</p>
<p>8. The discount rate used in the investment comparison analysis shall be determined following the requirements as set out in this tool for the calculation of IRR benchmarks in section 6 below.</p>	<p>Discount rate is not applicable for benchmark analysis.</p>
<p>9. The weighted average costs of capital (WACC) and the cost of equity provided in the Appendix or calculated using Capital Asset Pricing Model (CAPM) are post-tax IRR benchmarks, and investment analysis shall be conducted with post-tax cash flows.</p> <p>Depreciation, and other non-cash items related to the project activity, which have been deducted in estimating gross profits on which tax is calculated, shall be added back to net profits for the purpose of calculating the financial indicator (e.g. IRR, NPV).</p> <p>The cash flow effects of taxation should be included in the IRR/NPV calculation.</p> <p>Rationale: Depreciation is not an actual expense incurred by the company and as such does not directly affect the financial viability of the project.</p> <p>To treat both the capital cost of the assets and their depreciation as an expense to the project would be a double counting of this cost.</p>	<p>The validation team assessed the suitability of benchmark against the chosen financial indicator and found that PP has chosen post tax project IRR as the financial indicator and for project IRR, weighted average costs of capital (WACC) is the appropriate benchmark. Hence the benchmark chosen is appropriate and hence accepted. The cost of equity is based on Appendix of the investment analysis tool. Hence accepted.</p> <p>The calculation of post-tax project IRR is conducted with post tax cash flows. Hence accepted by the validation team.</p> <p>Depreciation is based on simple straight line method. Hence annual depreciation is same for the all the 30 years of assessment. This is checked and found to be accepted by the validation team. Earnings before Interest on loan, income tax, depreciation and amortisation (EBITDA) is calculated from the difference between revenue from electricity selling and expenditure due to total operating costs. Depreciation and interest on loan are deducted for the calculation of earnings before tax (EBT). The income tax is calculated on EBT. Earnings after tax (EAT) is calculated from difference between EBITDA and income tax. Since depreciation and Interest on loan are added back to Earnings After Tax (EAT) as cash inflow for the purpose of calculating the project IRR, the validation team has accepted.</p> <p>Since the proposed project could be developed by entities other than the PP and as per para 13 of the guideline, the benchmark is found to be based on the parameters that are standard in the market. Hence,</p>

	the validation team accepted the input values that used for calculating benchmark. Further, if the benchmark is based on the standard values, cost of equity may be determined by using best financial practices, based on publicly available data sources which are in line with para 15 of the same guideline
<p>10. Input values used in all investment analysis shall be valid and applicable at the time of the investment decision taken by the project participant.</p> <p>The DOE is therefore expected to validate the timing of the investment decision and the consistency and appropriateness of the input values with this timing.</p> <p>The DOE should also validate that the listed input values have been consistently applied in all calculations.</p> <p>Rationale: The use of investment analysis to demonstrate additionality is intended to assess whether or not a reasonable investor would or not decide to proceed with a particular project activity without the benefits of the CDM.</p> <p>This decision will therefore be based on the relevant information available at the time of the investment decision and not information available at an earlier or later point.</p> <p>Any expenditures occurred prior to the decision to proceed with the investment in the project will not impact the final investment decision as such expenses sunk costs which remain unaffected by the decision to proceed or not with a project activity.</p>	<p>The input values are based on financial model^{/22/} - Input File_Hasang_150923_LGI (SMBC). Since the financial model is available to the PP at the time of investment decision, the validation team has accepted.</p> <p>The validation team has confirmed that financial model and the date of investment decision are consistent and appropriate and that the period of time between the finalization of the financial model and the investment decision is sufficiently short that it is unlikely in the context of the project activity that the input values would have materially changed.</p> <p>The validation opinion of each input parameter is detailed below.</p>
Date of investment decision = 18 th October 2016	The validation team has reviewed the draft equity support agreement ^{/23/} between the PP and equity financiers and accepted that the board investment decision based on the equity support for the project
Capacity = 39 MW at the substation (grid interface)	<p>The validation team has reviewed the feasibility report^{/25/} applicable at the time of investment decision. The validation team has also reviewed EPC contract^{/7/}, PPA^{/11/} and accepted the same. The installed capacity of 39 MW is exactly matching with the EPC contract^{/7/}; the validation team has accepted the same.</p> <p>As per the PDD uploaded for GSCP in 2012, the capacity value was mentioned as 41.7 MW (3 x 13.9 MW). However, it was based on maximum guaranteed power output. As the financial models^{/22/} was based on installed capacity of 39 MW and maximum guaranteed power output, the validation team has accepted.</p>
Period of assessment = 30 years	The validation team checked the input value against this which stipulates that the period of assessment shall at least be in tune with the life time of the project activity. PP has taken the period of assessment of financial indicator (i.e post-tax project IRR) in tune with the operational lifetime of the project. As per the power purchase agreement ^{/11/} , lifetime of the project is 30 years. By considering the period of assessment of 30 years, the input value is satisfying this requirement. The validation team accepted the input value as appropriate.
Total project cost = 200,777,959 USD	It includes EPC cost (such general EPC, civil works,

