Voluntary Carbon Standard 2007

Validation Report

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Report Title:	**Approved by:**
Final Validation Report of "82 MW Lau Renun Hydro Power Plant, North Sumatra" in Indonesia	Certification and Services Division Director  Roberto Cavanna
Client:	**Project Title:**
Pt. PLN (Persero)	"82 MW Lau Renun Hydro Power Plant, North Sumatra"

Summary:	
RINA is performing a validation of the VCS(2007.1) project activity "82 MW Lau Renun Hydro Power Plant, North Sumatra" on the basis of the Voluntary Carbon Standard 2007.1 (VCS 2007.1), the VCS Program Guidelines 2007.1 as well as criteria to provide for consistent project operations, monitoring and reporting. The validation consists of the following three phases: i) a desk review of the project design documents, ii) follow-up interviews with project stakeholders and iii) the resolution of outstanding issues and the issuance of the final validation report and opinion. Eight (08) Corrective Action Requests (CAR's), One(01) Forward Action Request (FAR) and Ten (10) requests for Clarification (CL's) were identified. Upon the satisfactory resolution of these CAR's and CL's presented in this report, it is the validation team's opinion that the project meets the relevant Voluntary Carbon Standard 2007.1 (VCS 2007.1) requirements and thus recommend the project for registration.	
Work carried out by:	**Number of pages:**
Reghu Kumar Raghavan Nair, Team Leader Shivraj Sharma, Validator Sreeraj P N, Observer	105

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Abbreviation

ADB	Asian Development Bank
BM	Built Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism,
CL	Clarification Request
CM	Combined Margin
CO_2EF_i	Carbon dioxide Coefficient
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
FAR	Forward Action Request
GHG	Green house gas
GPS	Global positioning system
GWh	Giga Watt Hour
IDR	Indonesian Rupiah
IRR	Internal Rate of Return
kW	Kilo Watt
MEP	Monthly Electricity Protocol
MoV	Means of verification
MW	Mega Watt
MWh	Mega Watt Hour
NCV	Net Calorific Value
OM	Operating Margin
PLN	Perusahaan Listrik Negara
PP	Project Proponent
PPA	Power Purchase Agreement
PPT	Power Point Template
PD	Project Design
QA/QC	Quality Assurance/Quality Control
RINA	Registro Italiano Navale
UNFCCC	United Nations Framework Conventions on Climate Change
USD	United States Dollar
VCS	Voluntary Carbon Standard
VCUs	Voluntary Carbon Units
WACC	Weighted Average Cost of Capital

1 Introduction

The client has commissioned RINA to perform a validation of the "82 MW Lau Renun Hydro Power Plant, North Sumatra". This report summarizes the findings of the validation of the project, performed on the basis of Voluntary Carbon Standard- Specification for the project level quantification, monitoring and reporting as well as validation and verification of green house gas emission reductions or removals, Voluntary Carbon Standard program guidelines (VCS 2007.1), the subsequent decisions by the VCS board and the Host country criteria.

The validation was performed by the following team:

Role/Qualification	Last Name	First Name	Country
Team leader	Raghavan Nair	Reghu Kumar	India
Validator	Sharma	Shivraj	India
Observer	Narayanan	Sreeraj	India

The draft validation report, including the initial validation findings, underwent a technical review before being submitted to the project participants. The technical review was performed by Rekha Menon qualified in accordance with RINA's qualification scheme for CDM/VCS validation and verification.

1.1 Objective

The purpose of a validation is to have an independent third party to assess the VCS project design. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant VCS and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all GHG projects in accordance with VCS program requirements and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of Voluntary Carbon Units (VCUs).

1.2 Scope and Criteria

The validation scope is defined as an independent and objective review of the VCS PD. The VCS PD is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, Voluntary Carbon Standard program guidelines (VCS 2007.1), the CDM modalities and procedures as agreed in the Marrakech Accords and the approved baseline and monitoring methodology (ACM0002, i.e. "Consolidated

methodology for grid-connected electricity generation from renewable resources" – Version 10, EB 47 (valid from 11 June 2009 onwards) /4/.The validation team has, based on the recommendations in the Validation and Verification Manual /8/ employed a risk-based approach, focusing on the identification of significant risks for project implementation and the generation of VCUs.

The validation is not meant to provide any consulting towards the project participants. However, stated Clarifications and/or Corrective Action Requests may have provided input for improvement of the project design.

1.3 VCS project Description

The project is a 82 MW grid connected ,run off river type hydro electric power generating unit. It consists of a regulating pond with storage capacity of 500,000m^3./13/ It is located at north-western part of Lake Toba in North Sumatra Province which is about 100 km south of Medan city by air. The proposed main intake is situated at about 750 m downstream from the public bridge of Sidikalang-Tarutung road on the upstream reach of the Renun river at Pangiringan. The power station is located at foot of the spur of Toba Escarpment about 2 km southeast of Silalahi village and the waterway is about 24 km long.

The main objective of the project activity is to generate electricity by harnessing the hydrological resources of the Renun river and another eleven lateral tributaries and transmit it to the Sumatra grid through Sidikalang PLN and Brastagi PLN substations. This inturn reduces the power supplied to the grid, generated using fossil fuels that results in GHG emission to the atmosphere. Hence this project activity reduces the GHG emissions.

The validation team has verified the documents like contract agreements between the supplier of turbine and generator and Pt.PLN and commissioning certificates of the units to confirm the ownership of Pt.PLN (Persero) for the project activity.

The project has two units with 41 MW capacity each. Start date of the project is 14 August 2006 as per the commissioning certificate of the unit 2, which was commissioned first. /9/ The validation team accepted this start date as this is the actual and officially certified date from which the project activity began reducing or removing GHG emissions. The project is expected to reduce CO2 emissions on average to the extent of 2,29,048 tCO_2e/year over the fixed crediting period of 10 years with an expected operational life time of the project is

30 years as the same was evidenced by the documents provided to the validation team./13/

1.4 Level of assurance

The level assurance of validation report is reasonable and is based on the documents and evidences submitted to the validation team. The same were verified by the validation team and based on review of them along with opinion of experts, the assurance is found reasonable.

2 Methodology

The validation consists of the following three phases:

I. A desk review of the project design documentation

II. Follow-up interviews with project stakeholders

III. The resolution of outstanding issues and the issuance of the final validation report and opinion.

In order to ensure transparency, a validation protocol was customized for the project, according to the Validation and Verification Manual /8/. The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organizes, details and clarifies the requirements a VCS project is expected to meet;
- It ensures a transparent validation process where the Validator will document how a particular requirement has been validated and the result of the validation.

The validation protocol consists of two tables. The different columns in these tables are described in Figure 1.

The completed validation protocol is enclosed in Appendix A to this report.

Findings established during the validation can either be seen as a non-fulfillment of validation protocol criteria or where a risk to the fulfillment of project objectives is identified. Corrective Action Requests (CAR) are issued, where:

- mistakes have been made with a direct influence on project results;
- validation protocol requirements have not been met; or
- There is a risk that the project would not be accepted as a VCS project or that emission reductions will not be certified.

The validation team may also use the term Clarification Request (CL), where:

- Additional information is needed to fully clarify an issue.

The validation team may also use the term Forward Action Request (FAR), where

- During the validation the highlight issues related to project implementation that require review during first verification of the project activity.

Validation Protocol Table 1: Requirement checklist				
Checklist Question	***Reference***	***Means of verification (MoV)***	***Comment***	***Draft and/or Final Conclusion***
The checklist is organized in eight different sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	*Gives reference to documents where the answer to the checklist question or item is found.*	*Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.*	*The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.*	*This is either acceptable based on evidence provided (**OK**), or a **Corrective Action Request (CAR)** due to non-compliance with the checklist question (See below). **Clarification** is used when the validation team has identified a need for further clarification.*

Validation Protocol Table 2: Resolution of Corrective Action and Clarification Requests			
Draft report clarifications and corrective action requests	***Ref. to checklist question in table 2***	***Summary of project owner response***	***Validation conclusion***
If the conclusions from the draft Validation are either a Corrective Action Request or a Clarification Request, these should be listed in this section.	*Reference to the checklist question number in Table 1, where the Corrective Action Request or Clarification Request is explained.*	*The responses given by the Client or other project participants during the communications with the validation team should be summarized in this section.*	*This section should summaries the validation team's responses and final conclusions. The conclusions should also be included in Table 1, under "Final Conclusion".*

Figure 1 Validation protocol tables

2.1 Review of Document

The VCS PD of version 03, dated 6th November 2009 submitted by Pt.PLN(Persero) /1/ and additional background documents (/2/ to /44/)related to the project design and baseline were assessed by RINA.

2.2 Follow-up Interviews

On 16th and 17th September 2009, RINA performed the site visit and conducted interviews with project stakeholders (/45/ to /53/) to confirm selected information and to resolve issues identified in the document review. Representatives of Pt.PLN(Persero) and South Pole Carbon Asset Management Ltd. were interviewed. The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization(s)	Interview topics
Pt.PLN(Persero) and South Pole Carbon Asset Management Ltd..	• Clarifications on establishment of baseline, monitoring plan and emission reduction calculations • Resources, training needs and procedures for operation and maintenance • Monitoring Plan / Records (backups) • Maintenance program (calibration) • Project boundaries • Baseline and project emissions • Emissions reductions calculations

2.3 Resolution of any material discrepancy

The objective of this phase of the validation is to resolve any outstanding issues, which needs to be clarified for RINA's positive conclusion on the project design.

The initial validation of the Project resulted in Seven (08) Corrective Action Requests, Ten (10) Clarification Requests and One (01) Forward Action Request. Project participants were invited to respond to RINA's Clarification and Corrective Action Requests and include their response in Table 2 of the validation protocol, in Appendix A to which the project participant replied and resolved successfully.

To guarantee the transparency of the validation process, the concerns raised are summarized in section 3 below and documented in more detail in the validation protocol in Appendix A.

3 Validation Findings

The findings of the validation are stated in the following sections. The validation criteria (requirements), the means of verification and the results from validating the identified criteria are documented in more detail in the validation protocol appendix A.

3.1 Project Design

The "82 MW Lau Renun Hydro Power Plant, North Sumatra" project by Pt.PLN (Persero) is a run-off river hydro electric power plant which utilises the hydrological resources of Renun river inorder to generate electricity and supply to Sumatra grid which otherwise would have been generated through power plants connected to the grid that are mostly fossil fuel power plants. The project envisages the installation of two turbines of capacity 41 MW each./9/ The annual energy generation is estimated to be 313.5 GWh./13/

The water is taken from the main stream and tributaries of Renun river and is fed to regulation pond which is located in the middle of the waterway. From the regulating pond, water is fed to surge tank from which it is sent to the power house. The water is then discharged to the lake Toba through the tail race.

The power plant consists of two units that includes two turbines and generators of 41 MW capacity each. Both the turbines are of vertical shaft type Francis turbine made by Kvaerner Boving Ltd. which has a rated speed of 750rpm, rated head of 434.6m and a rated flow of 10.42m^3/sec. /13/ Generators are of Elin make of model SSV 290/8-176. The machineries were physically verified by the validation team during the site visit. The project supplies electricity to the Sumatra grid through Sidikalang and Brastagi substations.

The expected operational life time of the project activity is 30 years/10/ and the start date of the project activity is 14 August 2006 as per the commissioning certificate of unit 2. A fixed crediting period of 10 years has been chosen starting from 01 September 2006.

The proposed project is not a grouped project and has not participated in any other emission trading program nor applied for any other environmental credits, which has been verified during the validation/18/ and since the project has not applied for any other environmental credits, it is not rejected under other GHG programme.

The proposed project has been validated against all the requirements of VCS 2007.1 and is found eligible under the VCS.

3.2 Baseline

The project applies the approved consolidated baseline methodology ACM0002 (version 10),"Consolidated baseline methodology for grid connected electricity generation from renewable sources" /4/.

This methodology is applicable for this project activity as:

- The project activity is a new run of river type hydro power plant which is connected to a grid. The same was verified during the site visit by the validation team and through assessment of land agreement with department of forest./14/
- No capacity additions, retrofits or replacements involved in this project activity. The same was verified through the loan sanction letter /37/, contract agreement for turbines & generators **Error! Reference source not found.**/38/ and through approved EIA copy /11//29/ and found appropriate.
- The project activity is not a reservoir based hydro power plant. Power density of the plant is 820 W/m2 which is greater than 4 W/m2. **Error! Reference source not found.**/13/
- This project activity is a new hydro power plant wherein no retrofit, replacement or capacity measures are applicable. The same was verified during the site visit and subsequent assessment of land agreement /14/, approved EIA /11//29/, feasibility study report /10/, project completion report /12/ and commissioning certificate /9/.

The baseline selected is "Electricity delivered to the grid by the project activity that would otherwise have been generated by the operation of grid-connected power plants and by the addition of new generation sources". The combined margin emission factor is used here and is calculated as per the tool to calculate emission factor for an electricity system, version 2. The emission factor for the year 2008 is 0.743tCO2/MWh as provided by the Indonesian DNA /34/ and is selected as it is the most recent data available to the project proponent at the time of submission of PD to the RINA. The grid emission factor has been calculated as the combined margin with the operating margin being calculated ex-ante using a 3 year generation weighted average based on the most recent

data available at the time of submission of the PD to the DOE for validation. The data values for the years 2005, 2006 and 2007 are used for calculating the operating margin emission factor and the build margin is based on the power plant capacity addition that comprise 20% of the system generation that have been built recently. The operating margin has been arrived at 0.906tCO_2e/MWh and the build margin at 0.581tCO_2e/MWh and the combined margin emission factor has been confirmed to 0.743tCO_2e/MWh. This is fixed ex-ante for the entire crediting period. RINA has verified all the relevant documents and calculations and found it as appropriate and correct./19//34/

Additionality

PP has attempted to establish additionality of the project activity as per "Tool for the demonstration and assessment of additionality" (Version 5.2, EB 39) /5/

Step 1: Identification of alternatives to the project activity consistent with current laws and regulations

As per the guidance provided in the Validation and Verification Manual /8/ and approved consolidated methodology /4/, the baseline is defined in the methodology itself as 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, and as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system", Version 02 /6/

Due to this consideration as per Validation and Verification Manual, para 103 no further analysis is required on alternatives for the project activity.

Step 2: Investment Analysis:

Sub-step 2a: Determine the appropriate analysis method

The project activity will generate financial benefits other than VCS-Related income as it is selling the electricity to the grid. Hence the first option of the simple cost analysis method is not applicable.

The project activity doesn't have other comparable sources for the power generation as alternatives hence the PP chose the benchmark analysis.

Sub-step 2b: Option III – Application of Benchmark Analysis

As per the argument made by the PP, the application of benchmark depends upon the likelihood of the development and further operation of the project. The benchmark will

be determined by comparing the project IRR with benchmark rates available to a local investor. These could be provided by local banks, or investment bonds in the host country or it could be internally calculated, based on accepted models.

The following reviews were carried out during the assessment

a) Determining the appropriate analysis method

The project developer has chosen to apply the benchmark analysis method and has identified Project IRR as the most suitable financial indicator. Since the project developer is demonstrating the financial unattractiveness of the project, project IRR is appropriate as it is often used by the project developers to make a decision on investing in the project. Besides, the project will generate revenue from the sale of electricity./32/

Therefore project IRR can be accepted as the most suitable analysis method for this project activity.

b) Determining the suitability of the benchmark applied for the type of financial indicator presented

As per the additionality tool, the financial viability of the project may be demonstrated by comparing the project IRR against the benchmarks available for this type of financial indicators. The most accepted benchmarks are Investment bond rates, Government bond rates or benchmarks computed using internal and external data. One such bench mark may be computed through the Weighted Average Cost of Capital (WACC).

