VCS PROJECT REVIEW REPORT

Project ID	488
Project Name	82 MW Lau Renun Hydro Power Plant, North Sumatra
Project Proponent	PT. PLN (Pesero)
Methodology	ACM0002: Grid-connected electricity generation from renewable sources - -Version 17.0
Sectoral Scope(s)	1: Energy industries (renewable - / non-renewable sources)
Validation/Verification Body (VVB)	KBS Certification Services Pvt. Ltd.
Registry	APX

Assessment Criteria	*VCS Standard v3.7*, ACM0002, Methodological Tools "Tool to calculate the emission factor for an electricity system" and "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period (Version 03.0.1)"
Date of First Issue	21 November 2017
Date of Final Issue	20 December 2017

Summary:

An accuracy review of the 82 MW Lau Renun Hydro Power Plant, North Sumatra registration request has been conducted by VCS in accordance with Section 4.3 of the *Registration and Issuance Process*.

The accuracy review has raised 5 assessment findings and zero minor findings, detailed below. The VVB, in coordination with the project proponent, is hereby required to provide a response to the assessment findings presented in Section 1. The 5 assessment findings must be addressed to the satisfaction of VCS.

This findings report may be made publically available. Confidential information may be provided as separate attachments.

1 ASSESSMENT FINDINGS

Finding 1

Step 1.2 of the methodological tool "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period" version 3.0.1 requires that if the baseline scenario identified at the validation of the project activity was the continuation of the current practice without any investment, an assessment of the changes in market characteristics is required for the renewal of the crediting period.

The baseline scenario identified at validation was the consumption of electricity from the existing grid, without the investment of a greenfield hydro plant. Section 2.4 of the project description corresponding to step 1.2 of the applied tool, provides no assessment of changes in market characteristics.

Please update the project description to provide an assessment of the changes in market characteristics that have occurred since the project was validated. Additionally, please update the validation report to provide a conclusion regarding the assessment of changes in market characteristics.

VVB Response:

Step 1.2 of Section 2.4 in the project description has been updated to provide an assessment of the changes in market characteristics that have occurred since the project was validated.

Also Validation report (section 3.2.4) has updated to provide a conclusion regarding the assessment of changes in market characteristics.

VCS Response:

Sections 2.4 and 3.2.4 of the project description and validation report have been updated to describe the assessment of changes in market characters. This is sufficient to close the finding and no further action is required.

Finding 2

Table 2 in section 5.1 of the applied methodology states that methane emission from the reservoir of hydro power plants should be included as a project emission.

Table 3 in section 2.3 of the project description states that methane emissions are not applicable since the project is a run-of river hydropower plant with a daily regulating pond. Additionally in section 2.2 of the project description it is stated that the temporary storage has a power density of 820 W/m^2.

Please update the project description to provide clarification as to the difference between a daily regulating pond and a reservoir and why a daily regulating pond should not be considered a reservoir in the context of the methodology. If there is no difference between a daily regulating pond and a reservoir in the context of the methodology, please update the project description to include methane

emissions or a justification as to why they need not be included.

VVB Response:

In the context of the methodology, definition of reservoir is a water body created in valleys to store water generally made by the construction of a dam (UNFCCC CDM ACM0002 Large-scale Consolidated Methodology: Grid-connected electricity generation from renewable sources Version 17.0). And, according to UNFCCC CDM methodology AM0103 Renewable energy power generation in isolated grids) Version 02.0.0, the definition of Renewable energy sources is “This includes: hydro power plants (either with a run-of-river reservoir or an accumulation reservoir), wind power plants, geothermal power plants, solar power plants, wave power plants or tidal power plants”.

The run-of-river hydro power only diverts river flow to the power plant, and which reverted back to the original river. It diverts by using the daily regulating pond for a temporary water storage without construction of a dam. Hence it is a run-of-river reservoir (not an accumulation reservoir).

And, according to the clarification on UNFCCC CDM approved large scale methodologies ACM0002, the Meth Panel clarified that “Therefore, as long as the power plant involves a new reservoir or the increase of an existing reservoir, be it run-of-river or not, greenhouse gases emissions from the reservoir must be considered and, hence, the assessment of the power density is required as a necessary applicability condition of ACM0002;” (AM_CLA_0049: Calculation of power density https://cdm.unfccc.int/methodologies/PAmethodologies/clarifications/11717).

The section 2.2, Table 3 in section 2.3, and section 3.2 of the project description have been updated to provide the definition of daily regulating pond and a reservoir, and why a daily regulating pond should be considered as a reservoir.

Hence the power density has been calculated to justify the project emission from methane emission. As the power density of the project activity (PD) is greater than 10 W/m^2, the $PE_{HP,y}$ =0 as per para 43 (c) of the applied methodology ACM0002 version 17.0.

VCS Response:

The project description has been updated to discuss the daily regulating pond and its impact on quantification of methane emissions. This update is sufficient close this finding and not further action is required.

Finding 3

Section 3.1 of the project description states that the Indonesian government has already determined the emission factor for Sumatra, but then continues to recalculate the emission factor for Sumatra. Additionally it is unclear as to where the information used to calculate the emission factor was sourced.