<p>Total EPC cost =USD 112,772,300 Total non EPC cost =USD 75,100,180</p>	<p>architectural works, hydro-mechanical, electrical-mechanical and transmission lines), non EPC costs (such as development costs, Pre COD O&M costs, financing costs, project contingency costs, Establishment DSRA costs, establishment of initial working capital costs) and VAT costs. The validation team has reviewed the financial model^{/22/}- Input File_Hasang_150923_LGI (SMBC) applicable at the time of investment decision and accepted the same.</p> <p>The validation team has reviewed the EPC contract^{/7/} and EPC amount (EPC equipment cost has been USD 35,400,000 and EPC construction service cost has been USD 77,360,000) works to be USD 112,760,000. Hence accepted.</p> <p>The validation team has reviewed the common terms agreement^{/24/} and equity support agreement^{/23/} and accepted the project cost.</p>								
<p>Plant load factor (PLF) =73.1% Plant availability rate =97%</p> <p>Net generation = 242,240 MWh per year</p> <p>Source : PPA</p>	<p>As per para 3 of "Guidelines for the reporting and validation of plant load factors"^{/2/} v1.0, the plant load factor shall be defined ex-ante in the CDM-PDD according to one of the following three options: (a) The plant load factor provided to banks and/or equity financiers while applying the project activity for project financing, or to the government while applying the project activity for implementation approval; (b) The plant load factor determined by a third party contracted by the project participants (e.g. an engineering company). The validation team has reviewed the power purchase agreement^{/11/} and accepted the PLF and plant availability rate. The net generation of 242,240 MWh per year is exactly matching with the PPA. The PPA was submitted to project lenders, equity financiers while applying the project activity for project financing. Hence it is line with para 3a of the guideline.</p> <p>As per the PDD uploaded for GSCP in 2012, PLF was mentioned as 76.188%. The validation team has calculated the project IRR with this PLF and found that resultant project IRR is still less than the WACC.</p> <table border="1"> <thead> <tr> <th>PLF</th><th>Project IRR</th></tr> </thead> <tbody> <tr> <td>Base PLF =73.1%</td><td>4.20%</td></tr> <tr> <td>PLF of 76.188% as per PDD uploaded for GSCP in 2012</td><td>4.58%</td></tr> <tr> <td>Capacity of 41.7 MW and PLF of 76.188% (as per PDD uploaded for GSCP in 2012)</td><td>5.21%</td></tr> </tbody> </table>	PLF	Project IRR	Base PLF =73.1%	4.20%	PLF of 76.188% as per PDD uploaded for GSCP in 2012	4.58%	Capacity of 41.7 MW and PLF of 76.188% (as per PDD uploaded for GSCP in 2012)	5.21%
PLF	Project IRR								
Base PLF =73.1%	4.20%								
PLF of 76.188% as per PDD uploaded for GSCP in 2012	4.58%								
Capacity of 41.7 MW and PLF of 76.188% (as per PDD uploaded for GSCP in 2012)	5.21%								
<p>Electricity Tariff =USD 0.089917/kWh for the first 15 years and USD0 0.057121/kWh for the next 15 years</p>	<p>The validation team has checked the financial model^{/22/}-Input File_Hasang_150923_LGI (SMBC) applicable at the time of investment decision and accepted the same.</p> <p>The validation team has reviewed the Power Purchase Agreement^{/11/} and accepted the value as correct.</p>								
<p>Revenues =USD 21,781,000 per year (calculated)</p>	<p>It is based on net electricity for sale and electricity tariff. Hence accepted</p>								
<p>Annual fixed O&M cost for first 5 years=USD</p>	<p>The fixed O&M cost consists of foreign labour, local</p>								

<p>2,972,230 per year Annual fixed O&M cost for first 5 years=USD 2,561,380 per year Annual fixed O&M cost for first 5 years=USD 1,800,810 per year Other costs =USD 902,290 per year Major maintenance and overhaul costs</p> <p>Conversion rate =Indonesian Rupiah 13,787/USD</p>	<p>labour and general & admin expenses, other expenses, major maintenance and overhaul costs. The validation team has checked the data used to arrive at foreign labour, local labour and general & admin expenses, other expenses, major maintenance and overhaul costs. This is based on financial model^{/22/} - C_150813_Hasang Operation_Budget rev 7. Since the financial model is applicable to the PP at the time of investment decision and hence accepted.</p> <p>The validation team has reviewed the O&M agreement^{/26/} between the PP and PT HOM regarding operation and maintenance and accepted the value as correct.</p> <p>The validation team has reviewed the Bloomberg website^{/29/} for conversion rate from IDR to USD</p>
<p>Variable O&M costs =USD 0.00121487/kWh Lubrication =USD 0.0001523/kWh Water usage cost =IDR 5/kWh Maintenance of building =IDR 9.65/kWh Annual variable cost =USD 294,000 per year</p> <p>Conversion rate =Indonesian Rupiah 13,787/USD</p>	<p>The variable cost consists of lubrication, water usage costs, maintenance of building. This is based on financial model^{/22/} - C_150813_Hasang Operation_Budget rev 7 which is applicable at the time of investment decision.</p> <p>The validation team has reviewed the O&M agreement^{/26/} between the PP and PT HOM regarding operation and maintenance and accepted the value as correct.</p>
Total operating costs =USD 4,169,000 for the first year	Total operating costs =O&M fixed cost +O&M variable costs. Hence accepted. It is calculated for other years.
Earnings before Interest on loan, income tax, depreciation and amortisation (EBITDA) =USD 17,613,000 for the first year	EBITDA = Total revenue –Total operating costs
<p>Depreciation of EPC cost) Annual depreciation works to be USD 3,759,000 per year every year</p>	<p>Depreciation is based on simple straight line method. Hence annual depreciation is same for the all the 30 years of assessment. This is based on feasibility report applicable at the time of investment decision. This is checked and found to be accepted by the validation team.</p>
<p>Debt: Equity =70%:30%</p> <p>Debt =USD 140,545,000 Equity =USD 60,233,000</p>	<p>The validation team has reviewed the FSR report^{/25/} applicable at the time of investment decision and accepted the same. This FSR report^{/25/} has been prepared by E.ON Carbon Sourcing GmbH with Pöyry Energy Ltd. for PT Binsar Natorang Energi pursuant to the Technical Management Agreement signed between them on 17th June 2011 and Assignment of Rights of Feasibility Study on June 01 2012.</p> <p>The validation reviewed the covered facilities agreement^{/27/} between lenders and the PP and observed that covered commercial loan is USD 133,517,344 and uncovered facilities agreement^{/28/} signed between the PP, Korea Development Bank & Sumitomo Mitsui Banking Corporation (SMBC) and observed that uncovered commercial loan is USD 7,027,229. So the total loan works to be USD 140,544,573 (70% of the total project cost) and accepted the value as correct.</p> <p>The validation team has reviewed the equity support agreement^{/23/} signed between the PP and LG international and equity amount has been USD 60,233,388. Hence accepted by the validation team.</p>
Interest on loan	The loan is based on covered commercial loan