The project developer has chosen to use WACC as the benchmark for the project. The project is partly financed by debt and partly by equity. The debt component is a loan from the Japan Bank for International Cooperation (JBIC) with an interest rate of 8.0% in US Dollars (USD) /37/ and the equity component is funded by the government of Indonesia in form of an APBN (*Anggaran Pendapatan dan Belanja Negara*) or government's budget.

To arrive at the correct WACC, the following steps are followed:

Determining the cost of debt

The revenue and costs of operation are in Indonesian Rupiah (IDR) and the investment cost as well as the funding is in USD. Hence the project is exposed to currency risk arising from the fluctuation of the IDR and USD. The project developer has therefore converted the interest rate on the USD loan into its equivalent IDR using the Interest rate Parity method.

Interest rate parity plays an essential role in foreign exchange markets, linking interest rates, spot exchange rates and foreign exchange rates. Interest rate parity follows the theory that the interest rate differential between two countries is equal to the gap between the forward exchange rate and the spot exchange rate. In fact, the interest rate parity assumes that the actions of investors trigger corresponding changes in the exchange rates as well. We therefore consider it appropriate to use this method to determine the equivalent IDR rate.

This comprises:

Determining the 1-year IDR/USD Future Spot Rate using Fisher1 . This is calculated using the spot IDR/USD exchange rate in 1992 and applying the US and Indonesian inflation rates for 1992. The future spot rate thus calculated is IDR 2,134.75. The formula used is

$$S_{t+1} = S_t \times \frac{1+\inf_{IDR}}{1+\inf_{USD}}$$

Parameters	**Description**	**Value**	**Base**
S_t	IDR/USD Spot Rate	2,055.87	USD/IDR exchange rate in 1992
S_{t+1}	1-year IDR/USD Future Spot Rate	2,134.75	Calculated
inf_{IDR}	IDR inflation rate	7.00%	IDR Inflation Rate in 1992
Inf_{USD}	USD inflation rate	3.04%	US inflation rate in 1992

Using the future spot rate as calculated above, the PP has calculated the cost of debt using Fisher 2. The equivalent interest rate calculated thus is 12.14%. The formula used is

$$S_{t+1} = S_t \times \frac{1+CD_{IDR}}{1+CD_{USD}}$$

Parameters	**Description**	**Value**	**Base**
S_t	IDR/USD Spot Rate	2,055.87	USD/IDR exchange rate

			in 1992
S_{t+1}	1-year IDR/USD Future Spot Rate	2,134.75	Calculated
Cd_{USD}	USD cost of debt	8.0%	Loan interest and capital payment disbursement
Cd_{IDR}	IDR equivalent cost of debt	12.14%	Calculated

Determining the cost of equity

In determining the cost of equity, the project participant had two methods to choose from:

The Capital Asset Pricing model which is the most commonly used model to determine expected rate of return from a project. However the model assumes a certain level of maturity in the domestic market. The Indonesian market in 1992 was still very immature and developing hence the market return for 1992 was unavailable.

The Ashwath Damodaran Model /24/ based on country risk premiums. The project proponent has chosen to use this model to compute the cost of equity.

Parameter	Value	Source
Risk free rate	7.46%	30-year US Treasury Bill, value at beginning of January 1992.
Beta	0.83%	lowest beta for electricity generation, distribution, and transmission, integrated in 2003 – 2008; according to Prof. Damodaran.
Equity market risk + country risk	13.33%	Total risk premium Indonesia average 1992 – 1996, calculated using Interest Rate Parity Fisher model based on inflation during the period 1992-1996 and 2000 – 2005 and total risk

		premium Indonesia during the period 2000-2005.
Expected Cost of Equity	18.52%	Calculated. Cost for investing in Equity

The country risk premium for 1992-96 is unavailable and the Project proponent has calculated the equity risk and country risk premium for 1992-96 by applying the interest parity model to the average risk premium for 2000-05. The average inflation rate for 2000-05 is 8.39% and for 1992-96 it is 8.43%. The PP has held that the difference between the two is insubstantial and hence it is assumed that the economic conditions prevalent between the two periods are similar. The validation team has accepted this point due to the unavailability of other publicly available economic data from Indonesia during 1992-96. The interest parity model has then been applied to arrive at the rate of 13.33%.

Determining the Weighted Average cost of capital (WACC)

WACC is defined as the weighted average of the costs of the different components of financing used by the firm. The expected cost of equity is 18.52% and the cost of Debt is 12.14%.Together with a tax rate of 30%, the WACC is works out to 13.97%./3/

The tax rate of 30% has been verified by us against a report on Indonesian tax system prepared by Deloitte Tax Solutions.[1]

After assessing the financial calculation /3/ submitted by the PP along with the loan sanction letter /37/ and contract agreement to equipment suppliers /38/, the benchmark was found to be appropriate for this project activity.

c) Parameters and assumptions used and verification of the parameters and assumptions against third party documents:

Three important parameters that are used to compute the cash flow are,

- Project cost: This comprises,
  - Preparatory works
  - Intake dam
  - Tributary intake

[1] http://www.deloitte.com/dtt/cda/doc/content/Indonesi.pdf

- Regulating pond
- Waterway
- Penstock line
- Powerhouse and tailrace
- Switch yard
- Generating equipment
- Transmission line
- Other engineering work.

The project cost has been extracted from the Engineering Report on a Dam Scale on the basis of a result of a Geological Investigation prepared by Nippon Koei Co Ltd /10/ in association with PT Arkonin and PT Singgar Mulia. The report was prepared in December 1987.

- Financing levels and costs

The project has been partly funded by a debt from the Japan Bank for International Cooperation (JBIC)/37/. The loan is denominated in US Dollars. The terms of the loan as shown below has been extracted from the Feasibility Report prepared by Japan International Co-operation Agency in March 1985.

Rate of interest- 8%

Moratorium – 5 years

Total term (including moratorium) - 30 years

- Estimates of profits and incomes: This comprises,
  - Gross electricity revenue
  - Operating and management expenses
  - Depreciation.
  - Tax costs
  - Gross Electricity revenue

This is comprises electricity tariff and the estimated annual electricity generation. The Electricity tariff is obtained from the official transfer price document. The project proponent has calculated the average annual increase in tariff to be .028% based on the average annual increase for the period 1990-1994. The Annual generation is derived from the Detailed design document - 1998 prepared by Nippon Koei Co Ltd, Tokyo Japan.

Operating and management expenses

Operating and management expenses have been calculated as per the Feasibility Report/10/. The Project proponent has assumed an annual increase of 5% of operating costs which is conservative given the inflation levels. /3/

Depreciation

Depreciation has been calculated on a straight line basis over 30 years. The project is expected to have a life of 30 years. The project proponent estimated a salvage value of 5% at the end of 30 years which is a conservative estimate in our opinion. /3/

d) Assessment of correctness of computation:

All costs have been verified against the completion report prepared by Indra Karya in association with Nippon Koei & Co in 1993. The validation team also checked and found correct the formula used in the financial analysis.

The total project IRR based on the above numbers is 4.63%.

The validation team has also verified and found correct the formula used in the financial analysis /3/.

e) Sensitivity analysis:

A sensitivity analysis that supports the robustness of the conclusion arrived at by varying the critical assumptions have been carried out. The project developer has identified the following parameters as the most critical parameters:

1. Electricity tariff;
2. Electricity generation
3. Total investment
4. Operational cost.

The following table shows the changes required to the critical assumptions so that the IRR can cross the benchmark of 13.97%:

Scenario	**% change**	**IRR (%)**	**% change**	**IRR (%)**
Original		4.63%		
Increase in Tariff	10%	5.55%	141%	13.97
Increase in Electricity Generation	10%	5.55%	141%	13.97
Reduction in Investment Costs	10%	5.38%	68%	13.97

Reduction in Operational Costs	10%	4.99%	100%	7.72

Increase in Tariff/ Electricity Generation:

Based on the tariff increases over the period 1990-94, it seems highly unlikely that the tariff will increase beyond 10% per annum. In order for the IRR to cross the benchmark of 13.97%, the tariff needs to increase by 141% - a highly unlikely scenario.

Reduction in investment costs

Most of the costs of the project has already been incurred hence there is not likely to be any material change in the investment costs incurred. Project costs need to reduce by at least 68% for the IRR to cross the benchmark.

Reduction in operational costs

Even a 100% reduction in Operating costs will give an IRR of only 7.72% which is less than the bench mark of 13.97%.

Other financial issues

The validation team reviewed the financial statements of PLN for the period 1999 to 2002 and have noted the following:

1. The company has been suffering from operating losses since 1999. The operating loss for 2002 was IDR 8,152 billion. /39/
2. There has been a sharp increase in the values of the fixed assets held in 2002 on account of a revaluation exercise. This is unrealised profit
3. The rate of return on net average asset has been negative throughout this period.

The validation team also examined the report prepared by the Asian Development bank (the lender) in July 2003 and note the following:

1. PLN has been unable to meet the covenant requirements stated in the loan documents.
2. The financial position of PLN has been affected on account of the Asian financial crisis.
3. The Government's reluctance to increase tariffs has affected PLN's ability to meet its covenants.

4. PLN has over the last few years developed good internal controls which will help its financial position in the long run.

Step 4: Common Practice Analysis

As per the government data, the potential for hydro power in Indonesia is 75000 MW wherein only 3200 MW has been utilized /20/. These figures include project activities developed by captive generation by private entities and by the project proponent.

For this project activity, the regional grid boundary,Northern Sumatra has been taken as the region where in across the whole part of this northern Sumatra region, only 1.11% of the total installed capacity of the power plants is generated through hydro power plants.

Sub-step 4a: Analyze other activities similar to the proposed activity:

Comparison of hydro power plants account for 6,600 KW in out of 594,960 KW of installed capacity which accounts to 1.1 %

Sub-step 4a: Analyze other activities similar to the proposed activity:

As per the declaration of the Ministry of Environment, Government of Indonesia, No. 17/2001 /40/, all hydroelectric power plants with a dam height of ≥ 15 meters, or flooded area of ≥ 200 ha, or installed capacity of ≥ 50 MW need to undertake an Environmental Impact Assessment (EIA). Projects with an installed capacity of less than 50MW were thus excluded from the analysis, considering this declaration it is not possible to obtain information about small scale hydro projects.

In the light of the above mentioned declaration, there are two large-scale hydropower plants, with installed capacity above 50 MW are available for discussion and comparison. First one is Asahan hydro power project and second one is this project activity.

Asahan hydro power project is a reservoir based hydropower plant constructed and operated by private developer in joint venture. Asahan hydro power project is not connected to the Northern Sumatra grid. Besides Asahan hydro power plant is a joint venture between the government of Indonesia and a consortium of 12 Japanese companies. Owing to this it did not face any difficulties to obtain finance for the project. The project activity is the only run-off-river hydropower project in the region on large scale which is connected to the northern Sumatra grid and therefore it can’t be compared with Asahan hydro power plant.

Hence considering all arguments above and subsequent verification of all relevant evidences supporting these arguments, it can be concluded that the project is additional and VCS revenue would improve the financial viability of PLN for this project activity.

3.3 Monitoring Plan

The project activity essentially consists of generating power from hydro potential, a renewable resource, and feeding it to the Sumatra grid. The installed capacity of the project is 82 MW. The project qualifies for consideration as large scale project activity and therefore, baseline and monitoring methodology ACM 0002, version 10 /4/, is applicable for the project. Accordingly, the methodology requirement of "Metering the Electricity Generated" is in place for the project activity.

Monitoring plan consists of parameters required for monitoring during the crediting period for estimation of emission reduction. Such parameters are,

- Electricity supplied to the grid
- Amount of Diesel used in the project activity

Measurement of electricity supplied will be done continuously, which will also be recorded continuously. As the meters are installed at the switchyard near to the generation point the Transmission and Distribution losses are negligible. Metering is done separately for the net electricity exported to the grid accounting for the captive consumption. Electricity exported to the grid can be verified by the readings of a check meter. The meters installed are of standard quality and the calibration of the meters is governed by recommendations from equipment manufacturer. However the same will be carried out annually. Meters for monitoring of energy generated, consumed and exported to grid are of 0.2s accuracy class to ensure accurate measurement. Monthly readings of power exported to the grid are jointly signed through Monthly Electricity Protocol (MEP) by the official representatives of PLN Renun generating unit and PLN transmission unit that may be counter verified by monthly invoices raised.

As discussed in the section 3.4 of the report, the project emission through the usage of Diesel based Generator Set comes to less than 1% of the total emission of reduction. However, the PP has chosen to monitor the amount of fuel used to ensure transparency and conservative approach which is found acceptable. Recording of the same will be done through the log book

which will be maintained throughout the crediting period and two years after the end of the crediting period

The emission factor is based on the data published by Indonesian DNA and is applied on an ex-ante basis and is fixed for the crediting period /19//34/. All data, including the Emission Factor data of grid emissions, will be archived in paper and electronic format until two years further to the crediting period.

The project design employs SCADA based microprocessor ensuring high accuracy monitoring and control equipment that will measure, record, monitor and control various key parameters like energy generation by the project.

The VCS monitoring team comprising of experienced personnel led by a VCS Manager is responsible for monitoring, recording and reporting the monitored data. The manager will ensure training of required to personnel to ensure effective monitoring. A standard set of procedures /36/ have been developed which will enable the monitoring team to ensure effectiveness of the monitoring. The effectiveness of the corrective action also will be monitored and reports submitted for review.

As per the monitoring plan in order to ensure quality assurance on effectiveness adjustment will be made in the event of: any seal securing the metering system is broken, the system fails to register, or the measurement result is found (upon testing) to vary more than the allowable error from the standard meter used in the test. In case of failure of the main meter, the production meter and own consumption meter will be used as cross-check meters, measuring the quantity of electricity exported from the project. The difference between electricity produced and consumed on-site shall be valid for claiming carbon credits. In the special case of total failure of all meters no credits will be claimed during such period. This approach is conservative and hence accepted.

3.4 Calculation of GHG Emissions

The calculation of the GHG emissions is done as per the approved baseline and monitoring methodology ACM0002 version 10. Emission reduction is calculated by subtracting the project emission and leakage from the baseline emission.

Baseline emission is calculated as the product of net electricity supplied to the grid that is 313.5GWh(from detail design report) and the combined margin emission factor of the grid which is calculated as per the tool to calculate emission factor of an electricity system, version 2, EB 50. As discussed in the section 3.2, CM

emission factor for Sumatra grid is selected as 0.743tCO_2e/MWh.

According to the approved consolidated methodology ACM 0002, Version 10, emission due to leakage is not applicable for this project activity.

The project activity is a run-off river hydro power plant with a regulating pond with a retention period of 5 hours. The power density is calculated as the total capacity of the plant(8,20,00,000W) divided by flooded surface area (100,000 m^2)and is found to be 820W/m^2 which is more than the limit (10W/m^2) as mentioned in the methodology. A diesel generator is used as a backup in this project activity. The maximum quantity of diesel consumed is found to 720litres in a year. The value for the Diesel consumption has been taken from the plant record and it was verified during the site visit by the validation team. The value of 720 litres has been taken out of the highest consumption value for the year (2007)/21/. The emission calculated due to this is found to be 1.87t CO_2/year. Since the value is too small(less than 1%) compared to the baseline emission, this can be neglected. Hence the project emission is taken to be Zero. However, the PP will monitor the amount of Diesel consumed annually which is appropriate and conservative.

