



# VALIDATION REPORT

SWB ERZEUGUNG GMBH & Co. KG.

NAM NGAN HYDROPOWER PROJECT

**Report No: 8000367780 - 08/581**

**Date: 2010-07-19**

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Final Approval by:  <b>Rainer Winter</b>	Organisational unit:  <b>TÜV NORD JI/CDM Certification Program</b>
Client:  <b>swb Erzeugung GmbH &amp; Co. KG</b>	Client ref.:  <b>Mr. Michael de Jong</b>
Summary:	<input checked="" type="checkbox"/> positive validation opinion <input type="checkbox"/> negative validation opinion
<p>swb Erzeugung GmbH &amp; Co. KG has commissioned the TÜV NORD JI/CDM Certification Program (CP) to validate the project: "Nam Ngan Hydropower Project" with regard to the relevant requirements of the UNFCCC for CDM project activities, as well as criteria for consistent project operations, monitoring and reporting. UNFCCC criteria include article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakech Accords) and the relevant decisions by COP/MOP and CDM Executive Board.</p> <p>In the course of the validation 21 Corrective Action Requests (CARs) and 4 Clarification Requests (CLs) were raised and successfully closed. 1 FAR has been raised which should be considered during the 1<sup>st</sup> periodic verification.</p> <p>The review of the project design documentation and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and review of comments by parties, stakeholders and NGOs have provided TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria.</p> <p>In detail the conclusions can be summarised as follows:</p> <ul style="list-style-type: none"> <li>- The project is in line with all relevant host country criteria (Vietnam) and all relevant UNFCCC requirements for CDM. Project activity approval has been obtained from DNA of Vietnam vide the Letter of Approval (HCA) dated 2007-07-30. DNA of Germany provides the LOA dated 2010-07-09.</li> <li>- The project additionality is sufficiently justified in the PDD.</li> <li>- The monitoring plan is transparent and adequate.</li> <li>- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 205,254 tCO<sub>2</sub>e are most likely to be achieved within the (1<sup>st</sup> renewable) crediting period.</li> </ul> <p>The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation.</p>	

Report No.: <b>8000367780 - 08/581</b>	Subject Group: <b>Climate Protection</b>
Report title:  <b>Nam Ngan Hydropower Project</b>	
Work carried out by:  <b>Tran Viet Hoang, Martin Saalman, Stefan Winter</b>	
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## Indexing terms

Climate protection  
Kyoto Protocol  
CDM  
Validation

- ☒ No distribution without permission from the client or responsible organisational unit
- ☐ Limited distribution
- ☐ Unrestricted distribution

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## Abbreviations

<b>BAU</b>	Business as usual
<b>CA</b>	Corrective Action
<b>CAR</b>	Corrective Action Request
<b>CDM</b>	Clean Development Mechanism
<b>CER</b>	Certified Emission Reduction
<b>CL</b>	Clarification Request
<b>CO<sub>2</sub></b>	Carbon dioxide
<b>CO<sub>2e</sub></b>	Carbon dioxide equivalent
<b>CP</b>	Certification Program
<b>DNA</b>	Designated National Authority
<b>EB</b>	CDM Executive Board
<b>EIA</b>	Environmental Impact Assessment
<b>FAR</b>	Forward Action Request
<b>GHG</b>	Greenhouse gas(es)
<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>PDD</b>	Project Design Document
<b>QC/QA</b>	Quality control/Quality assurance
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change
<b>VVM</b>	Validation and Verification Manual

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## 1 OBJECTIVE / SCOPE

The purpose of a validation is to have an independent third party assess the project design. In particular the project's baseline, the monitoring plan (MP), and the project's compliance with

- the requirements of Article 12 of the Kyoto Protocol;
- the CDM modalities and procedures as agreed in the Marrakech Accords under decision 3/CMP.1
- the annex to the decision;
- subsequent decisions made by COP/MOP & CDM Executive Board and
- other relevant rules, including the host country legislation and sustainability criteria

are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is seen as necessary to provide assurance to stakeholders on the quality of the project and its intended generation of certified emission reductions (CERs).

The validation scope is given as a thorough independent and objective assessment of the project design including especially: the correct application of the methodology, the project's baseline study, additionality justification, local stakeholder commenting process, environmental impacts and monitoring plan, which are included in the PDD and other relevant supporting documents, to ensure that the proposed CDM project activity meets all relevant and applicable CDM criteria.

The information included in the PDD and the supporting documents were reviewed against the requirements as set out by the UNFCCC. The validation team has, based on the requirements in the Validation and Verification Manual<sup>VVM</sup>, carried out a full assessment of all evidences to assess the compliance of the project with the key areas as outlined in section V.E. and V.F. of the VVM (version 1, EB 44, version 1.1, EB 51).

The validation is based on the information made available to TÜV NORD JI/CDM CP and on the contract conditions. TÜV NORD JI/CDM CP cannot be held liable by any entity for making its validation opinion based on any false or misleading information supplied to it during the course of validation.

The validation is not meant to provide any consulting to the project participants. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

## 2 GHG PROJECT DESCRIPTION

### 2.1 Project Characteristics

Essential data of the project is presented in the following Table 2-1.