<p>Covered commercial loan without WHT Facility size =45.46% Interest =1.89%</p> <p>Covered commercial loan with WHT Facility size =49.54% Interest =1.89%</p> <p>Uncovered commercial loan facility size =5% Interest=4.16%</p> <p>Repayment =15 years (half yearly repayment)</p>	<p>without WHT, covered commercial loan with WHT, uncovered commercial loan. This is based on the macrotrends website^{/29/} which is applicable to the investment decision and hence accepted by the validation team. Depreciation and interest on loan are deducted for the calculation of earnings before tax (EBT).</p>
Earnings before tax (EBT) =USD 11,078,000	EBT =EBITDA-Depreciation-Interest on loan Hence accepted
Corporate tax =25% on EBT	The validation team has reviewed the Law No. 36/2008 on Income Tax ^{/30/} & FSR report ^{/25/} applicable at the time of investment decision and accepted the same.
Earnings after tax (EAT) =USD 14,843,000	EAT=EBT-Income tax Since depreciation and Interest on loan are added back to Earnings After Tax (EAT) as cash inflow for the purpose of calculating the project IRR, the validation team has accepted. Hence accepted
Cash inflow	Cash inflow = EAT Hence accepted
<p>Residual value =5% on EPC costs</p> <p>Fair value at the end of assessment period = USD 5,639,000</p>	<p>As per the additionality sheet, residual value is 5% on total EPC cost. This is based on Circular Letter^{/21/} No 55/PJ.6/1993 dated 08/10/1993 regarding the Guidelines decree from the Ministry of Finance No 174/KMK.04/1993 dated 23rd February 1993, especially about the machinery as stated in Attachment I point IV of the Circular Letter from Director General of Taxation No. SE-40/PJ.6/1993 dated 21st July 1993. Hence accepted. Since depreciation is applied to the tangible EPC costs only, the validation team has accepted.</p> <p>By calculation, fair value at the end of assessment = USD 5,639,000. This is accepted by the validation team. This fair value is included as cash inflow in the calculation in the final year. Hence accepted.</p>
Post tax project IRR without CDM=4.20%	The validation team has reviewed the additionality sheet ^{/2/} and accepted as it is in line with the standard financial auditing procedures
<p>11. In the case of project activities for which implementation ceases after the commencement and where implementation is recommenced due to consideration of the CDM the investment analysis should reflect the economic decision-making context at point of the decision to recommence the project.</p> <p>Therefore, capital costs incurred prior to the revised project activity start date can be reflected as the recoverable value of the assets, which are limited to the potential reuse/resale of tangible assets.</p> <p>Rationale: At the point of taking a decision to restart implementation of a project as a CDM project activity, the key issue of interest to an investor is the costs and revenues including the incentives from the CDM accruing from continuation of the investment.</p>	<p>This is not applicable as there is no stoppage in implementation of the project.</p> <p>The project cost is based on the financial model prepared by the PP.</p>