The project is expected to result in an emission reduction of 2,29,048 tCO_2e/year. The calculations and assumptions have been verified and found to be correct. In summary, the GHG calculations are complete and transparent, and the data accuracy has been verified.

3.5 Environmental Impact

As per the decree of the Ministry of Environment No. 17/2001, all hydroelectric power plants with a dam height of ≥ 15 meters, or flooded area of ≥ 200 ha or installed capacity of ≥ 50 MW need to undertake an Environmental Impact Assessment (EIA). Since the installed capacity of this project is 82 MW, an EIA was conducted and was approved by Ministry of Energy and Mining in 1991. PP has also received the permit for the plant from the forestry department. They have also applied for renewing the same./11//43/ RINA had checked the copy of the same and was found appropriate. Certain impacts that may affect the environment during the pre construction phase, construction phase and operation phase were found and the mitigation measures were suggested and defined. Project also supports the sustainable development. Validation team has verified the documents for the community development in the Pandan sector in which the plant is located./41//44/

PP has also signed an agreement with the local community for utilizing the water from Renun river and eleven tributaries. The letter mentioned that the project activity will not disturb the supply of water to the community. PLN will guarantee the water supply to the rice field or for other farming purposes. The letter was signed by the representative people of each village. The validation team has verified the agreement copy and found it appropriate./42/

With all these mitigation measures and contribution to the sustainable development, project has a positive impact on the local and global environment.

3.6 Comments by stakeholders

A stakeholder consultation meeting was held in the village hall of Pegagan Julu IV on August 24, 2005. The persons who attended the meeting included the village chief, local leaders, people from local organisation, NGO and those who live nearby the hydro power plant. RINA has checked the attendance list, pictures and verified the same and found that no negative comments were received from the stakeholders during the meeting which is prime requirement for any project developer to obtain the land deed agreement with the Department of Forestry. RINA has verified the land deed agreement issued by the Department of Forestry and has concluded that the stake holder consultation was completed as per the requirement. The validation team is of the opinion that there was fair representation and opportunity given to the stakeholders and also noticed that no negative comments were received from the stakeholders during the meeting /17//14/

4 Validation conclusion

RINA has performed the validation of the "82 MW Renun Hydro Power Plant, North Sumatra", Indonesia, on the basis of Voluntary Carbon Standard program guidelines (VCS 2007.1), the subsequent decisions by the VCS Board and the Host Country criteria as well as criteria given to provide for consistent project operations, monitoring and reporting.

The project activity involves hydro power as a source of energy to generate and clean electricity clean heat energy. The project activity exports clean electricity, produced from the renewable energy source (Hydro Source) to the national grid, thus reduces greenhouse gas emissions by displacing fossil-fuel electricity from the grid.

In the course of the draft validation 1 FAR, 8 CAR and 10 CL were raised and the same were closed up on appropriate justification/explanation and correction by the project proponent. The review of the project description and additional documents related to baseline and monitoring methodology, subsequent background investigation, follow-up interviews and review of comments by parties, local stakeholders, and consultant has provided RINA with sufficient evidence to validate the fulfillment of stated criteria.

As per VCS standard 2007.1, the project is not a grouped project activity and aims to reduce 2,29,048 tCO_2e per year with 10 years crediting period. The emission reductions achieved due to the project activity are real, measurable and give long term benefits and that are additional to what would have occurred in the absence of project.

The validation has confirmed that the project correctly applies the baseline and monitoring methodology as per approved consolidated methodology ACM 0002, i.e. "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", Version 10, dated 28/05/2009. The determination of baseline was elaborate, transparent and sufficiently supported with facts. The selected baseline scenario is reasonable and appropriate for the chosen crediting period. Moreover, an analysis of barriers facing the project demonstrates that project is not a likely baseline scenario and hence additional.

The monitoring plan is complying with requirement of the methodology. The monitoring plan includes all relevant parameters. Responsibilities and authorities for project

management, monitoring and QA/QC procedures have also been stated in the final version of VCS PD (version 3, dated 10th November, 2009). A local stakeholder consultation has been carried out by the project participant.

In detail, RINA's opinion can be summarized as follows:

1. The project meets all relevant VCS 2007.1 requirements and all relevant host country criteria (Indonesia)
2. It correctly applies approved consolidated methodology ACM 0002 - "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", Version 10, dated 28/05/2009.
3. The project additionality is sufficiently justified in VCS PD.
4. Monitoring plan is transparent and adequate.
5. Calculations of project emission reductions are carried out in transparent manner. The calculated emission reductions are 229,048 tCO_2e per year for 10 years crediting period.

Hence, RINA recommends and requests the registration of "82 MW Renun Hydro Power Plant, North Sumatra", as a VCS project activity.

5 References

Category 1 Documents:

The following table lists the documentation that was reviewed during validation.

/1/	VCS PD of "82 MW Lau Renun Hydro Power Plant, North Sumatra", version 03, dated 06 November 2009.
/2/	Emission Reduction Calculation sheet
/3/	IRR calculation sheets
/4/	"CDM Executive Board: ACM0002"Consolidated methodology for grid connected electricity generation from renewable sources" – Version 10, EB 47 (dated 11 July 2009 onwards).
/5/	"Tool for demonstration and assessment of additionality", version 05.2
/6/	"Tool to calculate emission factor for an electricity system", version 02
/7/	"Tool to calculate project or leakage CO2 emissions from fossil fuel consumption", version 02
/8/	Clean Development Mechanism Validation and Verification Manual, Version 01, Annex-3, EB-44. http://cdm.unfccc.int/EB/044/eb44_repan03.pdf
/9/	Copy of Commissioning certificate for unit 2 provided by the Department of Energy dated 14 August 2006
/10/	Copy of Feasibility report on Renun Hydroelectric Power Development Project prepared by Japan International Cooperation Agency in March 1985
/11/	Copy of Environment Impact Assessment
/12/	Copy of Project Completion Report Executive Summary prepared by Nippon Koei Co. Ltd. on October 2006.
/13/	Copy of Detail Design Report prepared by Nippon Koei Co. Ltd. in association with P.T.Arkonin and P.T.Singgar Mulia,Jakarta, Indonesia on December 1988.
/14/	Copy of Land Deed Agreement
/15/	Proof for the surface area of regulating pond
/16/	Copy of list of employees undergone training by Pt.PLN (Persero)
/17/	Copy of minutes of meeting of stake holder consultation along with the photographs of the meeting and the comments received.
/18/	Copy of undertaking letter provided by the PP dated 17 September 2009.
/19/	Copy of emission factor calculation sheet for the Sumatra grid for the year 2008 prepared by the DNA.

/20/	Report on Indonesian power sector by EU
/21/	Copy for the diesel consumption in the plant.
/22/	Foot note document
/23/	Paper published on Global Finance
/24/	A textbook on Security Analysis for Investment and Corporate Finance by Aswath Damodaran.
/25/	A text book on Valuation
/26/	Evidence for the Indonesian Inflation rate.
/27/	A book on Banking Disintermediation and its Implication for Monetary policy : The case of Indonesia.
/28/	Literature on Estimating Equity Risk Premiums by Aswath Damodaran
/29/	Report on Impact Evaluation Study of ADB Assistance to the power sector in Indonesia
/30/	Calibration certificates for the meters used.
/31/	Document for O&M
/32/	Document for the transfer price of electricity for the years 1990 to 1994
/33/	Document in support of GPS
/34/	Letter provided by the Indonesian DNA for the emission factor in Sumatra grid dated 19 January 2009
/35/	Copy of monthly electricity protocol from 1 January 2007 to 31 December 2008.
/36/	Copies of Standard Operation Procedures for calibration, monitoring, metering and emergency preparedness.
/37/	Loan sanction letter
/38/	Purchase order – Contract agreement between the supplier of turbine and generator and Pt.PLN(Persero)
/39/	Annual report – PT PLN 2002
/40/	Decree of Ministry of Environment
/41/	A PPT on Community development at Renun by Pt.PLN
/42/	A copy of agreement between Pt. PLN and the local community for the proper supply of water for farming.
/43/	Letter from forestry department mentioning the extension of the permit.
/44/	Report for the community development in Pandan sector where the plant is situated.

Persons interviewed:

List persons interviewed during the validation, or persons contributed with other information that are not included in the documents listed above.

/45/	Jonni Hudajuw – PLN Kitsbu
/46/	Eko Sukanawanto – PLN Pisuar
/47/	Embun Sihombint – PLN Sumbagut
/48/	Mansatuah Purba – PLTA Renun
/49/	Yan Elpha Kht – PLN Sekt. Pantan
/50/	Ronniko Agas F Silalahi – PLTA Renun
/51/	Romi Siahaan – PLTA Renun
/52/	Sanpgul H – PLN Kitsbu
/53/	Henricus H – South Pole Carbon Asset management Limited.

APPENDIX A

VCS 2007.1 VALIDATION PROTOCOL

This document contains a generic Validation Protocol for VCS projects, which must be seen in conjunction with the Validation and Verification Manual and the Validation Report Template. The entries in the protocol should be adjusted and amended as appropriate to prepare for the validation of a particular project.

This validation protocol serves the following purposes:

- *It organizes, details and clarifies the requirements a VCS project is expected to meet; and*
- *It ensures a transparent validation process by inducing the Validator to document how a particular requirement has been validated and which conclusions have been reached;*

This protocol contains two tables with generic requirements for validation projects. Table 1 consists of a checklist with validation questions. The checklist questions may not be applicable for all investors, and should not be viewed as mandatory for all projects. Where a finding is issued, a corrective action request or clarification request are stated. The resolution and final conclusions of these requests should be described in Table 2 of this protocol.

Before this generic validation protocol can be applied to validate a specific project, the Validator must review and adjust/amend the protocol to make it applicable to individual project characteristics and circumstances as well as individual investor criteria. The application of the validator's professional judgment and technical expertise should ensure that checklist amendments cover all necessary specific project requirements that have impact on project performance and acceptance of the project. Given the above, the checklist part of the protocol is neither exhaustive nor prescriptive.