**Table 2-1:** Project Characteristics

Item	Data
Project title	Nam Ngan Hydropower Project
Project size	<input type="checkbox"/> Large Scale <input checked="" type="checkbox"/> Small Scale
Project Scope (according to UNFCCC sectoral scope numbers for CDM)	<input checked="" type="checkbox"/> 1 Energy Industries (renewable- /non-renewable sources)
	<input type="checkbox"/> 2 Energy distribution
	<input type="checkbox"/> 3 Energy demand
	<input type="checkbox"/> 4 Manufacturing industries
	<input type="checkbox"/> 5 Chemical industry
	<input type="checkbox"/> 6 Construction
	<input type="checkbox"/> 7 Transport
	<input type="checkbox"/> 8 Mining/Mineral production
	<input type="checkbox"/> 9 Metal production
	<input type="checkbox"/> 10 Fugitive emissions from fuels (solid, oil and gas)
	<input type="checkbox"/> 11 Fugitive emissions from production and consumption of halocarbons and hexafluoride
	<input type="checkbox"/> 12 Solvents use
	<input type="checkbox"/> 13 Waste handling and disposal
	<input type="checkbox"/> 14 Afforestation and Reforestation
	<input type="checkbox"/> 15 Agriculture
Applied Methodology	AMS I.D. version 16: "Grid connected renewable electricity generation"
Crediting period	<input checked="" type="checkbox"/> Renewable Crediting Period (7 y) <input type="checkbox"/> Fixed Crediting Period (10 y)
Start of crediting period	2010-08-01

### 2.2 Involved Parties and Project Participants

The following parties to the Kyoto Protocol and project participants are involved in this project activity (Table 2-2).

**Table 2-2:** Project Parties and project participants

Characteristic	Party	Project Participant
Host party	Viet Nam	Nam Mu Hydropower Joint Stock Company
	Viet Nam	Energy and Environment Consultancy Joint Stock Company
Other involved party/ies	Germany	swb Erzeugung GmbH & Co. KG.

## 2.3 Project Location

The details of the project location are given in table 2-3:

**Table 2-3:** Project Location

No.	Project Location
Host Country	Vietnam
Region:	Quang Ngan and Viet Lam Communes, Vi Xuyen District, Ha Gian Province
Project location address:	Nam Mu Hydropower Joint Stock Company Office Address: Tan Thanh Commune, Bac Quang District, Ha Giang Province, Viet Nam
<b>Powerhouse</b>	
Latitude:	22°36'25" N
Longitude:	104°54'45" E
<b>Dam</b>	
Latitude:	22°36'17" N
Longitude:	104°54'10" E

## 2.4 Technical Project Description

The proposed project activity is the implementation of one run-of-river hydro power plant with a total capacity of 13.5 MW. The project has implemented two turbines and generators each with a capacity of 6.75 MW. According to the project design a dam is installed to divert the water from Nam Ngan River to an intake canal and afterwards to a pressure pipe which feeds the two Francis turbines with water. Afterwards the water is discharged to another river named Vat. The produced electricity is supplied to Vietnamese National Grid.

The emission reductions are due to the replacement of electricity supplied by the National Grid of Vietnam, which is predominated by thermal power plants.

The key parameters of the project are given in table 2-4. As the project is close to start commissioning the parameters included in the table below are from the nameplates and contracts of the equipment.

**Table 2-4:** Technical data of the hydropower project

Parameter	Unit	Value
<b>Turbine</b>		
Manufacturer	-	Hunan Ling Ling Hengyuan Generating Equipment Co. Ltd., China
Type	-	Francis with horizontal shaft (HLA 743 – WJ - 81)
Number of units	-	2
Capacity	MW	6.995
Rated net head	m	116.7
Turbine discharge	m³/s	6.64





Parameter	Unit	Value
Rated speed	rpm	1000
<b>Generator</b>		
Manufacturer	-	Hunan Ling Ling Hengyuan Generating Equipment Co. Ltd., China
Type	-	SFW 6750 – 6/1780
Number of units	-	2
Capacity	MW	6.75
Rated voltage	kV	6.3

### 3 METHODOLOGY AND VALIDATION SEQUENCE

#### 3.1 Validation Steps

The validation of the project consisted of the following steps:

- Contract review
- Appointment of team members and technical reviewers
- Publication of the project design document (PDD)
- A desk review of the PDD<sup>/PDD/</sup> submitted by the client and additional supporting documents with the use of customised validation protocol<sup>/CPM/</sup> according to the Validation and Verification Manual<sup>/VVM/</sup>,
- Validation planning,
- On-Site assessment,
- Background investigation and follow-up interviews with personnel of the project developer and its contractors,
- Draft validation reporting
- Resolution of corrective actions (if any)
- Final validation reporting
- Technical review
- Final approval of the validation.

The sequence of the validation is given in the table 3.1 below:

**Table 3.1:** Validation sequence

Topic	Time
Assignment of validation	2008-11-18
Submission of PDD for global stakeholder commenting process	2008-12-17
On-site visit	2009-02-03
Draft reporting finalised	2009-04-18
Technical review on draft reporting finalised	2009-04-19
Final reporting finalised	2010-06-16
Technical review on final reporting finalised	2010-06-23

### 3.2 Contract review

To assure that

- the project falls within the scopes for which accreditation is held,
- the necessary competences to carry out the verification can be provided,
- Impartiality issues are clear and in line with the CDM accreditation requirements

a contract review was carried out before the contract was signed.

### 3.3 Appointment of team members and technical reviewers

On the basis of a competence analysis and individual availabilities a verification team, consistent of one team leader and 2 additional team members, were appointed. Furthermore also the personnel for the technical review and the final approval were determined.

The list of involved personnel, the tasks assigned and the qualification status are summarized in the table 3-2 below.