<p>Note: Capital expenditures should be included not at the original investment costs but at the market fair value at the point of the decision to proceed with the investment, demonstrating the value through assessments done by chartered specialists</p>	
<p>12. Project participants shall supply spreadsheet versions of all investment analysis.</p> <p>All formulas used in this analysis shall be readable and all relevant cells shall be viewable and unprotected.</p> <p>The spreadsheet will be made available to the Board, UNFCCC secretariat and others contracted to assess the request for registration on behalf of the Board including assigned members of the Registration and Issuance Team.</p> <p>In cases where the project participant does not wish to make such a spreadsheet available to the public an exact read-only or PDF copy shall be provided for general publication.</p> <p>In case the project participant wishes to black-out certain elements of the publicly available version, a clear justification for this shall be provided to the secretariat by the DOE when requesting registration.</p> <p>Rationale: Investment analysis shall be presented in a transparent manner, to the extent that the reader can reproduce the results.</p>	<p>PP has provided investment analysis spreadsheet^{12/} to the validation team for validation. The formula is readable and all relevant cells are viewable and unprotected.</p>
<p>5. Application of Project IRR and Equity IRR</p> <p>13. The cost of financing expenditures (i.e. loan repayments and interest) shall not be included in the calculation of project IRR.</p> <p>Rationale: The purpose of the project IRR calculation is to determine the viability of the project to service debt.</p> <p>Therefore, to include the cost of financing as an expense in this calculation would result in a double counting of this cost in the ultimate analysis.</p>	<p>Earnings after tax is treated as cash inflow. The cash inflow and cash out flow does not include loan repayments and interest on loan. Hence accepted by the validation team.</p>
<p>14. In the calculation of equity IRR only the portion of investment costs which is financed by equity should be considered as the net cash outflow, the portion of the investment costs which is financed by debt should not be considered a cash outflow.</p> <p>Rationale: The purpose of the equity IRR calculation is to determine the final return on the initial equity investment.</p> <p>In such calculations cost of servicing debt (interest and principle payments) are considered as costs.</p> <p>Therefore, to consider all investment costs to be a cash outflow would double count the cost of debt to the equity investor</p>	<p>PP has selected post tax project IRR as financial indicator. This is not applicable.</p>
<p>6. Selection and Validation of Appropriate Benchmarks</p> <p>15. The applied benchmark shall be appropriate to</p>	<p>The validation team assessed the suitability of benchmark against the chosen financial indicator and found that PP has chosen post tax project IRR</p>

<p>the type of IRR calculated.</p> <p>Local commercial lending rates or WACC are appropriate benchmarks for a project IRR.</p> <p>Required/expected returns on equity are appropriate benchmarks for an equity IRR.</p> <p>Benchmarks supplied by relevant national authorities are also appropriate.</p> <p>The DOE shall validate that the benchmarks used are applicable to the project activity and the type of IRR calculation presented</p> <p>Rationale: For the same project activity, the project IRR and equity IRR will be different, therefore the benchmark shall be appropriate to the type of calculation applied.</p>	<p>as the financial indicator and for project IRR, weighted average costs of capital (WACC) is the appropriate benchmark. Hence the benchmark chosen is appropriate and hence accepted.</p> <p>As per equation 1 of the investment analysis tool,</p> $WACC = r_e \times W_e + r_d \times W_d \times (1 - T_c)$ <p>Where</p> <p>r_e -cost of equity</p> <p>W_e -percentage of financing that is equity</p> <p>r_d -cost of debt</p> <p>W_d - percentage of financing that is debt</p> <p>T_c -Corporate tax rate</p>
<p>16. In situations where an investment analysis is carried out in nominal terms and the available IRR benchmarks are in real terms, project participants shall convert the real term values of benchmarks to nominal values by adding the inflation rate.</p> <p>The inflation rate shall be obtained from the inflation forecast of the central bank of the host country for the duration of the crediting period.</p> <p>If this information is not available, the target inflation rate of the central bank shall be used.</p> <p>If this information is also not available, then the average forecasted inflation rate for the host country published by the IMF (International Monetary Fund World Economic Outlook) or the World Bank for the next five years after the start of the project activity shall be used.</p>	<p>The validation team has checked the investment analysis and found that no inflation is involved in the cash flows. So the validation team has confirmed that investment analysis is carried out in real terms.</p>
<p>17. In the cases of projects which could be developed by an entity other than the project participant the benchmark should be based on parameters that are standard in the market.</p> <p>The DOE's validation of the benchmark shall also include its opinion on whether a company-specific benchmark or a benchmark based on parameters that are standard in the market is suitable in the context of the underlying project activity.</p> <p>Rationale: If the project could be developed by a different entity the unwillingness of one investor to assume the associated risks is not sufficient evidence that the project is additional, as this may be based on the subjective profit expectations of that investor.</p> <p>The applied benchmark must be suitable for the specific proposed project activity.</p> <p>It is not suitable to compare the return of low risk investments with the returns achieved or achievable by higher risk investments.</p>	<p>Since the project that could be developed by any entity, WACC is based on parameters that are standard in the market. As the parameters used to calculate WACC are based on the standard values in the market. The validation team has observed that parameters are market specific and not project specific one.</p>
<p>18. If there is only one possible project developer,</p>	<p>This is not applicable as the project could be</p>

<p>either internal company benchmarks/expected returns may be applied, or the benchmark based on standard conditions in the market may be used.</p> <p>If internal company benchmarks/expected returns are used, it should be demonstrated to have been used for similar projects with similar risks, developed by the same company or, if the company is brand new, would have been used for similar projects in the same sector in the country/region.</p> <p>This shall require as a minimum clear evidence of the resolution by the company's Board and/or shareholders and require the validating DOE to undertake a thorough assessment of the financial statements of the project developer to assess the past financial behaviour of the entity during at least the last 3 years in relation to similar projects.</p> <p>Rationale: The Tool for the demonstration and assessment of additionality requires that benchmarks should not include the subjective profitability expectations or risk profile of a particular project developer.</p> <p>Note that a company's internal benchmark can be derived in different ways, however, values derived based on such approaches should only be used if the resulting benchmarks were consistently used by the company in the past.</p>	<p>developed by any project developer.</p>
<p>6.1. Cost of equity (expected return on equity) in the market</p> <p>19. If the benchmark is based on parameters that are standard in the market, the cost of equity should be determined either by:</p> <p>(a) selecting the values provided in the Appendix; or by</p> <p>(b) calculating the cost of equity using CAPM.</p> <p>The default values in the Appendix are based on long term historical returns and therefore may also be applied by projects with a start date prior to the adoption of the default values by the Board.</p> <p>Rationale: The values in the Appendix reflect, as an approximate value, the returns on equity expected by the market for different sectors and countries.</p> <p>The expectation of return depends on conditions of the market that can be modelled, taking into account the history (time series) of the market key variables (explaining variables proper of the technology and/or sector under analysis).</p> <p>Note: Adjustment to the CAPM or use of other financial models may be proposed through a request of revision of the Tool for the demonstration and assessment of additionality.</p> <p>If this data requirement cannot be met, the sector may be defined more broadly, e.g. by extending from the solar PV sector to the renewable energy sector and even to the utilities sector, so that at least three</p>	<p>Cost of equity =10.24%</p> <p>PP has selected option a- default values provided in the appendix of this investment analysis tool. As per the final PDD^{3/}, start date is 24th October 2016 and date of adoption of this tool is 28th November 2019. However, the default values in the Appendix of this investment analysis tool^{2/} are based on long term historical returns and therefore may also be applied by projects with a start date prior to the adoption of the default values by the Board.</p> <p>PP has selected option a- default values provided in the appendix of this investment analysis tool. For Group 1 –Energy Industries projects and country Indonesia, cost of equity is 10.24%.</p>