Requirement Checklist

Table 1 Requirements Checklist

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
1. General Description of Project Activity. *The project design is assessed.*					
1.1. Title of the project activity.					
1.1.1. Is the title of the project activity, version number and date of document (VCS PD) clearly mentioned?	/1/	DR	The title of the project is "82 MW Lau Renun Hydro Power Plant, North Sumatra " version 01. However the date of VCS PD mentioned in the first page and under section 1.1 is different.	~~CL 1~~	**OK**
1.2. Type/Category of the project.					
1.2.1. Is the project category part of a VCS Board approved GHG Program?	/1/	DR	Project is categorized under sectoral scope 1, Energy Industries (renewable/ non renewable resources)		**OK**
1.2.2. Is the project activity a grouped project?	/1/	DR	The project activity is not a grouped project. However the term debundled is not there in VCS.	~~CL 1~~	**OK**
1.3. Estimated amount of emission reductions over the crediting period including project size.					
1.3.1. Is the project a micro project, project or a mega project? • *micro projects: under 5,000 tCO_2e per year;* • *projects: 5,000 - 1,000,000 $tCO2_2e$ per year; and* • *mega projects: greater than 1,000,000 $tCO2_2e$ per year*	/1/	DR	The project generates an average emission reduction of 2,58,447 tCO_2e per year and hence comes under the category projects.		**OK**
1.3.2. Are the total and annual estimated emission reductions defined?	/1/	DR	Yes. The project is expected to reduce an annual amount of 2,58,447 tCO_2e per year and		**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			total amount of 2,584,470 tCO_2e.		
1.4. A brief description of the project.					
1.4.1. Has the project been properly described?	/1/ /9/ /13/ /20/	DR/I	The project activity is a new reservoir hydro power plant in North Sumatra province in Indonesia. It utilizes the hydrological resources of Renun river along with eleven other lateral tributaries to generate zero emission electricity, The total capacity of the project is 82MW which is generated with the help of two 41MW francis turbines which can work under a rated head of 434.6m and rated speed is 750rpm.. the rated flow is 10.42m^3/sec. The electricity generated is delivered to the Sumatra grid through Sidikalang PLN and Brastagi PLN substations. However PP needs to change the operation date of the three units. It has to be the date as mentioned in the commissioning certificate of the unit. PP is also requested to provide the evidence for the statement “the potential capacity of the hydro resources in Indonesia is 75000MW of which only 4,200 MW has so far been used to generate electricity”. Kindly clarify how the increased grid reliability gives rise to increase in local employment. Also clarify how the project supports	~~**CL 1**~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			technology transfer from other regions or even other countries. PP needs to submit the commissioning certificates for the turbines and generators, source for selecting capacity factor as 43% and the document that shows that reservoir area is 100,000m^2, electricity generation capacity is 313,500 MWh.		
1.5. Project location including geographic and physical information allowing the unique identification and delineation of the specific extent of the project					
1.5.1. Is the location of the project activity clearly defined, including details of the physical location and information that allows its unique identification and delineation of the specific extent of the project? *GPS -boundaries- coordinates included?*	/1/ /14/ /33/	DR	Project activity is located in North Sumatra province, Indonesia. Its exact location is mentioned as $2^0$47.126' North and 98^0 32.604' East. However the GPS mentioned in the EIA was different from this value. Kindly incorporate the exact value. Land agreement of the project site from the forestry department has to be submitted by the PP.	~~**CL 1**~~	**OK**
1.6. Project activity and crediting period Start dates.					
1.6.1. Is the project start date (*the date the project activity began reducing or removing GHG emissions*) correctly mentioned?	/1/ /9/	DR	Project start date mentioned in the PD is 14/06/2006 which is as per the commissioning inspection certificate. But as per the VCS guidelines, it should be the date in which actual	~~**CAR 1**~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			emission reduction has started. So starting date of the project should be as per the commissioning certificate of the generator. PP needs to revise the same and has to submit the commissioning certificate for the both the turbines and generators for verification.		
1.6.2. Is the project crediting period start date (*the date on which the first monitoring period commences*) correctly mentioned? *The earliest Project Crediting Period Start Date under the VCS 2007.1 shall be 28 March 2006 for non-AFOLU projects and 1 January 2002 for AFOLU projects.*	/1/	DR	Project crediting period also changes according to start date. PP needs to revise the crediting period start date to a suitable one.	~~**CAR 1**~~	**OK**
1.6.3. Is the project crediting period clearly mentioned? *For non-AFOLU projects and ALM projects focusing exclusively on emissions reductions of N_2O, CH_4 and/or fossil-derived CO_2, a maximum of 10 years which may be renewed at most two times. For AFOLU projects other than such ALM projects, a minimum of 20 years up to a maximum of 100 years.*	/1/	DR	Refer to 1.6.2	~~**CAR 1**~~	**OK**
1.7. Conditions prior to project initiation.					
1.7.1. Are the conditions prior to the initiation of the project clearly mentioned?	/1/	DR	No. Eventhough the project is a new activity, PP should mention the condition prior to the project activity.	~~**CL 1**~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
1.8. A description of how the project will achieve GHG emission reductions and/or removal enhancements.					
1.8.1. Is it explained how the project activity reduces GHG emissions, i.e. technology, measures?	/1/	DR	Yes. Project uses a reservoir for generating electricity which otherwise would have generated through power plants connected to the Sumatra grid(mostly fossil fuel based).		**OK**
1.9. Project technologies, products, services and the expected level of activity.					
1.9.1. Is the technical description of the project clearly stated?	/1/ /9/ /16/ /13/	DR	Yes. The technical description of the project is clearly mentioned. However the PP is requested to clarify the following issues : • Capacity is mentioned as 82 MW (41 MW x 2). But from the site visit, it was noted that the capacity was not the same. Instead it was 42 MW x 2 = 84 MW. • Capacity factor mentioned in the table of this section is contradicting with the value mentioned in the section 1.4. Also PP needs to provide the documented proof for the following statements: • Essential equipment has to be procured from another country. • Training provided to the employees prior to	~~**CAR 1**~~ ~~**CL 1**~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			the project commissioning. For all the values mentioned in table 2, the source taken is project completion report which is not acceptable. It has to be taken from the feasibility report. PP is requested to submit the Feasibility report for this project.		
1.9.2. Are the products, services and expected level of activity clearly mentioned?	/1/	DR	Yes. The products, services and expected level of activity is mentioned.		**OK**
1.9.3. Does the project involve transfer of technology?	/1/	DR	PP needs to mention whether the project involves transfer of technology	~~**CL 1**~~	**OK**
1.9.4. Is the technology used environmentally safe and sound?	/1/ /11/		PP needs to describe whether the technology used is environmentally safe and sound.	~~**CL 1**~~	**OK**
1.9.5. Does the project require extensive initial training and maintenance efforts in order to be carried out as scheduled during the project period?	/1/ /16/	DR	PP has mentioned that training was imparted to the employees prior to the project commissioning. Kindly provide the documents for justifying the same.	~~**CL 1**~~	**OK**
1.10. Compliance with relevant local laws and regulations related to the project.					
1.10.1. Does the project comply with laws and regulations of the Host Country?	/1/ /14/	DR	Project comply with all laws and regulations of the Host country. However PP needs to submit the documentary evidence for the same and also mention in the PD, the laws and regulations that the project should comply and that complying .	~~**CL 1**~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
1.11. Identification of risks that may substantially affect the project's GHG emission reductions or removal enhancements.					
1.11.1. Are the risks that may affect the project's GHG emission reductions or removal enhancements been identified?	/1/	DR	PP has to mention the risks that may affect the project's GHG emission reductions or removal enhancements.	~~**CL 1**~~	**OK**
1.12. Demonstration to confirm that the project was not implemented to create GHG emissions primarily for the purpose of subsequent removal or destruction.					
1.12.1. Does the project clearly state that it was not implemented to create GHG emissions primarily for the purpose of subsequent removal or destruction?	/1/	DR	PP needs to justify that why this section is not applicable for this project.	~~**CL 1**~~	**OK**
1.13. Demonstration to confirm that the project has not created another form of environmental credit *(for example renewable energy certificates)*					
1.13.1. Has the project created any form of environmental credit?	/1/	DR	The project has not created any form of environmental credits.		**OK**
1.13.2. Has supporting documents been provided to prove the above statement?	/1/ /18/	DR	PP has to provide an undertaking letter marked to the registry stating that they will not go for any other form of environmental credits other than VCS.	~~**CL 1**~~	**OK**
1.14. Project rejected under other GHG programs *(if applicable)*.					
1.14.1. Has this project being rejected by other GHG	/1/	DR	PP needs to justify that why this section is not	~~**CL 1**~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
programs due to procedural or eligibility requirements?			applicable for this project.		
1.14.1.1. If it was rejected, it is mentioned the reason for the rejection in the VCS PD? *Such information shall not be deemed commercially sensitive information.*	/1/	DR	Refer to 1.14.1	~~CL 1~~	**OK**
1.14.1.2. Was (were) the actual rejection document(s) provided to the VCS Program Validator/Verifier?	/1/	DR	Refer to 1.14.1	~~CL 1~~	**OK**
1.14.1.3. Is the project validated against the VCS2007.1 program requirements?	/1/		Yes. The project is validated against VCS 2007.1 program requirements.		**OK**
1.15. Project proponents' roles and responsibilities, including contact information of the project proponent(s), other participants.					
1.15.1. Are the roles and responsibilities of the project proponent and other participants incorporated?	/1/	DR	The roles and responsibilities of the project proponent and other participants has to be mentioned in this section.	~~CL 1~~	**OK**
1.15.2. Does the contact information of the project proponent and other participants mentioned?	/1/	DR	Yes. The contact information of the project proponent and other participants mentioned. However PP has to clearly mention whether the parties involved in this projects are public or private entity.	~~CL 1~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
1.16. Any information relevant for the eligibility of the project and qualification of emission reductions or removal enhancements, including legislative, technical, economical, sectoral, social, environmental, geographic, site-specific and temporal information.					
1.16.1. Does the VCS PD provides any information regarding the eligibility and qualification of emission reductions or removal enhancements, including legislative, technical economical, sectoral, social, environmental , geographic, site-specific and temporal information?	/1/	DR	PP needs to justify why this section is not applicable for this project activity.	~~**CL 1**~~	**OK**
1.17. List of commercially sensitive information *(if applicable)*.					
1.17.1. Has the project proponent listed any commercially sensitive information that has been excluded from the public version of VCS PD which will be displayed on the VCS project database?	/1/	DR	PP needs to justify why this section is not applicable for this project activity.	~~**CL 1**~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
2. Project Baseline Application (methodologies). *The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.*					
2.1. Baseline Methodology. *It is assessed whether the project applies an appropriate baseline methodology (number, title and version). Explanation of methodology choices.*					
2.1.1. Is the selected methodology previously approved by the VCS Registry and in line with the relevant project category? *(correctly quoted and interpreted?)*	/1/ /4/	DR	Methodology used in this project activity is ACM0002"Consolidated methodology for grid connected electricity generation from renewable sources", version 10 which is approved by the VCS registry.		**OK**
2.1.2. Is the methodology applicable to the project being considered?	/1/	DR	Yes. The methodology is applicable to the project activity.		**OK**
2.1.3. Does the project provide information on methodology deviations or methodology revisions?	/1/	DR	PP needs to provide information/Reference on methodology deviations/methodology revisions	~~**CL 2**~~	**OK**
2.1.4. Are other methodologies or tools drawn up by the approved methodology mentioned? *(correctly quoted and interpreted?)*	/1/	DR	Yes. All the tools used in this project activity is correctly mentioned.		**OK**
2.2. Justification of the choice of the methodology and why it is applicable to the project activity.					
2.2.1. Is the baseline methodology the one deemed	/1/	DR	PP needs to discuss all the applicability	~~**CL 2**~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
most applicable for this project and is the appropriateness justified?			conditions mentioned in the methodology and compliance to each of those conditions		
2.3. Identifying GHG sources, sinks and / or reservoirs for the baseline scenario and for the project.					
2.3.1. Has the GHG sources, sinks and / or reservoirs identified for the baseline scenario and for the project?	/1/	DR	Yes, the GHG sources, sinks and reservoirs have been identified for the baseline scenario and for the project.		**OK**
2.3.2. Has the justification for the emission in baseline scenario and the project done correctly?	/1/	DR	In revised PD, it is mentioned that CH_4 emissions are excluded due to simplicity which is not acceptable.	~~**CAR 7**~~	**OK**
2.4. Description of how baseline scenario is identified and description of the identified baseline scenario. *The choice of baseline will be validated with focus on whether the baseline is a likely scenario, whether the project itself is not a likely baseline scenario, and whether the baseline is complete and transparent.*					
2.4.1. Is the application of the methodology and the discussion and determination of the chosen baseline scenario transparent?	/1/ /4/	DR	Yes. The methodology selected is ACM0002 which is applicable for this project. Baseline selected is also in accordance with the methodology. Baseline 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.		**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
2.4.2. Has the baseline been determined using conservative assumptions where possible? *(confirm that any procedure contained in the methodology to identify the most reasonable baseline scenario, has been correctly applied)*	/1/	DR	The selected baseline is the only applicable baseline for this project.		**OK**
2.4.3. Has the baseline been established on a project-specific basis?	/1/	DR	Yes. The baseline is established on a project specific basis.		**OK**
2.4.4. Is the baseline determination compatible with the available data?	/1/	DR	PP is requested to submit the electricity generation data which includes electricity generated in the plant, supplied to the grid and own consumption.	~~**CL 3**~~	**OK**
2.4.5. Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	/1/	DR	There is only one possible baseline scenario for this project activity.		**OK**
2.4.6. Have the major risks to the baseline been identified? (*Are uncertainties in the GHG emission estimates properly addressed in the documentation?*)	/1/	DR	Kindly mention the major risks identified for the baseline.	~~**CL 3**~~	**OK**
2.4.7. Is all literature and sources clearly referenced?	/1/ /5/ /6/	DR	Kindly provide all literatures and sources referenced.	~~**CL 3**~~	**OK**
2.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered VCS project activity (*Assessment and demonstration of additionality*).					
2.5.1. Does the VCS PD follow all the steps	/1/	DR	PP has attempted to establish additionality of		

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
required in the methodology to determine the additionality? (*Is an approved additionality tool required / used? – Note: the guidance in the methodology shall supersede the tool*)	/5/		the project activity as per "Tool for the demonstration and assessment of additionality" (Version 5.2, EB 39) The PP needs to consider the guidance provided by the approved consolidated methodology – ACM 0002, Version 10 for demonstration and assessment of additionality. Project activity additionality is emphasized on investment barrier. Step 1: Identification of alternatives to the project activity consistent with current laws and regulations Sub-step 1a: Defining Alternatives Alternative 1: The proposed project activity without being registered as VCS project activity This alternative would be financially unattractive option which is discussed further in detail later in step 2. This alternative has not been considered as the plausible baseline scenario. Alternative 2: Continuation of the current practice The electricity generated through existing generation mix. Alternative 3: Construction of a fossil fuel fired power plant with same installed capacity or	~~**CAR 2**~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			same annual power output. Sub-step 1b: Consistency with mandatory laws and regulations: For the first alternative, there are no laws or regulations compelling the PP to develop hydro electric projects in Indonesia. However, the government aims to increase the renewable energy usage which at 5 % at present. Similarly alternatives 2 & 3 also are in line with applicable mandatory laws and regulations. The laws are encouraging project developers to invest in fossil-fired power plants making the third alternative viable option. The PP is requested to provide evidences stating the government is encouraging project developers to invest in fossil fuel fired power generation projects. It has been argued that the PP tends to develop power plant installation fuelled by indigenous renewable resources which are environment friendly. Hence the third alternative has been excluded and would not be considered in the assessment of alternatives.	~~**CL 4**~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			The PP is requested to clarify the basis on which the third alternative is excluded. The PP needs to substantiate the exclusion with supporting evidences	~~CL 4~~	OK
			Step 2: Investment Analysis: Sub-step 2a: Determine the appropriate analysis method The project activity will generate financial benefits other than VCS-Related income as it is selling the electricity to the grid. Hence the fist option of the analysis method is not applicable. The project activity doesn't have other comparable sources for the power generation as alternatives hence the PP chose to implement benchmark analysis. The PP is requested to justify the rejection of the third alternative with supportive evidences.		
			Sub-step 2b: Option III – Application of Benchmark Analysis The comparison between the continuation of purchase or grid electricity generation mix with returns from the project activity	~~CL 4~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			PP needs to provide the investment comparison for the continuation of purchase and grid electricity generation mix with returns from the project activity. The comparison will be based on comparing the project IRR (without carbon) with benchmark rates available to a local investor which obtained from local banks or investment bonds in the host country or it could be internally calculated. PP needs to justify why they have not considered lending rates from local banks as the benchmark. The risk free rates and premium risk are obtained from other countries which need to be justified with supporting evidences. When the PP is a government company based in the host country – Indonesia, who is into the power generation sector, PP needs to demonstrate consideration of calculating country risk. The premium risk is provided for the country which is not specific to the project activity; kindly justify the application of the same for this project activity. PP to justify the appropriateness of the project type / industrial sector considered when	~~**CL 4**~~ ~~**CL 4**~~	**OK** **OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			calculating for beta value hence they need to correct the same in the financial calculation/WACC sheet provided to the DOE. PP needs to clarify whether the beta value chosen represents raw/unlevered or levered value. PP need to provide sources for chosen values for insurance, operation and maintenance, equity amount, operational life time of the project activity, fair value for the project at the end of the operational life time. As per the guidance provided in the tool for demonstration and assessment of additionality version 5.2, guidance point no. 6, the PP needs to use input values for all investment analysis should be valid and applicable at the time of the investment decision taken. Further, the tariff considered for the financial analysis is not apprpopriate to the project. PP should also justify if the PLF considered is in line with the guidance given by EB 48 for reporting PLF The loan was procured from Japan Bank for International Cooperation (JBIC) and in the Japanese currency at the interest rate of 4.65 %. When the loan was procured from Japanese bank why PP has used input values applicable	~~**CAR 2**~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			for third country which is United States of America. Kindly justify the same with supporting evidences. The benchmark is calculated as per weighted average cost of capital (WACC) which comes to 10.79 %. The returns from the proposed project activity comes to 4.02 % which less than the selected benchmark. The PP is requested to provide justification on selection and the appropriateness of the chosen benchmark as per the EB guidance on investment analysis along with supporting documents. The PP is also requested to provide clarification on the pre-tax/ post-tax returns comparison with the benchmark. The PP is requested to provide the use of this arrangement consistently in their investment decisions for last three years which is in line with guidance provided on investment analysis by EB. PP to substantiate all arguments made under the performance of PLN with supportive evidences for all assumptions/ data provided Sub-step 2c: calculation and comparison of financial indicators:	~~**CL 4**~~ ~~**CL 4**~~	**OK** **OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			It has been mentioned that the project IRR without carbon revenue would be 2.98% which is differing from the value provided earlier. Kindly justify the same with supporting evidences. PP is requested to clarify on the use of other financial indicator – Net Present Value (NPV) for the project activity. Sub-step 2d: Sensitivity Analysis: Sensitivity analysis has been performed to check the robustness of the financial model employed for this proposed project activity. The project viability has been evaluated increase and decrease of 10 % of Electricity tariff, total investment and operational cost. The sensitivity analysis with +/- of 10 % of tariff, investment cost and O&M cost needs to be included in the PD and in the financial calculation sheet. The returns would reach the benchmark with increase of 138 % in tariff, decrease of 58 % in total investment cost and decrease of 100 % in the O&M cost. The tariff is unlikely to increase more than 10 % which can be witness from the historical data hence the increase of 138% in the tariff is not possible.	~~**CL 4**~~ ~~**CAR 2**~~	**OK** **OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			Reduction of 58 % in the investment cost would result in the crossing of the benchmark for this project activity which again not possible since the reduction in investment would result in reduction of the capacity of the project output. That will again lower returns from the project activity. Reduction of 100 % in O&M cost which is must to ensure the smooth operation of the power plant. Hence it is not possible to reduce the O&M cost by 100%. Step 4: Common Practice Analysis Sub-step 4a:Analyze other activities similar to the proposed activity: As per the government data, the potential for hydro power plant is 75000 MW wherein only 4200 MW has been utilized. PP is requested to provide the evidence for potential and installed capacities for Hydro Power plants in Indonesia. The project activity is located in northern Sumatra hence the PP has considered the northern Sumatra province for common practice analysis. The PP needs to conduct the common practice analysis for the relevant regional grid (for	~~**CL 4**~~	**OK**