**Table 3-2:** Involved Personnel

	Name	Company	Function <sup>1)</sup>	Qualification Status <sup>2)</sup>	Scheme competence	Technical competence <sup>4)</sup>	Host country Competence	Team Leading competence
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Tran Viet Hoang	TÜV NORD Vietnam Co., Ltd.	TM	TE	<input type="checkbox"/>	-	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Rainer Winter	TÜV NORD CERT, Germany	TR/FA <sup>3)</sup>	SA	<input checked="" type="checkbox"/>	S	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Stefan Winter	TÜV NORD CERT, Germany	TM	E	<input checked="" type="checkbox"/>	S	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Martin Saalman	TÜV NORD CERT, Germany	TL	SA	<input checked="" type="checkbox"/>	-	<input type="checkbox"/>	<input checked="" type="checkbox"/>

<sup>1)</sup> TL: Team Leader; TM: Team Member, TR: Technical review; FA: Final approval

<sup>2)</sup> GHG Auditor Status: A: Assessor; E: Expert; SA: Senior Assessor; T: Trainee; TE: Technical Expert

<sup>3)</sup> No team member

<sup>4)</sup> As per S01-MU03 or S01-VA070 A2 (such as A, B, C.....)

Certificates of appointment for the above mentioned team members are enclosed in annex 6 of this report.

### **3.4 Consideration of Public Stakeholder Comments**

Acc. to the modalities and procedures the draft PDD, as received from the project participants, has been made publicly available on the dedicated UNFCCC CDM website prior to the validation activity commenced. Stakeholders have been invited to comment on the PDD within the 30 days public commenting period.

In case comments were received, they are taken into account during the validation process. The comments and the discussion of the same are documented in annex 5 of this report.

### **3.5 Validation Protocol**

In order to ensure consideration of all relevant assessment criteria, a validation protocol is used. The protocol shows, in a transparent manner, criteria and requirements, means of validation and the results from pre-validating the identified criteria. The validation protocol reflects the generic CDM requirements each CDM project has to meet as well as project specific issues as applicable. The validation protocol serves the following purposes:

- It organises, details and clarifies the requirements that a CDM project is expected to meet;
- It ensures a transparent validation process where the validating entity will document how a particular requirement has been validated and the result of the determination.

The validation protocol as described in Figure 1.

<b>Validation Protocol Table A-1: Requirement checklist</b>				
<b>Checklist Item</b>	<b>Validation Team Comment</b>	<b>Reference</b>	<b>Draft Conclusion</b>	<b>Final Conclusion</b>
<i>The checklist items in Table A-1 are linked to the various requirements the project should meet. The checklist is organised in various sections. Each section is then further sub-divided as per the requirements of the topic and the individual project activity.</i>	<i>The section is used to elaborate and discuss the checklist item in detail. It includes the assessment of the validation team and how the assessment was carried out. The reporting requirements of the VVM shall be covered in this section.</i>	<i>Gives reference to the information source on which the assessment is based on</i>	<i>Assessment based on evidence provided if the criterion is fulfilled (OK), or a CAR, CL or FAR (see below) is raised. The assessment refers to the draft validation stage.</i>	<i>In case a corrective action or a clarification the final assessment at the final validation stage is given.</i>

**Figure 1:** Validation protocol tables

The completed validation protocol is enclosed in Annex 1 to this report.

### 3.6 Review of Documents

The published PDD (version 1.0) and supporting background documents related to the project design and baseline were reviewed.

Furthermore, the validation team used additional documentation by third parties like host party legislation, technical reports referring to the project design or to the basic conditions and technical data.

### 3.7 Follow-up Interviews

The validation team has carried out interviews in order to assess the information included in the project documentation and to gain additional information regarding the compliance of the project with the relevant criteria applicable for CDM.

During validation the validation team has performed interviews to confirm selected information and to resolve issues identified in the document review. The main topics of the interviews are summarized in table 3-3.

**Table 3-3:** Interviewed persons and interview topics

<b>Interviewed Persons / Entities</b>	<b>Interview topics</b>
Project participant representatives Project consultant	<ul style="list-style-type: none"> <li>- Chronological description of the project activity with documents of key steps of the implementation.</li> <li>- Technical details of the project realization, project feasibility, designing, operational life time, monitoring</li> </ul>

Interviewed Persons / Entities	Interview topics
	of the project - Letter of Approval of Viet Nam - Approval procedures and status - Monitoring and measurement equipment and system - Monitoring procedures - Financial aspects - Crediting period - Project activity starting date - CER allocation / ownership - Baseline study assumptions - Additionality - Environmental impact - Host country laws and regulation - Sustainable development issues - Analysis of local stakeholder consultation - Roles & responsibilities of the project participants w.r.t. project management, monitoring and reporting - Editorial issues of the PDD
DNA of Viet Nam	- Approval procedures and timelines - Allocation of DNA responsibilities - Emission Factor data - Transparency of information
Official from EVN Energy Institute	- Emission factor calculation
Stakeholders	- Stakeholder involvement procedure - Impacts of the project - Opinion to the project

A comprehensive list of all interviewed persons is part of section 7 'References'.

### 3.8 Project comparison

The validation team has compared the proposed CDM project activity with similar projects or technology that have similar or comparable characteristics and with similar projects in the host country in order to achieve additional information esp. regarding:

- Project technology
- Additionality issues
- Reasons for reviews, requests for reviews and rejections within the CDM registration process.

During time of validation only a few hydropower projects were registered. Thus a comparison to already registered project activities is very limited. However, experiences with other validations of hydro projects in Viet Nam were taken into consideration.

## **3.9 Resolution of Clarification and Corrective Action Requests**

### **3.9.1 Definition**

A **Corrective Action Request (CAR)** will be established where:

- mistakes have been made in assumptions, application of the methodology or the project documentation which will have a direct influence the project results,
- the requirements deemed relevant for validation of the project with certain characteristics have not been met or
- there is a risk that the project would not be registered by the UNFCCC or that emission reductions would not be able to be verified and certified.

A **Clarification Request (CL)** will be issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.

A **Forward Action Request (FAR)** will be issued when certain issues related to project implementation should be reviewed during the first verification.