players can be identified.	
<p>20. The cost of equity may be calculated using CAPM if all of the following conditions are satisfied, according to the most recent datasets from the World Federation of Exchanges and the Gross Domestic Product (GDP) from the World Bank or UNSTAT.</p> <p>(a) More than 10 years of existence for the stock exchange;</p> <p>(b) The stock market is representative of the domestic economy, i.e. ratio of stock market capitalization to GDP is in excess of 20 per cent;</p> <p>(c) The average share turnover ratio over the last calendar year is in excess of 20 per cent;</p> <p>(d) There are at least three domestic pure players that belong to the same sector as the project to calculate beta with at least 3 years of daily stock market data, and daily values are available;</p> <p>(e) There are domestic government securities labelled in the domestic currency with maturities over 10 years.</p> <p>Rationale for the individual conditions above:</p> <p>(a) For market return, it allows to include relatively recent but quite active stock exchanges;</p> <p>(b) For market return, this level is relatively low on purpose to ensure that countries that have not been undergoing multiple waves of privatization but still offer domestic private sector investment opportunities be included;</p> <p>(c) For market turnover, a ratio in excess of 100 per cent means that a single stock is traded more than once per year / a ratio of 20 per cent means that, on average, one stock out of five changes hands every year;</p> <p>(d) Minimum information required to calculate beta;</p> <p>(e) For risk-free rate, the maturity of such security should not be significantly lower than the project lifetime</p> <p>Note: World Federation of Exchanges - http://www.world-exchanges.org/statistics</p> <p>UNSTAT - http://data.worldbank.org/indicator/NY.GDP.MKTP.CD; http://unstats.un.org/unsd/databases.htm</p> <p>If this data requirement cannot be met, the sector may be defined more broadly, e.g. by extending from the solar PV sector to the renewable energy sector and even to the utilities sector, so that at least three players can be identified.</p>	This is not applicable.
<p>21. The application of CAPM to calculate the cost of equity shall follow the equation below, and should use official data sources from financial institutions (central banks, stock exchanges, etc.) as preferred</p>	This is not applicable.

choice over third party sources.	
<p>6.2. Cost of debt</p> <p>22. If a company's internal benchmark is used for the expected return on equity, the cost of debt should be based on the weighted average cost of debt financing of the legal entity owning the CDM project activity:</p> <p>(a) For loans, use the weighted average cost of outstanding long-term debt;</p> <p>(b) For bonds, use the weighted average yield of the bonds during the last three months prior to the submission of the CDM-PDD for validation or prior to the investment decision, whichever is earlier.</p> <p>The use of bonds to determine the cost of debt is only appropriate for corporate bonds issued in the host country of the CDM project;</p> <p>(c) In cases where the debt finance structure of the project is not yet available (e.g. a letter of intent for debt funding is not available), the cost of debt can be assumed as the commercial lending rate in the country or the yield of a 10-year bond issued by the government of the host country or, if this is not available, the bond with the maturity which is closest to 10 years.</p>	<p>Cost of debt = 11.64%</p> <p>This is based on Investment lending rate from Central bank of Indonesia (Year to investment decision date average). This is sourced from https://www.bi.go.id/id/statistik/sdds/Pages/default.aspx</p> <p>The validation team has also reviewed Bank of Indonesia lending rate sheet^{/29/} and confirmed the value.</p> <p>As the commercial lending rate in the country is considered as cost of debt (case c), the validation team has accepted.</p>
<p>23. The following should be documented in the CDM-PDD:</p> <p>(a) For bonds: the key parameters of the bond including the time of maturity, yield, registration issuance in the financial system and set-up in the market;</p> <p>(b) For loans from a financial institution: the contract of lending between the financial institution and the legal entity owning the assets of the project activity, or, in absence of the contract, a letter from the bank stating its intention to award the loan and the key terms for the loan;</p> <p>(c) For debt financing from a parent company: the transfer of capital to the legal entity, documented with the contract of lending between the parent company and the legal entity owning the assets of the project activity and/or the parameters of the corporate bonds as mentioned above.</p> <p>This latter option is only valid for corporate bonds issued in the host country of the CDM project activity.</p> <p>Rationale: Interest rates charged on loans are dependent upon a company's specific credit rating.</p> <p>Hence company specific interest rates are only relevant for projects with only one possible project developer.</p>	<p>The validation team has reviewed the Common Terms Agreement^{/24/} between the PP and the lenders regarding the loan availed.</p>
<p>24. If the benchmark is based on parameters that are standard in the market, the cost of debt should be calculated as the cost of financing in the capital markets (e.g. commercial lending rates and guarantees required for the country and the type of</p>	<p>Since the benchmark is based on parameters that are standard in the market, cost of debt shall be based on commercial lending rates of Indonesia. Hence accepted by the validation team.</p>