Checklist Question		Ref.	MoV*	Comments	Draft Concl.	Final Concl.
				entire Sumatra region) and present findings on the same. Sub-step 4b: Discuss any similar options that are occurring: The common practice analysis is not complete and has not included in the sub-step as per "Tool for the demonstration and assessment of additionality" (Version 5.2, EB 39)	~~**CAR 2**~~ ~~**CAR 2**~~	**OK** **OK**
2.5.2.	Does the project demonstrate to be additional?	/1/	DR	Refer to to 2.5.1	~~**CAR 2 CL 4**~~	**OK**
2.5.3.	Is a complete list of barriers developed that prevents the project activity to occur in step 2 of the implementation barriers?	/1/	DR	Refer to 2.5.1	~~**CAR 2 CL 4**~~	**OK**
2.5.4.	Is the discussion on the additionality clear and have all assumptions been conservative, supported by transparent and documented evidence for all steps?	/1/	DR	Refer to 2.5.1	~~**CAR 2 CL 4**~~	**OK**
2.5.5.	Is it appropriately explained how the approval of the project activity will help to overcome the identified barriers?	/1/	DR	Refer to 2.5.1	~~**CAR 2 CL 4**~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
3. Monitoring					
3.1. Monitoring Methodology. *It is assessed whether the project applies an appropriate monitoring methodology (number, title and version). Explanation of methodology choices.*					
3.1.1. Is the selected methodology approved under the VCS Program and in line with the relevant project category?	/1/	DR	Yes the monitoring methodology is approved by the CDM Methodology panel which is applicable for this project activity.		**OK**
3.1.2. Have the methodological choices corerectly explained?	/1/	DR	Yes, methodological choices have been explained correctly.		**OK**
3.1.3. Is the monitoring methodology the one deemed most applicable for this project and is the appropriateness justified?	/1/	DR	The approved methodology of ACM0002 is chosen and applicable to the proposed project due to the following reasons: ▫ The project activity is the installation of an accumulation reservoir hydroelectric power plant; The PP needs to clarify whether this project activity involves reservoir or not woth supporting evidences. PP to further detail about the regulating pond in the PD ▫ The proposed project is not an activity that involves switching from fossil fuels to renewable energy at the site of the project activity, ▫ It is implemented in a new reservoir, and the power density of the project activity, as per definitions given in the project	~~**CAR 3**~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			emissions section, is greater than 4 W/m2. The PP needs to clarify whether this project activity involves reservoir or not with supporting evidences. ▫ It is connected with a regional power grid, the Sumatra grid; the Sumatra grid is clearly identified and information on the characteristics of this grid is publicly available from PLN Sumatra	~~CL 5~~	**OK**
3.2. Monitoring. *(Monitoring procedures content)*					
3.2.1. Is the purpose of monitoring properly specified?	/1/	DR	Yes, it is to present the reliable and complete data. To also ensure that all actual data would be collected and archived in proper way.		**OK**
3.2.2. Types of data and information to be reported, including units of measurement, are mentioned?	/1/	DR	Yes, parameters to be monitored are mentioned below: ▫ Net electricity generated in MWh Units for ecember y exported to the grid needs to be in KWh ▫ Electricity imported from the Sumatra grid in MWh Units for ecember y imported from the grid needs to be in KWh ▫ Amount of diesel fuel used in metric tonnes or liters This data of Diesel usage need not to be monitored if it is justified that the emission due to diesel usage is less than 1% of the	~~CL 5~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			total emission reductions.		
3.2.3. Is the origin of the data identified?	/1/	DR	The data of the origin for electricity generation is given which is not mentioned in the parameters required for monitoring. The PP needs to incorporate the origin of the data for parameters those require monitoring.	~~**CAR 3**~~	**OK**
3.2.4. Is monitoring, including estimation, ecember , measurement or calculations approaches, properly specified?	/1/	DR	The PP will make and collect the data based on field data. The statement in the PD that PP will make the data is not justified and acceptable.	~~**CL 5**~~	**OK**
3.2.5. Monitoring times and periods, considering the needs of the intended users, are properly defined?	/1/	DR	Monitoring of electricity generation, export, and import, steam delivered, steam fraction, and diesel used will be made daily, monthly or quarterly with regular yearly reports dependent on the monitoring plan for each data parameter for the entire crediting period. The PP needs to clarify on monitoring of parameters like electricity generation, steam delivered, steam fraction and justify how it is relevant to this project. PP needs to also include recording procedures of these monitored paramteres in the PD.	~~**CAR 3**~~	**OK**
3.2.6. Are the monitoring roles and responsibilities defined?	/1/	DR	Yes, PP together will be responsible for collecting all monitoring data and information. However, PP needs to have team structure wherein roles and responsibilities to each team	~~**CL 5**~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			members are defined.		
3.2.7. Information management systems, including the location and retention of stored data, were identified?	/1/	DR	PP needs to identify information management systems, including the location and retention of stored data and incorporate the same in the PD.	~~CAR 3~~	**OK**
3.3. Monitoring parameters.					
3.3.1. Are the parameters to be monitored properly addressed and identified?	/1/	DR	During the site visit it was found that the two types of meters were installed 1) Analog meters 2) Tri-vector meters PP needs to incorporate types of meters, locations of installed meters, QA/QC procedures in section 3.3 of the PD PP needs to the list of parameters those are required to be monitored and re-work on the section 3.3 of the PD Grid Emission factor needs to be calculated separately for the different years 2006, 2007, 2009 etc..	~~CAR 3~~	**OK**
3.4. Description of the monitoring plan.					
3.4.1. Is the authority and responsibility of project management clearly described?	/1/	DR	VCS manager will head the team (VCS Monitoring team) to handle day to day activity, reporting, recording.		**OK**
3.4.2. Are procedures identified for training of monitoring personnel?	/1/	DR	PP will identify procedures for training of monitoring personnel.		**OK**
3.4.3. Are procedures identified for emergency	/1/	DR	PP needs to identify procedures for emergency	~~CL 5~~	**OK**

Checklist Question		Ref.	MoV*	Comments	Draft Concl.	Final Concl.
	preparedness for cases where emergencies can cause unintended emissions?			preparedness for cases where emergencies can cause unintended emissions		
3.4.4.	Does the monitoring plan reflect good monitoring and reporting practices?	/1/	DR	Monitoring plan consists of procedures on monitoring equipments installation, data recording , data management. PLN is ISO certified for quality management systems hence relevant standard operating procedures for operation of plant, calibration requirements and emergency related procedures were found. However, during the site visit, calibration certificates were not made available. Provide the copy of the same. Procedures for archiving of the recorded data needs to be included in the monitoring plan. The monitoring plan appears futuristic which needs to be changed and made realistic with sufficient evidences to confirm the same. Procedures on data apportioning for the joint meter reading and is not matching with the crediting period state date. Prcedures to identify if meters are functioning ok or faulty in between calibrations and procedures on actiona to be taken when such readings recorded with faulty meter	~~CL 5~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			are found. What is the permissible deviation between the main meter and check meter, to identify the faulty meter? There is a mentioned of annex 4 which is not in the PD, kindly clarify. Frequency for calibration is mentioned as "generally every year". The PP needs to be specific for such requirements in the monitoring plan. The PP needs to conduct calibration for all metering devices every year and archive the data. PP need to establish procedures to identify the meter faults and to take care the emergency and uncertainities involved in the generation readings in such a case.		
3.4.5. Is the discussion and selection of all required monitoring parameters and / or data variables (for example, project emissions, project electricity generation, baseline grid / captive power emission factor) of the monitoring plan according to the approved / applied methodology transparent?	/1/	DR	Refer to 3.2.3, 3.2.5, 3.2.7 and 3.3.1	~~**CAR 3**~~	**OK**
3.4.6. Is the monitoring methodology previously approved by the VCS Registry?	/1/	DR	Yes. Monitoring methodology is previously approved by the VCS Registry		**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
3.4.7. Is the monitoring methodology the one deemed most applicable for this project and is the appropriateness justified?	/1/	DR	Yes. The monitoring methodology is the one deemed most applicable for this project and is the appropriateness justified.		**OK**
3.4.8. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	/1/	DR	Refer to 3.2.3, 3.2.5, 3.2.7, 3.3.1 and 3.4.5	~~**CAR 3 CL 5**~~	**OK**
3.4.9. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/	DR	According to the methodology, leakage from related emission sources do not need to be considered.		**OK**
4. GHG emission reductions. *Validation of baseline GHG emissions will focus on methodology transparency and completeness in emission estimations.*					
4.1. Methodology choice.					
4.1.1. Have the project, baseline and leakage emissions and emission reductions been properly explained and determined using the same appropriate methodology and conservative assumptions?	/1/ /5/ /6/ /7/ /34/	DR	Project, baseline and leakage emissions and emission reductions been properly explained and determined using the same appropriate methodology and conservative assumptions. Kindly provide the exact location for the reference of NCV of fuel. However the PP is required to justify that the selected value for emission factor of the grid is in line with the procedures mentioned in the tool.	~~**CL 6**~~ ~~**CAR 4**~~	**OK** **OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			Under step 3, the equation used is for option B and PP has mentioned that option C is selected. Kindly clarify. PP needs to mention clearly whether option B1 or option B2 is selected.		
4.1.2. Does the proposed project clearly state which equations for the calculation of emission reductions are used, as given by the approved / applied methodology?	/1/ /4/	DR	Yes. The proposed project clearly state which equations for the calculation of emission reductions are used, as given by the approved / applied methodology.		**OK**
4.1.3. Are the demonstration / justification for the choice of the chosen scenario (for example, in ACM0006) or case, option / method (for example in ACM0002) adequate and sufficient?	/1/ /4/	DR	Yes. Demonstration/justification for the chosen scenario is adequate and sufficient.		**OK**
4.1.4. Are the demonstration / justification for the chosen default values adequate and sufficient?	/1/ /5/ /6/ /7/ /34/	DR	Refer to 4.1.1	~~CL 6~~	**OK**
4.2. Quantifying GHG emissions for the baseline scenario.					
4.2.1. Have the baseline GHG emissions been properly explained and determined using the same appropriate methodology and conservative assumptions?	/1/ /4/	DR	The baseline GHG emission has to be clearly explained. The explanation for the terms used in the equation should be clear and specific. The crediting period has to be changed since the starting date of the project is also going to	~~CAR 5~~	**OK**

Checklist Question		Ref.	MoV*	Comments	Draft Concl.	Final Concl.
				be changed.		
4.2.2.	Are the demonstration / justification for the chosen default values adequate and sufficient?	/1/ /21/ /34/	DR	Grid emission factor provided by the Indonesia DNA is for the year 2008. PP needs to provide justification for using the same value for the calculation of emission in the years 2006 and 2007. Kindly mention how the emission reduction was calculated for the year 2008 to 2015. Also provide the electricity generation data, electricity supplied to the grid, own consumption from the starting date of the project activity. PP also needs to demonstrate that emission produced due to the diesel consumption is less than 1% of the total emission.	~~CAR 5~~	**OK**
4.2.3.	Does the proposed project clearly state which equations for the calculation of baseline emission are used, as given by the approved / applied methodology?	/1/ /4/	DR	Yes. The PP has used the correct equations for the calculation of baseline emission and is as per the approved / applied methodology.		**OK**
4.2.4.	Is the calculation of the expected baseline emissions transparent, conservative, accurate, and documented and as per the approved / applied methodology (equations) of the project activity?	/1/ /21/ /34/	DR	Refer to 4.2.2	~~CAR 5~~	**OK**
4.3. Quantifying GHG emissions for the project.						
4.3.1.	Have the project GHG emissions been	/1/	DR	Yes. Project emissions have been properly	~~**CL 7**~~	**OK**

Checklist Question		Ref.	MoV*	Comments	Draft Concl.	Final Concl.
	properly explained and determined using the same appropriate methodology and conservative assumptions?	/4/		explained and determined using the same appropriate methodology and conservative assumptions. However PP needs to provide the proof for the reservoir area.		
4.3.2.	Are the demonstration / justification for the chosen default values adequate and sufficient?	/1/ /4/	DR	Refer to 4.3.1	~~CL 7~~	**OK**
4.3.3.	Does the proposed project clearly state which equations for the calculation of project emission are used, as given by the approved / applied methodology?	/1/ /4/	DR	Refer to 4.3.1	~~CL 7~~	**OK**
4.3.4.	Is the calculation of the project emissions transparent, conservative, accurate, and documented and as per the approved / applied methodology (equations) of the project activity?	/1/ /4/	DR	Refer to 4.3.1	~~CL 7~~	**OK**
4.4.	**Quantifying GHG emission reductions for the project.** *(between a **baseline scenario** and the project)*					
4.4.1.	Have the project GHG emission reductions been properly explained and determined using the same appropriate methodology and conservative assumptions?	/1/ /2/	DR	PP needs to provide the calculation transparently. The values for the emission reduction mentioned in the table is different from that mentioned in the sentence just above the table. Kindly clarify. The crediting period also has to be changed as discussed under section 1.6.2.	~~CAR 6~~	**OK**