### **3.9.2 Draft Validation**

After reviewing all relevant documents and taken all other relevant information into account, the validation team issues all findings in the course of a draft validation report and hands this report over to the project proponent in order to respond on the issues raised and to revise the project documentation accordingly.

### **3.9.3 Final Validation**

The final validation starts after issuance of the proposed corrective action (CA) of the CARs CLs and FARs by the project proponent. The project proponent has to reply on those and the requests are “closed out” by the validation team in case the response is assessed as sufficient. In case of raised FARs the project proponent has to respond on this, identifying the necessary actions to ensure that the topics raised in this finding are likely to be resolved at the latest during the first verification. The validation team has to assess whether the proposed action is adequate or not.

In case the findings from CARs and CLs cannot be resolved by the project proponent or the proposed action related to the FARs raised cannot be assessed as adequate, no positive validation opinion can be issued by the validation team.

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The CAR(s) / CL(s) / FAR(s) are documented in chapter 4.

### **3.10 Technical review**

Before submission of the final validation report a technical review of the whole validation procedure is carried out. The technical reviewer is a competent GHG auditor being appointed for the scope this project falls under. The technical reviewer is not considered to be part of the verification team and thus not involved in the decision making process up to the technical review.

As a result of the technical review process the validation opinion and the topic specific assessments as prepared by the validation team leader may be confirmed or revised. Furthermore reporting improvements might be achieved.

### **3.11 Final approval**

After successful technical review of the final report an overall (esp. procedural) assessment of the complete validation will be carried out by a senior assessor located in the accredited premises of TÜV NORD.

Only after this step the request for registration can be started (in case of a positive validation opinion).



## 4 VALIDATION FINDINGS

In the following table the findings from the desk review of the published PDD, visits, interviews and supporting documents are summarised:

**Table 4-1:** Summary of CARs, CLs and FARs issued

Validation topic <sup>1)</sup>	No. of CAR	No. of CL	No. of FAR
General description of project activity (A) - Project specification - Technical project description - Participation - Contribution to sustainable development - PDD editorial aspects - Technology to be employed	4	-	-
Project Baseline, Additionality and Monitoring Plan (B) - Application of the Methodology - Project Boundary - Baseline identification - Calculation of GHG emission reductions Project emissions Baseline emissions Leakage - Additionality determination - Monitoring Methodology - Monitoring Plan - Project management planning	13	4	-
Duration of the Project / Crediting Period (C)	1	-	-
Environmental impacts (D)	2	-	1
Stakeholder Comments (E)	1	-	-
<b>SUM</b>	<b>21</b>	<b>4</b>	<b>1</b>

<sup>1)</sup> The letters in brackets refer to the validation protocol

The following tables include all raised CARs, CLs and FARs. For an in depth evaluation of all validation items it should be referred to the validation protocols (see Annex 1).

The findings of validation process are summarized in the tables below.

Finding A1	
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The letter of approval from Germany is not available in this stage of validation. The project participant is requested to provide it before the documentation can be submitted for registration.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The Letter of Approval from Germany will be submitted by SWB Erzeugung GmbH & Co.KG before submitting for registration.
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>Ok, the LOA has been checked by the validation team. The content is fully in compliance with the regulation of the CDM. The document is reliable; the validation team has received a scanned version of the LOA.</p> <p>It has further been checked that the title and project participant is consistent with the information provided in the PDD and any other document.</p> <p>Hence, CAR is closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding A2	
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	For unique identification of the proposed project activity the longitudes and latitudes of dam and power house should be provided separately in section A.4.1.4.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The longitudes and latitudes of dam and power house have been added separately in section A.4.1.4 of the revised PDD/version 2.3.
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>Ok, the PDD has been revised adequately. Unique identification of the dam and the power house is possible since the coordinates are provided in hours, minutes and seconds.</p> <p>The coordinates are derived from the feasibility study and internet based maps. The sources have been checked and information provided is confirmed.</p> <p>CAR is closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input type="checkbox"/> The project complies with the requirements

Finding A3	
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	Evidences should be provided regarding the share of tax to the GDP of the province (page 4).
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	Evidences from Statistic Book and Excel sheet are attached with the revised PDD/version 2.3.
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Ok, the document provided "Statistic Book of Vietnam 2007" has been checked to confirm the calculation and figure provided in the PDD. The statistical yearbook is published by the Vietnamese government. The source is therefore assessed as reliable. CAR is closed.
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input type="checkbox"/> The project complies with the requirements

Finding A4	
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The table 1 provided on page 7 is inconsistent according to values checked from nameplates during on-site visit. Deviations were observed according to the classification of the turbine, the turbine discharge and efficiency of generator. Correction is requested.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The following corrections have been made in the revised PDD: <ul style="list-style-type: none"> <li>• Turbine discharge: 6.64m<sup>3</sup>/s</li> <li>• Efficiency of generator: 97.27%</li> <li>• Classification of the turbine: HLA 743 – WJ – 81</li> </ul>
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The PDD has been corrected according to the observations during on-site visit. The technical parameters provided in the PDD are in line with the information on the nameplates. The information has further been cross checked with the equipment purchase contract. In conclusion, the information provided in the PDD is correct. Therefore CAR is closed.
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input type="checkbox"/> The project complies with the requirements

Finding B1	
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Finding B1	
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The explanation given under Figure 3 on page 10 is not comprehensible. It leads to misunderstandings as per methodology leakage must not be considered. Revision is requested.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The explanation given under Figure 3 has been deleted to avoid misunderstanding.
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Ok, the PDD has been revised accordingly. Misleading description has been deleted. CAR is closed.
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input type="checkbox"/> The project complies with the requirements