<p>project activity concerned), based on documented evidence from financial institutions with regard to the cost of debt financing of comparable projects.</p> <p>In cases where such data is not available, use the commercial lending rate in the host country to calculate the cost of debt.</p>									
<p>6.3. Weighting of debt and equity</p> <p>25. If a company's internal benchmark is used for the expected return on equity, then the percentage of debt financing and equity financing should reflect the long-term debt/equity finance structure of the legal entity owning the assets of the project activity.</p> <p>The percentage should be determined based on the latest balance sheet provided under local fiscal/accounting standards and rules if:</p> <p>(a) the legal entity owning the assets of the project activity has balance sheets audited by a third party within two years prior to the submission of the CDM-PDD for validation; and</p> <p>(b) the accounting books of the legal entity reflect at least the total value of all the assets needed for the project activity.</p> <p>If the debt/equity finance structure is not yet available, 50 per cent debt and 50 per cent equity financing may be assumed as a default.</p>	<p>This is not applicable as the benchmark is based on parameters that are standard in the market.</p>								
<p>26. If the benchmark is based on parameters that are standard in the market, then the typical debt/equity finance structure observed in the sector of the country should be used.</p> <p>If such information is not readily available, 50 per cent debt and 50 per cent equity financing may be assumed as a default.</p>	<p>Debt:Equity = 50%:50%</p> <p>Since typical debt/equity finance structure observed in the sector of the country are not available, default value of 50%:50% is used. This is accepted by the validation team.</p>								
<p>Corporate income tax (T_c)= 25%</p>	<p>It is already validated as above</p>								
<p>WACC =9.485%</p>	<p>The validation team has calculated WACC correctly.</p>								
<p>7. Sensitivity analysis</p> <p>27. Variables, including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues should be subjected to reasonable variation (all parameters varied need not necessarily be subjected to both negative and positive variations of the same magnitude), and the results of this variation should be presented in the PDD and be reproducible in the associated spreadsheets.</p> <p>Where a DOE considers that a variable which constitute less than 20 per cent has a material impact on the analysis they shall raise a corrective action request to include this variable in the sensitivity analysis.</p> <p>Rationale: The initial objective of a sensitivity analysis is to determine in which scenarios the project activity would pass the benchmark or become more favourable than the alternative.</p>	<p>As per para 27 of this investment analysis tool, the variables, including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues should be subjected to reasonable variation. The departure variations in the sensitivity analysis should at least cover a range of +10% and -10%. A sensitivity analysis is conducted on variables that constitute more than 20% of either project costs or project revenues. The investment cost, PLF, Electricity tariff and O&M cost are the parameters that are subjected to reasonable variation and the results are documented in the final PDD^{/3/} and found to be reproducible in the financial sheets. Variations in the sensitivity analysis cover a range of +10% and -10%, and results show that the project activity does not cross the benchmark in any of the scenarios.</p> <table><tr><td></td><td>-10%</td><td>+10%</td><td>% variation to cross benchmark</td></tr><tr><td>Total project</td><td>5.10%</td><td>3.43%</td><td>-42.7%</td></tr></table>		-10%	+10%	% variation to cross benchmark	Total project	5.10%	3.43%	-42.7%
	-10%	+10%	% variation to cross benchmark						
Total project	5.10%	3.43%	-42.7%						

	cost			
	PLF	3.26%	5.09%	+67.5%
	Electricity tariff	3.24%	5.10%	+66.5%
	Total operating costs	4.39%	4.01%	-339.3%
<p>These results of sensitivity analysis were evaluated and were found to be correct, they indicate conservativeness and robustness of the parameters used for the investment analysis.</p> <p>Total project costs: The post-tax project IRR reaches the benchmark if total projects costs is reduced by 42.7% which is not possible since offshore EPC contracts are already signed by the PP.</p> <p>PLF: The post tax project IRR reaches the benchmark if PLF is increased by 67.5% which is not possible since committed electricity supply is already fixed as per the signed PPA with PLN.</p> <p>Electricity tariff: The post tax project IRR reaches the benchmark if tariff is increased by 66.5% which is not possible since tariff is already fixed as per the signed PPA with PLN.</p> <p>Total operating costs: The post-tax project IRR reaches the benchmark even if total operating costs is zero.</p> <p>The revenues of project activity would be insufficient to justify the required investment and it is observed that without the benefits of CDM the project is unfavorable option to invest. Hence, the project is concluded to be additional and CDM revenue is considered imperative to bridge the gap between post tax project IRR and the WACC.</p>				
<p>28. The DOE should assess in detail whether the range of variations is reasonable in the project context.</p> <p>Past trends may be a guide to determine the reasonable range.</p> <p>As a general point of departure variations in the sensitivity analysis should at least cover a range of +10 per cent and –10 per cent, unless this is not deemed appropriate in the context of the specific project circumstances.</p> <p>In cases where a scenario will result in the project activity passing the benchmark or becoming the most financially attractive alternative the DOE shall provide an assessment of the probability of the occurrence of this scenario in comparison to the likelihood of the assumptions in the presented investment analysis, taking into consideration correlations between the variables as well as the specific socio-economic and policy context of the project activity.</p> <p>Rationale: The ultimate objective of the sensitivity</p>				
It is already validated as above.				