Checklist Question		Ref.	MoV*	Comments	Draft Concl.	Final Concl.
4.4.2.	Does the proposed project clearly state which equations for the calculation of project emission reductions are used, as given by the approved / applied methodology?	/1/ /4/	DR	Yes. The equations used for the calculation of the project emission reductions are applicable to this project as per the approved / applied methodology.		**OK**
4.4.3.	Is the calculation of the project emission reductions transparent, conservative, accurate, and documented and as per the approved / applied methodology (equations) of the project activity?	/1/	DR	The project emission reduction values are not accurate. It is contradicting to each other. Also the document for the electricity generation, own consumption and supply to the grid has to be provided.	~~**CAR 6**~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
5. Environmental impacts. ***If required by the host party,*** *documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the Validator/Verifier*.					
5.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?	/1/ /11/	DR	As per the Decree of the Ministry of Environment, all hydroelectric power plants with a dam height of >= 15m or flooded area of >=200ha or installed capacity of >=50 MW needs to conduct an EIA. Since this project has an installed capacity of 82 MW, an EIA has been conducted by the client. PP is requested to submit the copy of the same for verification.	~~CL 8~~	OK
5.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/1/ /11/	DR	Refer to 5.1	~~CL 8~~	OK
5.3. Will the project create any adverse environmental effects?	/1/ /11/	DR	Project is expected to have an overall positive impact on the local and global environment. All the environmental impacts have been identified during the EIA and mitigation measures also have been taken. Hence project does not create any adverse environmental impacts.		OK
5.4. Are transboundary environmental impacts considered in the analysis?	/1/	DR	There are no adverse transboundary environmental impacts for this project activity.		OK
5.5. Have identified environmental impacts been	/1/	DR	Refer to 5.3		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
addressed in the project document?	/11/				
5.6. Does the project comply with the environmental legislation in the host country?	/1/	DR	Yes. Project complies with environmental legislation in the host country.		OK
6. Stakeholder's comments. *The Validator/Verifier should ensure that stakeholders' comments have been invited and that due account has been taken of any comments received.*					
6.1. If a stakeholder consultation process is required by regulations / laws in the host country, has the stakeholders' consultation process been carried out in accordance with such regulations / laws?	/1/ /17/	DR	Stakeholder consultation is not mandatory according to the regulations/ law in the host country. However relevant stakeholder was identified and meeting was conducted. PP needs to submit the documentary evidence for the same. It is mentioned in the PD that stakeholder meeting was held to inform regarding the project rather than consultation. PP is required to justify on the same. Also kindly clarify whether the project is a capacity up gradation project which is a complete contradictory to all the discussions that was done above.	~~CL 9~~	OK
6.2. Have relevant stakeholders been consulted / invited for comments?	/1/ /17/	DR	Yes. Relevant stake holders been identified and were invited for the meeting. However the date and venue of meeting, mode of invitation for stakeholder consultation, persons invied, persons present for the stakeholder	~~CL 9~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			consultation, contact details and summary of comments received are not transparent in PD. Kindly provide evidences for all the above		
6.3. Was the stakeholders' consultation process conducted, within a reasonable time for comments submission, in an open and transparent manner to facilitate comments and properly described?	/1/ /17/	DR	Refer to 6.2	~~CL 9~~	OK
6.4. Are the stakeholders who made comments identified (addresses provided / available)?	/1/ /17/	DR	Refer to 6.2	~~CL 9~~	OK
6.5. The summary of the stakeholders' comments received is provided / available?	/1/ /17/	DR	Refer to 6.2	~~CL 9~~	OK
6.6. Has due account been taken of any stakeholders' comments received?	/1/ /17/	DR	Refer to 6.2	~~CL 9~~	OK
7. Schedule					
7.1. Has the chronological plan for the date of initiating project activities, date of terminating the project, frequency of monitoring and reporting and the project period, including relevant project activities in each step of GHG project cycle mentioned?	/1/ /9/ /10/	DR	Refer to 1.6.1. Also provide the schedule in detailed and correct appropriately with change in start date mentioned. Documented evidence for the operational life time of the project has to be submitted.	~~CL 10~~	OK
8. Ownership					
8.1. Proof of Title.					
Has they provided a legislative right or a right under local common law for the proof of title? Or Has they submitted any evidence for proving the	/1/ /9/	DR	PP has submitted the commissioning order and purchase order for the proving the proof of title. RINA has verified the same and found to		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
ownership of the plant, equipment and / or process generating the reductions / removals? Or Does a contractual arrangement with the owner of the plant, equipment or process that grants all reductions / removals to the proponent shown?			be satisfactory		
8.2. Projects that reduce GHG emissions from activities that participate in an emissions trading program *(if applicable)*.					
8.2.1. Does the projects that reduces GHG emissions from activities participate in an emission trading program or take place in a jurisdiction or sector in which binding limits are established on GHG emissions?	/1/	DR	Not applicable		**OK**
8.2.1.1. Has the project proponent provided any evidence to prove that the reductions or removals generated by the project have or will not be used in the program or jurisdiction for the purpose of demonstrating compliance?	/1/	DR	Refer to 8.2.1		**OK**
8.2.1.1.1. Has letter from the Program operator or DNA that emission allowances (or other GHG credits used in the program) equivalent to the reductions / removals generated by the project have been cancelled from the program or national cap as applicable been submitted?	/1/	DR	Refer to 8.2.1		**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
8.2.1.1.2. Has purchase and cancellation of GHG allowances equivalent to the reductions /removals generated by the project related to the program or national cap done?	/1/	DR	Refer to 8.2.1		**OK**

Table 2 Resolution of Corrective Action and Clarification Requests, and FARs

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
FAR 1 Frequency for calibration is mentioned as "generally every year". The PP needs to be specific for such requirements in the monitoring plan. The PP needs to conduct calibration for all metering devices every year and archive the data. PP need to establish procedures to identify the meter faults and to take care the emergency and uncertainties involved in the generation readings in such a case.	3.4.4	Calibration will be conducted on yearly basis in accordance with methodology. Frequency of calibration has been added in the PD section 3.3 Table data to be monitored and PD section 3.4 Monitoring plan. SOP for emergency is available and has been shown and submitted to DOE during validation site visit (Renun_SOP). In emergency situations gross meter and own consumption meter will be used to calculate net electricity produced. In case gross meter or own consumption meter is not operational no emission reduction will be claimed during such period. The same has been indicated in the PDD. Detailed procedure regarding uncertainty will be defined in the SOP prior to verification.	The PP needs to incorporate the same in the PD. The same has been incorporated in the revised PD and found acceptable. The same has been incorporated in the revised PD and found acceptable. However, the same shall be verified during the verification. Hence FAR 1 is closed.
CAR 1 • Project start date mentioned in the PD is	1.6.1, 1.6.2,1.6.3,	• According to the commissioning certificate issued by independent body,	The document submitted by the PP for electricity generation in the plant clearly

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
14/06/2006 which is as per the commissioning inspection certificate. But as per the VCS guidelines, it should be the date in which actual emission reduction has started. So starting date of the project should be as per the commissioning certificate of the generator. PP needs to revise the same and has to submit the commissioning certificate for the both the turbines and generators for verification. • PP needs to revise the crediting period start date to a suitable one • Capacity is mentioned as 82 MW (41 MW x 2). But from the site visit, it was noted that the capacity was not the same. Instead it was 42 MW x 2 = 84 MW.	1.9.1	start date of the project activity was on 19 December 2006 for Unit 1 and on 14 August 2006 for Unit 2. Evidence of commissioning certificate has been submitted to DOE during validation site visit. PD has been revised accordingly. Unit 2 started to produce the electricity on Dec 2005, but commissioning certificate of unit 2 issued by 3rd party on 14 August 2006, so for conservativeness 1 Sept 2006 is used as start date of crediting period. • Star date of crediting period has been revised in the PD accordingly. Commissioning for Unit 1 was on 1 January 2007 and Unit 2 on 1 September 2006. Therefore the start date of crediting period is on 1 Sept 2006. • Capacity 82 MW (41 MW x 2) stated in PD is based on detailed design report 1988. Relevant document has been submitted to DOE.	mentions that unit 2 generates electricity from December 2005 onwards which contradicts to the commissioning date. Kindly clarify. Justification from the PP is acceptable and hence this CAR is closed. The start date of crediting period needs to be kept as per the guidance provided by VCS guidelines. Start date of the crediting period is 1 September 2006. Its found appropriate and hence is acceptable. Hence this CAR is closed. Document has been verified and values taken are appropriate. Hence CAR 1 is closed.

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
CAR 2 The PP needs to consider the guidance provided by the approved consolidated methodology – ACM 0002, Version 10 for demonstration and assessment of additionality. As per the guidance provided in the tool for demonstration and assessment of additionality version 5.2, guidance point no. 6, the PP needs to use input values for all investment analysis should be valid and applicable at the time of the investment decision taken. Further, the tariff considered for the financial analysis is not appropriate to the project. PP should also justify if the PLF considered is in line with the guidance given by EB 48 for reporting PLF The sensitivity analysis with +/- of 10 % of tariff, investment cost and O&M cost needs to be included in the PD and in the financial calculation sheet. The PP needs to conduct the common practice analysis for the relevant regional grid (for entire Sumatra region) and present findings on the same.	2.5.1, 2.5.2, 2.5.3, 2.5.4	Input values for investment analysis have been revised in accordance the prevailing parameters during the time when the investment decision was made. Such information is taken from feasibility study dated March 1985 and detail design report dated December 1988. Document feasibility study has been shown and submitted to DOE during validation site visit. Additional document detail design report described the differences has been submitted to DOE. Responses of additionality were explained in the email. Tariff used in Investment analysis is revised according to the issued tariff information by PLN Medan sector as headquarter for Northern Sumatra region. The tariff used is the internal transfer-pricing tariff for hydropower plant delivered to northern Sumatra grid. Reference document has been submitted to DOE. Tariff used in the investment analysis was Rp. 152/kWh in year 1993 calculated based on tariff Rp. 143.6/kWh in year	PP has taken the values as per the feasibility study report that is in line with guidance provided by the additionality tool. However, there are some queries raised in the mail need to be answered by the PP. The tariff has been taken as per the actual internal transfer pricing. It has been considered for the year 2002 using average escalation which is realistic.

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
The common practice analysis is not complete and has not included in the sub-step 4b as per "Tool for the demonstration and assessment of additionality" (Version 5.2, EB 39)		1991, stated in Renun FS, by escalating the tariff with 2.85% as an actual average transaction tariff increase in the years 1990 – 1994. PLF is already in line with EB guidance. The value of PLF (43.64%) is calculated based on values available in the detailed design report. All section in PD pertinent to the PLF number has been revised accordingly in particular section 1.4 and 1.9. The PLF determination is calculated by dividing the expected annual electricity production, as per FS, through the maximum annual electricity production as per generator specifications. The maximum annual electricity production is calculated by multiplying the installed capacity with 8760 hours. In addition to the realistic variation of sensitive parameters by +\-10% another analysis has been performed where	The PLF has been calculated as per the

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
		parameters hit the benchmark as comparison. At least +\- 10% variation of parameters is proposed by a guidance of the UNFCCC. For the common practice analysis, the appropriate regional grid is supposed to be northern Sumatra grid since by the time when the project was commissioned; the region was not yet connected to the whole Sumatra grid. Whole Sumatra grid was interconnected in July 2007. Reference document has been submitted to DOE. Due to the fact that the project has been starting construction several years ago, data acquisition seems difficult. No loan letter with stated PLF or third party calculation is available. As a cross-check reference to the detailed design report the real electricity production should be used which is very much in the range of the predicted load factor (detailed design report: 313.5 GWh, Ex-post monitored: 250-360 GWh)	values provided in the FS. FS is carried out by Nippon Koei Company Limited in association with P. T. Indra karya in 1983-84 with financial assistance form IBRT which is a third party and they have derived the PLF of the project activity as per the expected annual generation with maximum annual generation which is in line with requirement. The reference document has been verified and it is evident that prior to July 2007 northern Sumatra grid was separate. The correction has been carried out in the revised Pd and found acceptable. The PLF determination is not transparent as how the same has been carried out.

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
		For sub-step 4b. More elaboration and explanation is added in PD section 2.5.	More details have been provided as per the sub step 4. b of tool for demonstration & assessment of additionality. The correction has been incorporated in the revised PD and found acceptable. CAR 2 is closed
CAR 3 The PP needs to clarify whether this project activity involves reservoir or not with supporting evidences. PP to further detail about the regulating pond in the PD The data of the origin for electricity generation is given which is not mentioned in the parameters required for monitoring. The PP needs to incorporate the origin of the data for parameters those require monitoring. The PP needs to clarify on monitoring of parameters like steam delivered, steam fraction and justify how it is relevant to this project. PP needs to also include recording procedures of these monitored parameters in the PD. PP needs to identify information	3.1.3, 3.2.3, 3.2.4, 3.2.5, 3.2.7, 3.3.1, 3.4.5, 3.4.5	The project activity is a run off river type hydropower plant with a daily regulating pond. This mentioned in detailed design report 1988. The document has been submitted to DOE. PD also has been revised in the whole document accordingly in section 1.2; 1.3 and 1.9 (Renun_Layout of Regulating Pond). As per applied methodology no need for supplying such information is needed. If this requirement emerges from world commission of damns (WCD) it shall be neglected, as power density is the relevant factor mentioned in the methodology to determine whether WCD needs to be considered or not.	The PP has provided clarification on retention period for collected water with supporting evidence and found 5 hrs which is acceptable.

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
management systems, including the location and retention of stored data and incorporate the same in the PD. PP needs to incorporate types of meters, locations of installed meters, QA/QC procedures in section 3.3 of the PD PP needs to the list of parameters those are required to be monitored and re-work on the section 3.3 of the PD Grid Emission factor needs to be calculated separately for the different years 2006, 2007, 2009 etc.		The electricity generation's data used for monitoring is the monthly electricity generation report delivered to grid signed by both parties of generation department and transmission department. The monitoring parameter in PD is revised in section 3.3 accordingly. The electric generation amount is relevant for the calculation of the ex-ante emission reduction and the investment analysis. Monitoring of parameters steam delivered and steam fraction have been deleted in PD, since it is not relevant to the project activity. Recording procedures of these monitored parameters have been added with more clarity in PD section 3.4 Description of monitoring plan. Information management system, including the location and retention of stored data has been added in PD section 3.4 Description of	The electricity generation data has been incorporated in the monitoring plan and is important for ex-ante emission reduction calculation & investment analysis. It is accepted. It is accepted. The correction has been incorporated in the revised PD and found acceptable. The correction has been incorporated in the

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
		monitoring plan. Types of meters, locations of installed meters, QA/QC procedures have been added in PD section 3.3 Data and parameters to be monitored. Table of data and parameters to be monitored in PD section 3.3 has been revised. As per tool "Tool to calculate the emission factor for an electricity system"" EB 40 Annex 14, page 15 the most recent DNA approved emission factor 2008 is applied during the whole crediting period: "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. For the second crediting period, the build margin emission factor should be updated based on the most recent information available on units already built	revised PD and found acceptable. The correction has been incorporated in the revised PD and found acceptable. The correction has been incorporated in the revised PD and found acceptable. The Indonesian DNA approved emission factor has been provided to the DOE and found acceptable. The calculation of emission factor has been done as per the tool to calculate the emission factor for an electricity system which is in line with the requirement.

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
		at the time of submission of the request for renewal of the crediting period to the DOE."	CAR 3 is closed
CAR 4 • PP is required to justify the selected value for emission factor of the grid is in line with the procedures mentioned in the tool.	4.1.1	The values used in the grid emission factor calculation have been in line with the procedures mentioned in the tool as described in the answer of CAR 3	Refer to CAR 3. Justification provided is satisfactory and hence this CAR 4 is closed.
CAR 5 The baseline GHG emission has to be clearly explained. The explanation for the terms used in the equation should be clear and specific. The crediting period has to be changed since the starting date of the project is also going to be changed. PP needs to provide justification for using the same value for the calculation of emission in the years 2006 and 2007. Kindly mention how the emission reduction was calculated for the year 2008 to 2015. Also provide the electricity generation data, electricity supplied to the grid, own consumption from the starting date of the project activity.	4.2.1,4.2.2, 4.2.4	All formulas for calculation of baseline emission and their explanation have been revised and clearly explained in PD in section 4. Net supplied electricity is taken from detailed design report 1988. The credibility of the values can be cross-checked with ex-post values which are in a similar range. The crediting period also has been changed according to the start date of the project activity. PD is revised accordingly. Please see the explanation in CAR 1. Design values have been used to estimate the emission reductions. Value for 2006 is	PP has explained the calculation of baseline emission clearly. However, the source of net supplied electricity is not clear. Justification is acceptable. Refer to CAR 1 It is acceptable. Value of Emission Factor is taken for the year 2008 since this is the most recent data

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
PP also needs to demonstrate that emission produced due to the diesel consumption is less than 1% of the total emission.		different since commissioning date of unit 1 and unit 2 is difference. Values 2007 and 2008 values are the same. Such values will be replaced in the monitoring report through actual measured ex-post values. EF has been calculated based on values explained in the CAR 3 response. Data EG supplied to grid and for own consumption have been shown and submitted to DOE in form of Monthly electricity generation report delivered to grid signed by both generation department and transmission department during validation site visit. However, for ex-ante ER calculation design values have been used. Please see the explanation in CAR 3. Calculation of project emission from diesel consumption has been added in PD, showing that emission from diesel consumption is less than 1% of total emission. Therefore project emission from fossil fuel can be neglected. PD has been revised in section 4 accordingly.	available for the PP at the time of PD submission to RINA. Refer to CAR 3 Justification is found acceptable and hence this CAR is closed. PP has included the emission due to diesel fuel consumption and has demonstrated that emission due to diesel is less than 1% of total emission. However values for diesel consumption from data provided and used for calculations are not clear. The validation team has received the clear