Finding B2	
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	AMS I.D. gives a clear definition of how to derive the baseline for this specific project activity (refer to AMS I.D. paragraph 9). Thus a step wise approach is not necessary. The section B.4. should be revised considering the "guidelines for completing the SSC PDD" which gives a clear explanation about the content of this section. The client is requested to revise the section accordingly.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	Section B.4 has been revised according to the guidelines for completing the SSC PDD.
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>Not ok, since the version of the methodology changed and baseline approach is expressed different.</p> <p>In the validation process the methodology has been changed to version 16. Since, the applied version 13 of the published PDD is not anymore valid the latest version 16 shall be applied and corresponding corrections with regard to</p> <ul style="list-style-type: none"> <li>a) The applicability and</li> <li>b) The ER calculation</li> <li>c) Baseline</li> <li>d) Monitoring</li> </ul>
<b>Corrective Action #2</b>	The PDD has been revised accordingly. Information provided is adjusted to the latest version.

	Finding B2
<b>DOE Assessment #2</b>	<p>Ok, the PDD has been revised considering the applicability criteria and emission reduction approach.</p> <p>The project is assessed as applicable since</p> <ol style="list-style-type: none"> <li>1) It is a hydropower plant serving the national grid of Vietnam.</li> <li>2) The capacity is 13.5 MW which is below 15 MW.</li> <li>3) It further is defined as Greenfield plant since no unit has been installed at the site before.</li> <li>4) The project results in a new reservoir where the power density is higher than 4 W/m<sup>2</sup>.</li> </ol> <p>The information could be confirmed by means of on-site visit, interviews<sup>/IM01/</sup> and document check<sup>/EPC/</sup>.</p> <p>The emission reduction calculation is in line with the stipulations as set out in AMS I.D. version 16. The methodology and section 6 of the PDD have been compared to verify this.</p> <p>The baseline is expressed in line with the methodology as:  “(…) the baseline scenario is the electricity delivered to the grid by the project activity that otherwise would have been generated by the operation of grid-connected power plants and by the addition of new generation sources.”</p> <p>It is in compliance with the applied methodology and national circumstances in Vietnam. This has been verified by means of checking the methodology and calculation applied<sup>/BS/</sup> and by means of interviewing the responsible person provided the data for emission factor determination.<sup>/IM04/</sup> The data is provided by EVN the national monopolist for electricity supply.</p> <p>The monitoring section in the PDD has also been adjusted and is now reflecting the requirements of AMS I.D. with regard to project emissions resulting from a reservoir. It is shown that the design of the reservoir doesn't lead to project emissions since the power density (10.3 W/m<sup>3</sup>) is above 10 W/m<sup>2</sup>. The monitoring plan includes all relevant parameters to determine the project emissions ex post, if relevant.</p> <p>Therefore CAR is closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

	Finding B3
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR

	Finding B3
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>The benchmark used to substantiate an investment barrier should be discussed more detailed, as the approach given is not especially provided by the guidance from CDM EB. The client is requested to provide the sources of investigation to exclude the approaches for a benchmark stipulated by the CDM EB meeting 41, Annex 45. If the WACC approach is used, evidences should be provided with regard to utilizing standard market rates as stipulated by the additionality tool on page 6, para 9.</p>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>To reflect that the approach is in compliance with the EB rules, the financial analysis has been rewritten. Please see Section B.5 of the revised PDD/version 2.3. The approach was referred to the "Estimates of the cost of financing and required return on capital" as introduced in the additionality tool (version 05.2) page 6, Annex 10, EB 39. As instructed further in para 12 of Guidance on Assessment of Investment Analysis (version 03), Annex 58, EB 51, "Local lending rates or weighted average costs of capital (WACC) are appropriate benchmarks for a project IRR". Thus the WACC is applied to estimate the required return on capital as a benchmark for this project IRR. However, the rate of return on equity is a country-specific but not an internal rate of return of the investor in order to comply with the EB rules.</p> <p>An interview with another independent financial expert in Vietnam also showed that the WACC analysis is a common practice in conducting the financial analysis for power generation investments in Vietnam.</p> <p>To reflect the risk profile of the hydropower sector and to prove that the chosen country-specific rate as the rate of return on equity is the most conservative one, the CAPM model using the data from Vietnamese companies listed in the Vietnam stock market has been run to derive the cost of equity for investment projects in the hydropower sector in Vietnam. All the data sources have been submitted to the DOE. The result of the simulation shows that the country required return used as the cost of equity is the lowest value compared to the cost of equity for investment projects in hydropower sector. It then is chosen in the analysis to ensure the conservativeness. For more detail, please find in the revised PDD version 2.3.</p>



	Finding B3
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The explanation and justification provided by the client is reasonable. The approach chosen is fully in line with the stipulations as defined in EB 51, Annex 58. It is confirmed by the DOE that the applied WACC approach is a suitable figure to compare with the project IRR.</p> <p>The explanation provided by the PP in section B.5 of the PDD is detailed and gives a clear view on chosen parameters, sources and calculation approaches. All documents and sources provided in the response above and in the PDD have been checked by the validation team and results are verified. DOE confirms that everything is in line with the CDM regulations and all data presented is checked. No mistakes have been observed. For a detailed analysis of each parameter, please refer to Annex 3 of this report.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

	Findings B4
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>Section B.5. of the PDD should include a clear description of the milestones for the action taken to secure CDM benefits as per EB41, Annex 46, paragraph 5. The client is also requested to include important milestones of project implementation (e.g. start of construction etc.).</p>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The Major milestones and description in developing the investment project and CDM application has been added in the revised PDD.</p>
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The PDD has been revised by PP incorporating a table which includes the CDM and the project milestones. The information is provided in a transparent and accurate way.</p> <p>TÜV NORD was able to check the documents listed during on-site visit. The information was back-up by means of interview with the project operator. Deviations have not been observed. Therefore, TÜV NORD came to the conclusion that the timeline as presented in the PDD is in line with the stipulations as provided in EB 49, Annex 22.</p> <p>CAR is therefore closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