analysis is to determine the likelihood of the occurrence of a scenario other than the scenario presented, in order to provide a cross-check on the suitability of the assumptions used in the development of the investment analysis.	
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Appendix 12: Requirements of common practice v3.1

Requirements of common practice v3.1	Validation opinion
1. Introduction 1. This methodological tool provides a step-wise approach for the conduction of the common practice analysis as referred to in methodological tool "Tool for the demonstration and assessment of additionality", the methodological tool "Combined tool to identify the baseline scenario and demonstrate additionality", or baseline and monitoring methodologies that use the common practice test for the demonstration of additionality.	PP had used "Tool for the demonstration and assessment of additionality" v7.0. The validation opinion of step-wise approach for the conduction of the common practice analysis is detailed below.
2. Scope, applicability, and entry into force 2.1. Scope 2. This methodological tool provides a step-wise approach for the analysis of the extent to which a proposed project type (e.g. technology or practice) has already diffused in the relevant sector and region.	PP had demonstrated the project type- Hydro power plant has not diffused in the power production sector in Indonesia. The validation opinion of common practice analysis is detailed below.
2.2. Applicability 3. This methodological tool is applicable to project activities that apply the methodological tool "Tool for the demonstration and assessment of additionality", the methodological tool "Combined tool to identify the baseline scenario and demonstrate additionality", or baseline and monitoring methodologies that use the common practice test for the demonstration of additionality.	PP had used "Tool for the demonstration and assessment of additionality" v7.0. Hence application of this tool for common practice is accepted by the validation.
4. In case the applied approved baseline and monitoring methodology defines approaches for the conduction of the common practice test that are different from those described in this methodological tool, the requirements contained in the methodology shall prevail.	The requirements of applied methodology specific to the project type is in line with the requirements of the common practice tool ^{2/} .
2.3. Entry into force 5. Immediately upon adoption of the methodological tool at the eighty-fourth meeting of the Board (28 May 2015).	PP has used the latest version of the common practice tool ^{2/} v3.1 adopted at EB84.
3. Normative references 6. Project participants shall follow the applicable provisions for the demonstration of additionality in the CDM Project Standard.	The validation opinion of requirements of PS-PA is detailed in Appendix 5 of this report.
7. This methodological tool refers to the following documents: (a) Methodological tool: "Tool for the demonstration and assessment of additionality"; (b) Methodological tool: "Combined tool to identify the baseline scenario and demonstrate additionality".	PP had used "Tool for the demonstration and assessment of additionality" v7.0.
4. Definitions 8. The definitions contained in the Glossary of CDM terms shall apply.	
9. Applicable geographical area - should be the entire host country.	PP has considered host country as applicable geographical area.

<p>If the project participants opt to limit the applicable geographical area to a specific geographical area (such as province, region, etc.) within the host country, then they shall provide justification on the essential distinction between the identified specific geographical area and rest of the host country.</p>	
<p>10. Measure - (for emission reduction activities) is a broad class of greenhouse gas emission reduction activities possessing common features.</p> <p>Four types of measures are currently covered in the framework:</p> <p>(a) Fuel and feedstock switch (example: switch from naphtha to natural gas for energy generation, or switch from limestone to gypsum in cement clinker production);</p> <p>(b) Switch of technology with or without change of energy source including energy efficiency improvement as well as use of renewable energies (example: energy efficiency improvements, power generation based on renewable energy);</p> <p>(c) Methane destruction (example: landfill gas flaring);</p> <p>(d) Methane formation avoidance (example: use of biomass that would have been left to decay in a solid waste disposal site resulting in the formation and emission of methane, for energy generation).</p> <p>Note: Identified measures do not cover the industrial gases, transport and afforestation/reforestation projects.</p>	<p>The project is installation of hydro power plant. The measure is the generation of electricity using hydro power sources and supplying the electricity thus generated to grid.</p> <p>Hence Switch of technology with or without change of energy source (power plants supplying electricity) is considered to be the suitable measure for this project. Hence accepted by the validation team.</p>
<p>11. Output - is goods/services produced by the project activity including, among other things, heat, steam, electricity, methane, and biogas unless otherwise specified in the applied methodology;</p>	<p>The output of the project is 39 MW electricity.</p>
<p>12. Different technologies - are technologies that deliver the same output and differ by at least one of the following (as appropriate in the context of the measure applied in the proposed clean development mechanism (CDM) project activity and applicable geographical area):</p> <p>(a) Energy source/fuel (example: energy generation by different energy sources such as wind and hydro and different types of fuels such as biomass and natural gas);</p> <p>(b) Feed stock (example: production of fuel ethanol from different feed stocks such as sugar cane and starch, production of cement with varying percentage of alternative fuels or less carbon-intensive fuels);</p> <p>(c) Size of installation (power capacity)/energy savings:</p> <p>(i) Micro (as defined in paragraph 24 of decision 2/CMP.5 and paragraph 39 of decision 3/CMP.6);</p> <p>(ii) Small (as defined in paragraph 28 of decision 1/CMP.2);</p> <p>(iii) Large.</p>	<p>PP had used energy source/fuel (option a) and investment climate (option d) to differentiate the project technology from other technologies.</p>