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
		Diesel genset is only used in emergency situation and for warm up. Such consumption was not mentioned in any project report or feasibility study as negligible low. However, real diesel consumption values have been taken to show the low the low impact of such emissions. To be conservative the highest diesel consumption since operation start have been taken to show that diesel consumption is less then 1% of the total emission reduction. Reference of actual diesel fuel consumption has been submitted to DOE. Clear document has been submitted to DOE (Renun_Diesel Consumption).	document of diesel consumption and found to be appropriate. Hence this CAR is closed. The figures for consumption of diesel oil mentioned in the PD, excel sheet and supporting document are matching and they are verified by means of comparison. CAR 5 is closed
CAR 6 • The values for the emission reduction mentioned in the table is different from that mentioned in the sentence just above the table. Kindly clarify. The crediting period also has to be changed as discussed under section 1.6.2. • The project emission reduction values are not accurate. It is contradicting to	4.4.1,4.4.3	• The values for ER in the table are revised, since date of crediting period has been revised according to commissioning certificate date. Start date of the crediting period has been revised in PD section 1.3; 1.6; and 7.	The values of ER has been revised and found to be same in the table as well as in the description above the table. For Crediting period, kindly refer CAR 1. Justification is acceptable in CAR 1

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
each other. Also the document for the electricity generation, own consumption and supply to the grid has to be provided.		• The project emission reduction values also have been revised accordingly. All documents electricity generation, own consumption and supply to the grid are provided and submitted to DOE during validation.	Project emission reduction values have been revised and found acceptable. CAR 6 is closed
Additional CAR found after submitting the revised PD. **CAR 7** In revised PD, it is mentioned that CH_4 emissions are excluded due to simplicity which is not acceptable. PP needs to explain the exclusion in detail.	2.3.2	PD has been revised in table 4 section 2.3 according to the methodology ACM0002 Version 10, EB 47.	Justification is found satisfactory and hence CAR 7 is closed.
CAR 8 PP has calculate the emission factor of the grid using the latest version of the tool.	4.1	As per tool "Tool to calculate the emission factor for an electricity system"" EB 50 Annex 14, page 15 the most recent DNA approved emission factor 2008 is applied during the whole crediting period.	The calculation of emission factor has been done as per the tool to calculate the emission factor for an electricity system which is in line with the requirement. CAR 8 is closed.
CL 1 • The date of VCS PD mentioned in the first page and under section 1.1 is different. • The term debundled is not there in VCS.	1.1.1,1.2.2, 1.4.1,1.5.1, 1.7.1,1.9.1, 1.9.3,1.9.4, 1.9.5,1.10.1 ,1.11.1,1.12	• Date of VCS PD in first page and section 1.1 has been revised to be similar. • The term of debundled has been changed	Date of the VCS PD mentioned in the first page and under section 1.1 is September 07, 2009. It is accepted Term debundled was removed from the PD and renamed as grouped. PP needs to

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
• PP needs to change the operation date of the three units. It has to be the date as mentioned in the commissioning certificate of the unit. PP is also requested to provide the evidence for the statement "the potential capacity of the hydro resources in Indonesia is 75000MW of which only 4,200 MW has so far been used to generate electricity". Kindly clarify how the increased grid reliability gives rise to increase in local employment. Also clarify how the project supports technology transfer from other regions or even other countries. PP needs to submit the commissioning certificates for the turbines and generators, source for selecting capacity factor as 43% and the document that shows that reservoir area is 100,000m^2, electricity generation capacity is 313,500 MWh.	.1,1.13.2,1.14.1,1.14.1.1,1.14.1.2,1.15.1,1.15.2,1.16.1,1.17.1	to group. The type of the project has been identified as sectoral cope 1 (renewable/non-reneable sources) applying methodology UNFCCC ACM0002 version 10 EB 47. PD is revised in section 1.2. • Renun hydropower plant has two units (not three units as mentioned). The operation date of the two units is the date when the commissioning certificate issued by independent body. Unit 1 operation date on 19 December 2006 and Unit 2 operation date on 14 August 2006. PD has been revised accordingly. Reference to that statement has been provided and submitted to DOE. Please see the explanation in CAR 1	mention the type of the project. The same is reflected in the revised PD. Refer to CAR 1 Justification in CAR 1 is acceptable. Hence this CL is closed.
• GPS mentioned in the EIA was different from the value mentioned in the PD. Kindly incorporate the exact value. Land agreement of the project site from the forestry department has to be submitted by the PP.		• The evidence regarding the statement of potential hydro resources in Indonesia has been submitted to DOE. Evidence potential hydro in Indonesia has been submitted to DOE	The evidence provided for the potential hydro resources in Indonesia is not matching with the statement in PD. The values have been revised and is acceptable.

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
• Even though the project is a new activity, PP should mention the condition prior to the project activity. • Capacity factor mentioned in the table of this section is contradicting with the value mentioned in the section 1.4. PP needs to provide the documented proof for the following statements: • Essential equipment has to be procured from another country. • Training provided to the employees prior to the project commissioning. • For all the values mentioned in table 2, the source taken is project completion report which is not acceptable. It has to be taken from the feasibility report. PP is requested to submit the Feasibility report for this project. • PP needs to mention whether the project involves transfer of technology • PP needs to describe whether the technology used is environmentally safe		(Indonesian_Power_Sector). Footnote 1 in PD has been revised accordingly. • Various training has been conducted prior to the commissioning of the project activity and during the operation as part of the technology transfer. Relevant document has been submitted to DOE during validation site visit. PD has incorporated a summary of the training provided to the staff at the plant. Please see PD section 1.9. Detailed list of training and participant has been sent to DOE (Renun_List of Training). • Documents of commissioning certificate for turbines and generators have been provided and submitted to DOE during validation site visit. Copy of documents commissioning certificate has been submitted to DOE (Renun_Commissioning Certificate). Source of capacity factor calculated	PP needs to list out what type of training provided to the plant people. PP has mentioned the details of the list of training provided for the employees in the revised PD. Hence this CL is closed. RINA has observed commissioning certificates during the site visit however, RNA did not receive the commissioning certificates. Hence PP needs to submit the same. RINA has received the commissioning certificates and found appropriate. Refer to CAR 2 Justification provided in CAR 2 is

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
and sound. • PP has mentioned that training was imparted to the employees prior to the project commissioning. Kindly provide the documents for justifying the same. • PP needs to submit the documentary evidence for the same and also mention in the PD, the laws and regulations that the project should comply and that complying. • PP has to mention the risks that may affect the project's GHG emission reductions or removal enhancements. • PP needs to justify that why this section is not applicable for this project. • PP has to provide an undertaking letter marked to the registry stating that they will not go for any other form of environmental credits other than VCS.		based on value in detailed design report 1988. Further explanation is provided in the answer of CAR 2 All the electricity generated is delivered to the grid. Star date of commissioning for those 2 units is difference. Commissioning for Unit 1 was on 19 December 2007 and Unit 2 on 18 August 2006. Therefore the start date of crediting period is on 1 Sept 2006. The sustainable development indicators have been moved to section 1.16. Commissioning dates and capacity factor in section 1.14 also have been removed to avoid repetition. Statement of "*120 km south of Medan*	acceptable. Hence this CL is closed. The justification is acceptable. PP also needs to explain why the details regarding sustainable development indicators, commissioning dates and capacity factor used are removed from the section 1.4. Justification is found acceptable and hence this CL is closed. PP needs to clarify the statement "*120 km south of Medan city as the crow flies*". The

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
• PP needs to justify that why the section 1.14 is not applicable for this project. • The roles and responsibilities of the project proponent and other participants has to be mentioned in this section. • PP has to clearly mention whether the parties involved in this projects are public or private entity. • PP has to mention whether VCS PD provides any information regarding the eligibility and qualification of emission reductions or removal enhancements, including legislative, technical economical, sectoral, social, environmental , geographic, site-specific and temporal information. • Has the project proponent listed any commercially sensitive information that has been excluded from the public version of VCS PD which will be		*city as the crow flies*" has been changed to "100 km south of Medan citiy as the crow flies" taken from project completion report 2006. • Layout of reservoir area has been submitted to DOE. • GPS in PD has been revised to be in line with GPS in EIA. GPS value has been revised in PD section 1.5 to be inline with the supporting document. • Land agreement of the project site from forestry department has been submitted to DOE. • Explanation of condition prior to the	same has been clarified in the revised PD and it is found ok. Correction has been incorporated in the revised PD and is acceptable. RINA has received the same and found acceptable. Refer to CAR 2 GPS value mentioned in the revised PD is in line with the supporting document. RINA has received the land agreement letter, which is acceptable. PP has explained the condition prior to the project activity in the revised PD. It is acceptable and hence the CL is closed. Justification found appropriate and hence CL

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
displayed on the VCS project database.		project activity has been added in PD section 1.7. PD has been revised in section 1.7.	is closed.
		• Value of capacity factor has been revised to be similar in PD section 1.4 and table 2. Capacity factor in section 1.4 has been removed to avoid repetition. This factor can be found in table 2 section 1.9	PP has submitted the documents for contract with the supplier and Feasibility study report.
		Documents of the following statement has been submitted to DOE during validation site visit: • Essential equipment procured from another country (contract with supplier) • Training provided to the employees prior to the project commissioning. • Feasibility study March 1985. Document detailed design report has been submitted to DOE. All values used from detailed design report 1988 as actual project activity is not inline with feasibility study from the year 1985.	PP has taken the values from feasibility study report and values are appropriate. Hence it is closed. Since the values in the detail design report are almost the same as that of project activity, this is accepted. Hence this CL is closed. Justification found appropriate. Hence this CL is closed.

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
		Please see explanation in PD section 1.4. • The project activity involves transfer of technology. This information has been added in PD in section 1.9. No technology transfer takes place in this project, as technology itself is quite simple. However, the quality of the equipment is ensured by importing from Annex I country. The statement has been removed in PD section 1.16. PP proved that by EIA approval, the project activity (which includes as well all project's components) is environmentally safe and sound. If environmental risks would exist in the project they would be assessed in the EIA and measures will be defined. If environmental risks would exist in the project they would be assessed in the EIA and measures will be defined. The correct application is monitored and need to be submitted to the Environmental Agency. EIA page 15-35	RINA had gone through the EIA during the site visit and the contract agreement and found that it is not a technology transfer but equipment transfer. The same has been included in the revised, hence closed. PP has provided the necessary documents and found appropriate.

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
		until 15.40 show the environmental impact assessment. All indicators are below the threshold and therefore no measures have to be applied (Renun_EIA_Matrix Evaluation).	
		• Prior to project commissioning, the project developer had organized a series of training together with the equipment supplier. The training conducted covered mainly the following topics: management of hydropower generation, operation and maintenance of the hydropower plant, operation and maintenance of turbine, generator, and other equipments. The training enables local staff to perform regular and safe operation and maintenance. This information has been added in PD section 1.9. Evidences for the training has been submitted to DOE (Renun_List of Training).	Training imparted prior to the project commissioning has been recorded and evidences were provided.. PP has submitted the relevant documents and found appropriate. Hence this CL is closed.
		• Project activity is complying with all law and regulations as it has been	PP has obtained and provided evidence of the clearance from forest department.

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
		described in EIA. EIA has been shown and submitted to DOE during Validation site visit. Construction permits need to be present in order to finalised an EIA. EIA has been shown and partly submitted to the DOE. Construction permits could not be found at the current time.	
		• Major risks involved to project activity are explained and rephrased in PD section 1.11.	Kindly brief the risks involved in the revised PD. The description is satisfactory. However kindly reframe the sentence to a meaningful one. PP has rephrased the sentence and is acceptable.
		• PP has provided Undertaking Letter marked to the registry stating that they will not go for any other form of environmental credits other than VCS.	Undertaking letter was provided by PP. RINA has verified the same and found appropriate.
		• This project has never been submitted to	The correction needs to be reflected in the revised PD.

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
		other GHG programs. PD has been revised in section 1.14.	PP has addressed the same in the revised PD.
		• The roles and responsibilities of the project proponent and other participants have been mentioned in PD section 1.15 table 3.	The correction has been incorporated in the revised PD and found acceptable.
		• Parties involved in this project have been clearly explained and stated in PD. PLN acts as Public entity with role as Project owner and South Pole Carbon Asset Management, Ltd as Private entity with role as Carbon Credit Buyer. This information can be found in PD section 1.15 table 3.	The correction has been incorporated in the revised PD and found acceptable.
		• Information regarding the eligibility and qualification of emission reductions or removal enhancements, including legislative, technical economical, sectoral, social, environmental, geographic, site-specific and temporal information has been added in PD section 1.16.	All the information has been included in the PD. However in this section, it is still mentioned that the project is implemented in an existing reservoir. Kindly clarify. PP has revised this section and is acceptable.

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
		PD has been revised by removing sentence mentioned about existing reservoir. The same has been checked on-site by DOE . Please see PD section 1.16. • The project proponent has no commercially sensitive information that has been excluded from the public version of VCS PD which will be displayed on the VCS project database.	Hence this CL is closed. The correction has been incorporated in the revised PD and found acceptable. Hence this CL is closed.
CL 2 • PP needs to provide information/Reference on methodology deviations/methodology revisions. • PP needs to discuss all the applicability conditions mentioned in the methodology and compliance to each of those conditions.	2.1.3,2.2.1	Sentence regarding deviation/revision of methodology has been incorporated in PD section 2.1. • Project activity installs a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant).	The correction needs to be incorporated in the revised PD. The same has to be mentioned in the PD. Necessary correction has been done in the revised PD. PP has mentioned all the tools used in this project activity. All applicability conditions are explained in the revised PD and found acceptable.

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
CL 3 • PP is requested to submit the electricity generation data which includes electricity generated in the plant, supplied to the grid and own consumption. • Kindly mention the major risks identified for the baseline. • Kindly provide all literatures and sources referenced.	2.4.4,2.4.6, 2.4.7	• The electricity generation data, which includes electricity generated in the plant, supplied to the grid and own consumption has been submitted to DOE during validation site visit. Please see the explanation in CAR 1. • Major risks involved to project activity are explained in PD. They are 1) Water supply 2) Natural disaster 3) Unexpected major machine breakdown. • All literatures and sources referenced have been submitted to DOE during validation site visit. All documents regarding electricity generation (export, import and own consumption) have been submitted to DOE (Renun_Electricity Production). Document Monthly Report Electricity Transaction has been submitted to DOE in hardcopy during onsite validation. Softcopy of monthly transaction is not	All mentioned documents have been submitted and verified. However from this document it is clear that electricity generates from December 2005 whereas as commissioned date of the unit is later than that. Refer CAR 1. Justification in CAR 1 is acceptable and hence this CL is closed. The correction has been incorporated in the revised PD and found acceptable. All literatures and sources referenced need to be listed by the PP. All sources used have been mentioned in the PD and literatures have been submitted by the PP. Hence this CL is closed.