	Finding B5		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	As per the "Tool to calculate the emission factor for an electricity system" the parameter $EF_{EL,m,y}$ should be calculated based on appropriate option given in step 3 (a) for the simple OM calculation. Clarification should be provided which option was chosen.		
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	In step 3 (a), the simple OM has been calculated according to Option A which is based on data on fuel consumption and net electricity generation of each power plant/unit. The parameter $EF_{EL,m,y}$ is only considered when Option B, which is based on data on net electricity generation, the average efficiency of each power unit and the fuel type(s) used in each power unit, is applied. Therefore, the parameter $EF_{EL,m,y}$ is not applicable in the calculation of emission factor for this project.		
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The response given by the project participant is correct. In accordance with the methodology and data available Option A is used to calculate the simple operating margin. Therefore it is not necessary to consider $EF_{EL,m,y}$ . The PDD has been revised reflecting the content of the latest revision of the "Tool to calculate the emission factor for an electricity system". Hence CAR is closed.		
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Appropriate action was taken <input type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements		

	Finding B6		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	To ensure conservativeness the emission reductions should be down rounded. Thus the client is requested to revise all corresponding sections where the emission reductions are referenced and the corresponding Excel calculation sheet.		
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The emission reductions have been down rounded. All corresponding sections have been revised. The electricity generation of Nam Ngan hydropower plant has been updated based on documents available at the time of making the investment decision (Please in the excel sheet in details), so the emission reductions increase slightly.		
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Ok, for the sake of conservativeness the client down rounded the emission reductions over the first crediting period. Correction in the revised PDD is appropriate. CAR is closed.		



Finding B6	
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input type="checkbox"/> The project complies with the requirements

Finding B7			
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	In section B.6.2. the purpose of each parameter should be indicated, i.e. for calculation of $EF_{OM}$ or $EF_{BM}$ . A reference to the Annex 3 should be provided under "Value applied".		
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The purpose of each parameter has been indicated in "Any comment" field of tables in Section B.6.2. A reference to Annex 3 has been provided under "Value applied".		
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Ok, the PDD has been revised. The parameters which remain fixed throughout the crediting period are clearly and transparently provided. CAR is therefore considered to be closed out.		
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input type="checkbox"/> The project complies with the requirements		

Finding B8			
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The monitoring section B.7.1. needs to be revised according to the following issues: 1. The client is requested to include the parameters $EG_{EXP}$ (Electricity Exports) and $EG_{IMP}$ (Electricity Imports) to derive $EG_y$ . It should be made clear for $EG_y$ that this is a calculated parameter which is determined by the exports and imports of electricity. 2. The frequency of measurement and recording as per the methodology should be included in the table to the parameters $EG_{EXP}$ and $EG_{IMP}$ .		
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	1. The parameters $EG_{y, export}$ ; $EG_{y, import}$ have been added. And the parameter $EG_y$ has clearly determined by the formula in the "Any comment" field of each parameters. 2. The frequency of measurement and recording as per the methodology has been added into tables of parameters $EG_{y, export}$ ; $EG_{y, import}$ .		

	Finding B8
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>Ok, section B.7.1 has been revised taking into account imports and exports to derive the net electricity generation <math>EG_y</math>. Furthermore the monitoring frequency has been added. Information provided is in line with the methodology.</p> <p>The revised section 7 ensures a transparent and complete monitoring in accordance to the methodology.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

	Finding B9
<b>Classification</b>	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>Clarification is requested whether the project owner implemented an auxiliary electricity line during construction. If it is so confirmation should be given that the line will not be used during project operation. Otherwise this must be included in the monitoring plan and deducted from the emission reductions.</p>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The project owner confirms that the auxiliary electricity line will not be used during the project operation. This information has been added to Section B.7.2 in the revised PDD.</p>
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>Ok, considering the confirmation of the project owner, it is not necessary to monitor electricity imported from the line.</p> <p>CL is closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input type="checkbox"/> The project complies with the requirements

	CAR B10
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>The monitoring section in the Annex needs to be revised according to the following issues:</p> <ol style="list-style-type: none"> <li>1. A figure should be indicated showing meter location and bus bars used for electricity supply.</li> <li>2. The accuracy of the meters should be provided.</li> <li>3. Information should be provided if the meters are of bi-directional nature.</li> <li>4. Equations need to be addressed defining how to derive to the net electricity generation of each station.</li> </ol>

CAR B10	
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The monitoring section in the Annex has been revised per request, including:</p> <ol style="list-style-type: none"> <li>1. The figure indicates the location of power meters in the figure in Annex 4</li> <li>2. The accuracy of the meters has been provided in Annex 4 under Section "A. Description of technical equipment".</li> <li>3. The power meters at the connection point are bi-directional nature. This information has been added in section B.7.2 of the revised PDD.</li> <li>4. The equation "<math>EG_{BL,y} = EG_{y,export} - EG_{y,import}</math>" has been addressed to derive the net electricity generation (<math>EG_{BL,y}</math>) in section B.7.2</li> </ol>
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<ol style="list-style-type: none"> <li>1. The figure indicated in Annex 4 to the report could be verified by means of on-site visit and through checking the wiring diagram.<sup>/WD/</sup> Correctness is confirmed.</li> <li>2. The accuracy of the meters is 0.2S which has been confirmed by means of checking the type description of meters most likely implemented.<sup>/TD/</sup> It should be noted that final decision on meter implementation was not taken at the time of validation and therefore monitoring plan includes information that meters will have accuracy not less than 0.5S which is assessed to be sufficient based on experiences TÜV NORD made during validation and verification of other hydro projects worldwide.</li> <li>3. Ok, confirmation has been provided that the meters will be bi-directional.</li> <li>4. The formula is assessed to be correct and in line with the methodology. It is ensured that the net electricity generation can be accurately calculated.</li> </ol> <p>All issues raised could be sufficiently responded. Hence, CAR is closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<p> <input type="checkbox"/> To be checked during the first periodic verification  <input checked="" type="checkbox"/> Appropriate action was taken  <input type="checkbox"/> Project documentation was corrected correspondingly  <input type="checkbox"/> Additional action should be taken  <input checked="" type="checkbox"/> The project complies with the requirements         </p>