Please update the project description to clarify as to why the emission factor was recalculated when

an emission factor has already been calculated by the government of Indonesia. Additionally, please provide references to the sources of information used to calculate the emission factor as well as the emission factor produced by the government of Indonesia. Lastly, please update the validation report to provide an assessment of the necessity to recalculate the emission factor if an emission factor is already available and an assessment of the sources of information used to calculate the emission factor.

VVB Response:

1. For the response of first query i.e. "*why the emission factor was recalculated when an emission factor has already been calculated by the government of Indonesia.*". The Operating Margin emission factor ($EF_{grid,OMsimple,y}$), Build Margin emission factor ($EF_{grid,BM,y}$), and Combined Margin emission factor ($EF_{grid,CM,y}$) have already calculated by the Indonesian government as per the "Tool to calculate the emission factor for an electricity system" and publicly available. PP has not calculated the Operating Margin emission factor ($EF_{grid,OMsimple,y}$) and Build Margin emission factor ($EF_{grid,BM,y}$) and only mentioned the steps (i.e. under section 3.1 of VCS PD) followed by the Indonesian government as per the understanding from the publicly available documents from Indonesian government. For the transparency PP has mentioned the steps.
2. For the response to the query "*Additionally, please provide references to the sources of information used to calculate the emission factor as well as the emission factor produced by the government of Indonesia.*".,.

   As mentioned in the previous query response, the Operating Margin emission factor ($EF_{grid,OMsimple,y}$), Build Margin emission factor ($EF_{grid,BM,y}$), and Combined Margin emission factor ($EF_{grid,CM,y}$) have already been calculated by the government of Indonesia. PP has directly taken the Operating Margin emission factor ($EF_{grid,OMsimple,y}$), Build Margin emission factor ($EF_{grid,BM,y}$) to calculate the Combined Margin emission factor ($EF_{grid,CM,y}$) as per the requirement of the tool "Tool to calculate the emission factor for an electricity system" (referred under the applied methodology) as mentioned in the section 3.1 of the VCS PD and 3.2.4 of the validation report. Because as per as per UNFCCC Methodological tool (Tool to calculate the emission factor for an electricity system), the following default values should be used for w_{OM} (Weighting of operating margin emissions factor) and wBM (Weighting of build margin emissions factor) in order to calculate the Combined Margin emission, (for all projects except for wind and solar power generation project activities): 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. While government of Indonesia is using w_{OM} = 0.5 and w_{BM} = 0.5 (for the first crediting period). Hence the Combined Margin emission should be calculated as per UNFCCC Methodological tool, as already provided in section 3.1 of the project description. The references to the emission factor produced by the government of Indonesia is from the Directorate General of Electricity - Ministry of Energy and Mineral Resources (MEMR), as already provided in section 3.1 of the project description.
3. For the last query "Lastly, please update the validation report to provide an assessment of the necessity to recalculate the emission factor if an emission factor is already available and an assessment of the sources of information used to calculate the emission factor.". The validation report has been updated in section 3.2.4 to provide an assessment of the Operating Margin emission factor and Build Margin emission factor have already been calculated (available) by the government of Indonesia, and of the necessity to recalculate the Combined Margin emission

factor as per UNFCCC Methodological tool.
VCS Response: The project description and validation report have been updated to discuss how the combined margin emission factor were determined. This update is sufficient to close this finding and no further action is required.

Finding 4 Section 3.19.1 of the *VCS Standard v3.7* requires that project use VCS Project Description Template, and adhere to all instructional text within the template. Section 1.5 of the VCS Project Description Template requires that the project proponent provide and justify the project start date. Section 1.5 of the project description provides the project start date, but it is unclear as what the justification is for the date provided. Please update the project description to clarify and provide justification for the start date provided. Please update the validation report to provide an assessment of the justification provided.
VVB Response: The start date of the project is 14 August 2006 as per the commissioning certificate of the unit 2. The section 1.5 of the project description has been updated to clarify and provide justification for the start date provided. Validation report has also updated for the assessment of the start date.
VCS Response: The project description and validation report have been updated to discuss the justification for the project start date. This update is sufficient to close this finding and no further action is required.

Finding 5 Section 3.8.5 (3) of the *VCS Standard v3.7* states that for the renewal of a project crediting period, “the updated project description shall be validated in accordance with VCS rules.” There are multiple locations in the validation report in which the information provided in the project description is not assessed and instead states that the information provided in the current project description is the same as the information provided in the validated project description. Please update sections 3.1, 3.2.3, 3.2.6, 3.2.8, 4.2, and, but not limited to 4.3 of the validation report

to provide assessment of the information provided in the project description and its adherence to VCS rules and requirements, the applied methodology, and all applicable tools.
VVB Response: Validation team has revised the sections 3.1, 3.2.3, 3.2.6, 3.2.8, 4.2, and 4.3 of the validation report accordingly.
VCS Response: The validation report has been updated to more thoroughly discuss how information was assessed. This update is sufficient to close the finding and therefore no further action is required.

2 MINOR FINDINGS

No minor finders were raised.

3 ASSESSMENT CONCLUSION

On 21 November 2017, VCS issued the initial round of findings.

On 18 December 2017, an update project description and validation report, as well as responses were submitted to sufficiently close all findings.

On 20 December 2017, VCS closed the review as all findings were sufficiently closed.