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
		available due to size of the document.	
CL 4 The PP is requested to provide evidences stating the government is encouraging project developers to invest in fossil fuel fired power generation projects. The PP is requested to clarify the basis on which the third alternative is excluded. The PP needs to substantiate the exclusion with supporting evidences The PP is requested to justify the rejection of the third alternative with supportive evidences. PP needs to provide the investment comparison for the continuation of purchase and grid electricity generation mix with returns from the project activity. PP needs to justify why they have not considered lending rates from local banks as the benchmark. The risk free rates and premium risk are obtained from other countries which need to be justified with supporting evidences. When the PP is a government company based in the host country – Indonesia, who	2.5.1, 2.5.2, 2.5.3, 2.5.4	• Relevant document stating that the government is encouraging project developers to invest in fossil fuel fired power generation projects has been submitted to DOE. • According to methodology the ACM0002 version 10, the baseline is defined in the methodology as '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 the "Tool to calculate the emission factor for an electricity system". Therefore according to the Validation and Verification manual, no further analysis is required for other alternatives. According to the methodology and Validation and Verification manual, list of alternatives have been removed from	The same has been verified by RINA and found ok. PP has stated three alternatives, hence the rejection needs to be substantiated with supporting evidences.

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
is into the power generation sector, PP needs to demonstrate consideration of calculating country risk. The premium risk is provided for the country which is not specific to the project activity; kindly justify the application of the same for this project activity. PP to justify the appropriateness of the project type / industrial sector considered when calculating for beta value hence they need to correct the same in the financial calculation/WACC sheet provided to the DOE. PP needs to clarify whether the beta value chosen represents raw/unlevered or levered value. PP need to provide sources for chosen values for insurance, operation and maintenance, equity amount, operational life time of the project activity, fair value for the project at the end of the operational life time. When the loan was procured from Japanese bank why PP has used input values applicable for third country which is United States of America. Kindly justify the same with supporting evidences.		PD. No further analysis is required for other alternatives. If applying the "Tool for the demonstration and assessment of additionality" under ACM002, PP only needs to identify that there is at least one credible and feasible alternative that would be financially more attractive then the project activity. Therefore no other project alternatives need to be elaborated. Pease see paragraph (4) of the tool. • The benchmark incorporates also lending rate as part of WACC calculation. WACC calculation is chosen as the appropriate benchmark since the Capital employed in financing the project consists of Loan and Government's equity. The cost of equity is industry and country specific calculated and therefore reflects the investment of the underlying project activity. Evidence and article supporting WACC calculation has been shown, explained and submitted to DOE during validation site visit. Justification has been also explained in PD section 2.5	Explain the appropriateness of the chosen benchmark to the project activity transparently in the PD.

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
The PP is requested to provide justification on selection and the appropriateness of the chosen benchmark as per the EB guidance on investment analysis along with supporting documents. The PP is also requested to provide clarification on the pre-tax/ post-tax returns comparison with the benchmark. The PP is requested to provide the use of this arrangement consistently in their investment decisions for last three years which is in line with guidance provided on investment analysis by EB. PP to substantiate all arguments made under the performance of PLN with supportive evidences for all assumptions/ data provided. It has been mentioned that the project IRR without carbon revenue would be 2.98% which is differing from the value provided earlier. Kindly justify the same with supporting evidences. PP is requested to clarify on the use of other financial indicator – Net Present Value (NPV) for the project activity. PP is requested to provide the evidence for potential and installed capacities for Hydro		Please see explanation above and PD section 2.5. • Country risk data is not calculated; instead it is taken from related references. The justification and references have been noted and explained in PD. Country risk will reflect the economic risks for particular country affected by various risks for investing in such country. Regardless private or government entity, risks such as inflation, consumer confidence, political stability, currency, domestic economic strength etc will reflect on stability of index capital market value (Damodaran uses the standard deviation of equity market value and bond value to find country risk adjustment). As per guidance the proposed benchmark must be suitable for the specific project activity. The premium country risk is justified due to the fact that the project activity takes place in Indonesia and not in the US. Such	In Indonesia, the financial condition of entire country has not been as healthy as it has been verified through various sources submitted by the PP. In such conditions, the sector specific risk could not be established. However, the PP has come up with risk associated with the project have been calculated through country rick. PP has also taken the lowest beta value from energy sector which is conservative and hence accepted.

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
Power plants in Indonesia.		country risk therefore incorporate the additional risk an investor has to take by investing in Indonesia instead of in the US. As risk free rate the US treasury bill has been taken on which the country risk has been added. Please see further explanation in the supporting document (Renun_Risk Premium Damodaran). Biography of Damodaran has been removed in PD in section 2.5 step 2 investment analysis. Beta has been revised in benchmark calculation by using only electricity generation industry beta. The lowest Beta value since existence of database has been used for the WACC calculation to follow conservativeness. • Beta used is calculated by average taken from beta several related industry sector, they are electric generation, transmission and distribution sectors. Please see the explanation above.	Biography of Dr. Damodaran is not relevant to this project and the same has been removed from the revised PD. PP has calculated beta value considering similar type of industries i.e. Electricity Generation. The beta value has been taken from the year where the same has been the lowest which is conservative and in line with the requirement. This is acceptable Refer to the explanation give above.

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
		• Beta used represent levered beta since the project is mostly financed by Loan. Beta values, formula of this type cost of equity by Damodaran are adhered in the cash flow spreadsheet calculation along with reference footnotes. Please see the explanation above.	Refer to the explanation give above.
		• Source parameters for operation amount, operation life time, time of the project activity, fair value for the project are based on the feasibility report 1985 and detailed design report 1988 where such document have been shown and submitted to DOE during validation site visit. Investment analysis has been revised according to the project report 1993 as well as the values in PD pertinent to the investment analysis. About insurance reference, since the evidence supporting cash flow is just an expert opinion thus this parameter has been omitted from the cash flow.	The correction has been incorporated in the revised PD and found acceptable.
		• Evidence to show information about the	The correction has been incorporated in the

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
		loan financing the project activity has been shown in form of feasibility study 1985 in which containing the information about value of loan, tenor, interest charge, payment schedule and total investment value. Such document has been shown and submitted to DOE during validation visit.	revised PD and found acceptable.
		• Justification for benchmark appropriateness has been added in PD additionality section. Justification for chosen benchmark has been added in PD section 2.5.	The appropriateness of the chosen benchmark to the project activity is discussed transparently in the PD section 2.5. Since the PP planned to obtained loan from foreign bank and the equity from the government, the most appropriate bench mark would be WACC to assess the viability of the project. It is found conservative and hence accepted
		• Benchmark calculated is post-tax value, and such number is compared with post-tax IRR of the project. The clarification has been explained in PD.	The correction has been incorporated in the revised PD and found acceptable.
		• Arguments about poor financial performance of PLN has been supported by relevant document which are ADB's impact evaluation report and PLN's annual report. Such documents have	RINA has received ADB report stating the financial condition was poor for Pt PLN. IT is acceptable

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
		been submitted to DOE. Evidence stating the financial condition was poor is taken from ADB report. This supporting document has been submitted to DOE. • IRR calculation has been revised by using values from initial design. • Financial parameter NPV has been removed from PD. PD uses IRR as indicator of project feasibility. • Evidence for potential and installed capacities for Hydro Power Plant has been submitted to DOE.	The correction has been incorporated in the revised PD and found acceptable. The correction has been incorporated in the revised PD and found acceptable. The correction has been incorporated in the revised PD and found acceptable. Hence CL 2 is closed.
CL 5 The PP needs to clarify whether this project activity involves reservoir or not with supporting evidences. Units for electricity exported to the grid needs to be in KWh. This data of Diesel usage need not to be	3.1.3,3.2.2, 3.2.6, 3.4.3, 3.4.4, 3.4.6	• The project activity is a run-off-river type hydro power plant with a daily regulating pond. This mentioned in detailed design report 1988 and project completion report 2006. Please see the explanation in CAR 3.	Refer to CAR 3

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
monitored, if it is justified that the emission due to diesel usage is less than 1% of the total emission reductions. The statement in the PD that PP will make the data is not justified and acceptable. PP needs to have team structure wherein roles and responsibilities to each team members are defined. PP needs to identify procedures for emergency preparedness for cases where emergencies can cause unintended emissions During the site visit, calibration certificates were not made available. Provide the copy of the same. Procedures for archiving of the recorded data needs to be included in the monitoring plan. The monitoring plan appears futuristic which needs to be changed and made realistic with sufficient evidences to confirm the same. Procedures on data apportioning for the joint meter reading is not matching with the crediting period state date and are not evident in PD. Procedures to identify if meters are		• Units for electricity exported to the grid have been revised to kWh instead of MWh. PD has been revise accordingly. • Emission from diesel consumption of the project activity has been calculated less than 1% of the total emissions reduction, therefore these parameter no needs to be monitored. Please see the explanation in CAR 5. • Statement that "PP will make the data" has been revised to " Monitoring data has been made" • Organization structure for VCS team has been established integrated within existing organization structure of the Renun hydropower plant. • Procedures for emergency preparedness for cases where emergencies can cause unintended emissions will be established prior to the verification.	The correction has been incorporated in the revised PD and found acceptable. Refer to CAR 5 The correction has been incorporated in the revised PD and found acceptable. The correction has been incorporated in the revised PD and found acceptable. The correction has been incorporated in the revised PD and found acceptable.

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
functioning ok or faulty in between calibrations and procedures on action to be taken when such readings recorded with faulty meter are found. What is the permissible deviation between the main meter and check meter, to identify the faulty meter? There is a mention of annex 4 which is not in the PD, kindly clarify.		• Calibration certificates for all meters have been submitted to DOE. List of all calibration certificates has been submitted to DOE (Renun_Meter Calibration)	PP has provided all calibration certificates to the DOE and found in order, hence accepted.
		• Procedures for archiving of the recorded data have been included in the monitoring plan. PD is revised in section 3 accordingly.	The correction has been incorporated in the revised PD and found acceptable.
		• Monitoring plan has been revised to be more realistic. Responsibility for monitoring, monitoring procedures and emergency failure have been additionally described to be more specific. PD has been revised in section 3.4	PP has explained in detail and incorporated parameters those requires monitoring in the revised PD.
		• Procedures on data apportioning for the joint meter reading have been revised.	The correction has been incorporated in the revised PD and found acceptable.
		• Identification of the faulty meter has	The correction has been incorporated in the revised PD and found acceptable.

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
		been added in PD. • Information about permissible deviation has been added to PD. Exact procedure in terms of acceptable uncertainty will be defined in the SOP prior to verification. The word annex 4 has been removed in PD section 3. Monitoring.	 The PP has addressed the issue of permissible deviation and the same has been included in the revised PD which was found acceptable. Annex 4 written due to typographical erroe, the same has been removed from the revised PD. IT is found acceptable. CL 5 is closed.
CL 6 • Kindly provide the exact location for the reference of NCV of fuel. • Under step 3, the equation used is for option B and PP has mentioned that option C is selected. Kindly clarify. • PP needs to mention clearly whether option B1 or option B2 is selected.	4.1.1,4.1.4	• Exact location for the reference of NCV of fuel has been revised in PD section 3.3. • Calculation of grid emission factor for Sumatra has been revised in PD section 4.1. Please see the explanation in CAR 3. • Calculation of grid emission factor for Sumatra has been revised in PD section	The correction has been incorporated in the revised PD and found acceptable. Refer to CAR 3 Refer CAR 3. Justification in CAR 3 is accepted and hence this CL is closed. PP has still used the equation and the statement written above the equation in step

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
		4.1. Step 3 calculation the operation margin has been revised according to the tool. Pleasee see the explanation in PD section 4.	3 those are contradicting. The same have been incorporated in the PD. This is acceptable and hence this CL is closed.
		Sentence has been revised in PD section 4 step 3. The actual calculation of the emission factor has been done by the Indonesian DNA and has been excluded from the PD due to size.	PP has also mentioned that power plants are grouped and specified in a table, which is not there. Kindly submit the copy of the same. PP has provided a copy of the same and found relevant.
		Based on calculation, the set of power units describe as (b) in Sumatra grid comprises the larger annual generation than that of (a), the sample group (b) should be used for calculating the build margin of Sumatra grid. This explanation has been added in PD section 4 step 4.	Kindly elaborate step 4,it is not clear that which set of power units is selected for calculating build margin. PP has revised the section and found appropriate. Hence this CL is closed.
		Description of project emission from fossil fuel has been added in PD section 4.1 project emission.	Under project emissions, description regarding the emission due to usage of diesel is not mentioned. Refer to CAR 5 PP has included the description regarding diesel consumption in this section. It is

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
			found acceptable. Hence this CL is closed.
CL 7 PP needs to provide the proof for the reservoir area.	4.3.1,4.3.2, 4.3.3,4.3.4	Project activity is a run-off-river type hydropower plant with a daily regulating pond. Evidence can be found in detailed design report 1988 and project completion report 2006. Relevant document has been submitted to DOE. Detail explanation of the calculation of the project emission has been revised in PD section 4.1 and section 4.3.	RINA has verified the relevant documents and found to be satisfactory. Also explain the calculation of project emission in detail. The units of all the parameters used for calculating the same is not matching with the excel sheet submitted by the client. It is mentioned that COEF is calculated using option A. But later it is explained using option B. Kindly clarify. Kindly explain fossil fuel tool 1 and fossil fuel tool 4 as mentioned in the PD. Also provide the source for the same. Refer CAR 3 PP has provided a detailed explanation of the calculation of project emission in this section. Units of all the parameters mentione in the excel sheet is matching with the revised PD. Hence this CL is closed.
CL 8 PP is requested to submit the copy of the EIA for verification.	5.1,5.2	Document EIA has been submitted to DOE during validation site visit.	Refer to CL 1. EIA has been submitted by the client and

Draft report clarifications and corrective action requests	Ref. to table 1	Summary of project proponents' response	Validation team conclusion
		Please see the explanation in CL 1.	found appropriate. Hence this CL is closed.
CL 9 • Stakeholder consultation is not mandatory according to the regulations/ law in the host country. However relevant stakeholder was identified and meeting was conducted. PP needs to submit the documentary evidence for the same. • It is mentioned in the PD that stakeholder meeting was held to inform regarding the project rather than consultation. PP is required to justify on the same. • Also kindly clarify whether the project is a capacity up gradation project which is a complete contradictory to all the discussions that was done above. • The date and venue of meeting, mode of invitation for stakeholder consultation, persons invited, persons present for the stakeholder consultation, contact details and summary of comments received are not transparent in PD. Kindly provide evidences for all the above	6.1,6.2,6.3, 6.4,6.5	• Document evidence for stakeholder consultation has been submitted to DOE. Document of stakeholder consultation also with minutes of meeting has been sent to DOE (Renun_Stakeholder Consultation). • Justification on this statement can be found in document summary of stakeholder consultation. • Project activity is a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant). The project is a new power plant at site. Evidence can be found in the FS. • All information regarding stakeholder consultation has been added in PD section 6. Evidence has been submitted	RINA has checked the documents during the site visit. However PP needs to submit a copy of the same to RINA. PP also needs to submit if any comment was raised during the stake holder consultation process. The correction has been incorporated in the revised PD and found acceptable. Hence the CL is closed. . Justification is acceptable. PP has provided the necessary documents and is found appropriate. Hence this CL is closed.

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		to DOE.	
CL 10 Provide the schedule in detail and correct appropriately with change in start date mentioned. Documented evidence for the operational life time of the project has to be submitted.	7.1	• PD has been revised in section 7 for the schedule of project start date and crediting period. PD has been revised in section 7 schedule of the project start date and crediting period as per template by VCS. • Operational lifetime of the project is 30 years. This information is taken from feasibility study and detail design engineering. Relevant document has been submitted to DOE during validation site visit.	Kindly mention all the details as per the template provided by the VCS. PP has mentioned the important dates as far as for this project is concerned. Hence this CL is closed. The correction has been incorporated in the revised PD and found acceptable. Hence this CL is closed.