Finding B11			
<b>Classification</b>	<input type="checkbox"/> CAR	<input checked="" type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>In the Excel sheet provided to show the calculation of benchmark and IRR of the project activity two different tariffs for electricity are indicated. It should be referred to sheet "Project Info", cell G 32, 820 VND/kWh and to sheet "Assumptions", cell E 46, 608 VND/kWh. The client is requested to provide clarification regarding this finding.</p>		

Finding B11																																																									
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The tariff referred in sheet "Project Info", cell G 32, 820 VND/kWh was calculated wrongly (has to be divided for the total electricity of the project referred but it was obtained by dividing for those of Nam Ngan). This information was revised in the excel sheet and the highest tariff of the hydropower projects that were accessible at the time of making investment decision (Feb 2006) was applied in the analysis.</p>																																																								
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>Ok, the spreadsheet has been revised. The justification provided by the PP is conclusive due to the following reasons:</p> <ol style="list-style-type: none"> <li>1. TÜV NORD conducted several hydro validations in Vietnam and a tariff of 820 VND/kWh has never been observed.</li> <li>2. A tariff of 608 VND/kWh is applied and assessed as most suitable since it is higher than the tariff provided in the pre-negotiation document and the power purchase agreement<sup>/PPA/</sup>.</li> <li>3. The following table with information derived from other registered hydro projects has been established by TÜV NORD to compare the tariff with other projects:</li> </ol> <table border="1"> <thead> <tr> <th>Reg. No.</th> <th>Price VND/kWh (excl. VAT)</th> <th>Invest USD/kW</th> <th>Capacity (MW)</th> </tr> </thead> <tbody> <tr><td>2367</td><td>602</td><td>1117,9</td><td>5.6</td></tr> <tr><td>2368</td><td>595</td><td>1122</td><td>5.5</td></tr> <tr><td>2371</td><td>595</td><td>855,9</td><td>2.4</td></tr> <tr><td>2372</td><td>592</td><td>707,3</td><td>8.7</td></tr> <tr><td>2627</td><td>603</td><td>1261,5</td><td>15</td></tr> <tr><td>2878</td><td>608</td><td>1244,5</td><td>15.6</td></tr> <tr><td>2891</td><td>595</td><td>1137,7</td><td>3.6</td></tr> <tr><td>2971</td><td>604</td><td>1225,9</td><td>20</td></tr> <tr><td>2978</td><td>602</td><td>1127,5</td><td>18</td></tr> <tr><td>3034</td><td>606</td><td>1192</td><td>14</td></tr> <tr><td>3051</td><td>603</td><td>1228</td><td>19,5</td></tr> <tr><td>3255</td><td>602</td><td>1163,5</td><td>6,4</td></tr> <tr><td>3256</td><td>608</td><td>1115,3</td><td>7,5</td></tr> </tbody> </table> <p>The table shows that the average grid tariff is about 601 VND/kWh, i.e. far from 820 VND/kWh. Based on this information TÜV NORD concluded that the explanation is sufficient and CL is therefore closed.</p>	Reg. No.	Price VND/kWh (excl. VAT)	Invest USD/kW	Capacity (MW)	2367	602	1117,9	5.6	2368	595	1122	5.5	2371	595	855,9	2.4	2372	592	707,3	8.7	2627	603	1261,5	15	2878	608	1244,5	15.6	2891	595	1137,7	3.6	2971	604	1225,9	20	2978	602	1127,5	18	3034	606	1192	14	3051	603	1228	19,5	3255	602	1163,5	6,4	3256	608	1115,3	7,5
Reg. No.	Price VND/kWh (excl. VAT)	Invest USD/kW	Capacity (MW)																																																						
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<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input type="checkbox"/> The project complies with the requirements																																																								