<p>(d) Investment climate on the date of the investment decision, inter alia:</p> <ul style="list-style-type: none"> (i) Access to technology (ii) Subsidies or other financial flows; (iii) Promotional policies; (iv) Legal regulations. <p>(e) Other features, inter alia:</p> <ul style="list-style-type: none"> (i) Nature of the investment (example: unit cost of capacity or output is considered different if the costs differ by at least 20 %). <p>Note:</p> <p>In general, capacity values should be considered in the common practice assessment.</p> <p>The use of output values should be justified and consistently applied in the assessment.</p>	
<p>5. Stepwise approach for common practice</p> <p>13. Step 1: calculate applicable capacity or output range as +/-50% of the total design capacity or output of the proposed project activity.</p>	<p>Output of the project = 39 MW Therefore output range = 19.5 MW to 58.5 MW.</p>
<p>14. Step 2: identify similar projects (both CDM and non-CDM) which fulfil all of the following conditions:</p> <p>(a) The projects are located in the applicable geographical area;</p>	<p>PP has considered host country as applicable geographical area.</p>
<p>b) The projects apply the same measure as the proposed project activity;</p>	<p>Switch of technology with or without change of energy source (power plants supplying electricity) is considered to be the suitable measure for this project. Therefore power plants such as diesel, gas based, geothermal, gas+steam power plant, coal including hydro power plants are treated to be projects similar to the project activity.</p>
<p>(c) The projects use the same energy source/fuel and feedstock as the proposed project activity, if a technology switch measure is implemented by the proposed project activity;</p>	<p>The project is installation of hydro power plant and thus does not involve technology switch. This is not applicable.</p>
<p>(d) The plants in which the projects are implemented produce goods or services with comparable quality, properties and applications areas (e.g. clinker) as the proposed project plant;</p>	<p>The measure is the generation of electricity using hydro power sources and supplying the electricity thus generated to grid.</p>
<p>(e) The capacity or output of the projects is within the applicable capacity or output range calculated in Step 1;</p>	<p>Output of the project = 39 MW Therefore output range = 19.5 MW to 58.5 MW</p>
<p>(f) The projects started commercial operation before the project design document (CDM-PDD) is published for global stakeholder consultation or before the start date of proposed project activity, whichever is earlier for the proposed project activity.</p> <p>Note: While identifying similar projects, project participants may also use publicly available information, for example from government departments, industry associations, international associations on the market penetration of different technologies, etc</p>	<p>First GSCP conducted in 31st January 2012 for 30 days and second GSCP conducted in 21st Feb 2020. Start date is 24th October 2016. Hence start date of the project is considered to be cut off date for the common practice analysis.</p> <p>Hence power plants satisfying all the conditions are considered to be similar projects to the project activity.</p> <p>$N_{\text{similar}} = 118$</p> <p>The validation team has checked CDM website, VCS website and the government departments, industry associations, international associations on the market penetration of different technologies and accepted the same. The exhaustive list of power plants is sourced from "Power plant list"^{n/31/} obtained from DNA Grid Emission Factor data.</p>
<p>15. Step 3: within the projects identified in Step 2,</p>	<p>In the similar project list, there are 4 projects which</p>

identify those that are neither registered CDM project activities, project activities submitted for registration, nor project activities undergoing validation. Note their number N_{all} .	are CDM based projects. Therefore, $N_{all} = 114$
16. Step 4: within similar projects identified in Step 3, identify those that apply technologies that are different to the technology applied in the proposed project activity. Note their number N_{diff} .	PP had used energy source/fuel (option a) and investment climate (option d) to differentiate the project from other technologies. By this way, 95 power plants are considered to be different to the project activity. The validation team has reviewed the "Power plant list" ^{n/31/} obtained from DNA Grid Emission Factor data and accepted N_{diff} . The balance 19 power plants are either implemented by public entity PLN (13 power plants) or its subsidiary PT Pembangunan Jawa Bali (5 power plants), PT Indonesia Power (1 power plant). Since investment risk faced by public entity and private entity are different, these 19 power plants are considered to be different to the project technology. Therefore, $N_{diff} = 114$.
17. Step 5: calculate factor $F = 1 - N_{diff}/N_{all}$ representing the share of similar projects (penetration rate of the measure/technology) using a measure/technology similar to the measure/technology used in the proposed project activity that deliver the same output or capacity as the proposed project activity.	F is calculated to be 0. Therefore penetration rate of the project technology that delivers the same capacity is zero in the host country.
18. The proposed project activity is a "common practice" within a sector in the applicable geographical area if the factor F is greater than 0.2 and $N_{all} - N_{diff}$ is greater than 3.	Since $F = 0$ and $N_{all} - N_{diff} = 0$, the validation team has confirmed that the proposed project is not a common practice within the power sector in host country, Indonesia.

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Document information

Version	Date	Description
04.0	31 May 2019	Revision to: <ul style="list-style-type: none"> Ensure consistency with version 02.0 of the "CDM validation and verification standard for project activities" (CDM-EB93-A05-STAN); Make editorial improvements.
03.1	11 January 2018	Editorial revision to remove an erroneously included instruction paragraph in section D.2 (Identification of project type).
03.0	31 October 2017	Revision to align with the requirements of the "CDM validation and verification standard for project activities" (version 01.0).
02.0	22 July 2016	EB 90, Annex 3 Revision to include provisions related to automatically additional project activities.
01.0	23 March 2015	Initial publication.

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