Finding B12			
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR

Finding B12	
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>With regard to the IRR calculation the following was detected:</p> <ol style="list-style-type: none"> <li>1. The unit of surface area of reservoir is not indicated in sheet "Project Info". Revision is requested.</li> <li>2. The electricity revenues calculated in sheet "Project cash flow" are including VAT. However, according to EB 51, Annex 58, paragraph 5 taxation should be excluded, if the IRR is calculated on after tax basis. Please clarify this and ensure that it is made clear in the PDD, whether project IRR is calculated on after or before tax basis.</li> <li>3. In sheet "Assumption" several tables are included where the necessity is not clear. Especially the cells from column "P" need clarification.</li> </ol>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<ol style="list-style-type: none"> <li>1. The surface area and its unit in the excel sheet has been added according to the FS.</li> <li>2. The benchmark applied is the post-tax benchmark. According to EB51, Annex 58, paragraph 5, "Taxation should only be included as an expense in the IRR/NPV calculation in cases where the benchmark or other comparator is intended for post tax comparisons". However the VAT is usually considered as neutral in cash flow analysis. Hence the electricity price used for calculation of cash flow was excluded VAT.</li> <li>3. These tables are only supporting tables for certain functions in Excel calculation. Column P is the condition to identify that the project owner will fall under which kind of revenue tax preferences regulated by the government. The unnecessary logic value "After" and "Before" have been deleted in the Excel sheet and the colour has been changed relatively.</li> </ol>
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<ol style="list-style-type: none"> <li>1. The surface area is 1,31 km<sup>2</sup> and provided in the Excel calculation sheet. The value has been cross checked with the feasibility study report.<sup>/FSR/</sup></li> <li>2. It is made clear that the IRR is a project IRR calculated on after tax basis. The VAT has not been considered in the analysis. It is excluded. The corresponding calculation sheet has been checked by the validation team and correctness is confirmed.</li> <li>3. Ok, explanation is sufficient to understand the function of these cells.</li> </ol> <p>Depreciation and other non-cash related items are not considered as cash-outflow.</p> <p>Appropriate and sufficient information has been provided and Excel sheet/ PDD has been revised.</p> <p>CAR is closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<p> <input type="checkbox"/> To be checked during the first periodic verification  <input checked="" type="checkbox"/> Appropriate action was taken  <input checked="" type="checkbox"/> Project documentation was corrected correspondingly  <input type="checkbox"/> Additional action should be taken  <input checked="" type="checkbox"/> The project complies with the requirements </p>

Finding B13	
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	A discussion about the outcome of the sensitivity analysis should be provided in section B.5. Explanation should be given why it will most likely not be the case that each of the parameters will reach/cross the benchmark.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The discussions about the likeliness of the case that each of the parameters will reach/ cross the benchmark has been added in section B.5, Sub-step 2d Sensitivity analysis of the revised PDD.
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The explanation and revisions given in the revised PDD are assessed to be appropriate. The client provided a clear analysis of all 4 parameters used in the sensitivity analysis. The value where the benchmark will be crossed is provided. The calculations have been checked and can be confirmed by the validation team. The arguments and sources provided by the client to substantiate the justification have been checked by the validation team and can be confirmed. The analysis shows that the project is robust against changes of the sensitive parameters. The sensitivity analysis clearly shows that the project activity is unlikely to be financially attractive. For further assessment, please refer to Annex 3 of this report. Hence, CAR is considered to be closed out.
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input type="checkbox"/> The project complies with the requirements

Finding B14	
<b>Classification</b>	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	For cross-check purposes the client is requested to provide information about the different shares of the total investment for the equipment, construction etc.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The information about the different shares of the total investment based on the supporting document has been added in the revised PDD
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>Ok, the values have been provided in the PDD allowing to receiving a clearer and more transparent view on different parts of total investment.</p> <p>A deeper assessment to the total investment is provided in Annex 3 to this validation report.</p> <p>CL is closed.</p>



Finding B14	
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input type="checkbox"/> The project complies with the requirements

Finding B15			
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	Especially the footnotes in section B.5. are not providing the correct information and are not matching with references made. Correction is requested.		
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The footnotes in Section B.5. have been revised according to correct sources and references.		
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Ok, the validation team has checked the footnotes and concluded that they are referring to the correct sources. All financial assumptions are backed-up with sources. Information provided is transparent. CAR is closed.		
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input type="checkbox"/> The project complies with the requirements		

Finding B16			
<b>Classification</b>	<input type="checkbox"/> CAR	<input checked="" type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	According to the documentation provided the feasibility study report was provided in mid 2006, July 2006 respectively. However, the management decision was already taken in February 2006. Clarification is requested why the PP decided to apply for CDM even if the FSR was not issued during this time. Evidences should be submitted to confirm the assumptions taken to assess the financial barrier. On which basis did the PP decide to apply CDM?		
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	Before publishing the Final FSR in mid 2006, Song Da Ucrin consultant issued the pre-feasibility study in June 2005. So the Decision of Management Board was based on this document. The pre-feasibility study report is attached with this revised PDD.		
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The pre-feasibility study has been provided. It seems that there are deviations between the feasibility study and pre-feasibility study. It is requested to clearly indicate the distinctions in terms of financial figures and technology implemented, since it is still not clear on which basis the management took their decision.		

Finding B16	
<b>Corrective Action #2</b>	<p>The Decision of Management Board was based on the pre-feasibility. The financial analysis was based on the latest information available about the total investment cost in the Volume "Total investment cost" issued in July 2005 and the latest technical parameters like electricity output, capacity in the Volume "Summary Report" issued in June 2005.</p> <p>There is not any deviation in the technology implementation but there is a minor deviation about the total investment cost. However, this change was only 0.13% and made no impact to the additionality of this proposed project. Please refer to the FSR approval for more details about the technical parameters and the total investment cost.</p>
<b>DOE Assessment #2</b>	<p>The pre-feasibility assessment (from June/ July 2005) of the project has been checked.<sup>/PFS/</sup> It is confirmed by TÜV NORD that technical figures like installed capacity and total electricity generation didn't change compared to the feasibility study report from July 2006. The figures have been compared and this can be confirmed. In July 2005 the consulting company provided the estimation of financial figures. This is also fully in compliance with the FSR.</p> <p>Hence, TÜV NORD came to the conclusion that the management decision to invest in the project activity under consideration is based on the figures provided in the pre-feasibility study. TÜV NORD further noted that the pre-feasibility study is a document providing condensed information about the project activity while the FSR is more detailed. Both documents (FSR and PFS) have been prepared by Da Ucrin Consulting Engineering Company Limited, which is a qualified and authorized third party engineering company.</p> <p>Finally the figures have been confirmed by the Vietnamese government with issuing the construction permission<sup>/IL/</sup>. Therefore, TÜV NORD is convinced that the management decision is based on reliable and sufficient information basis.</p> <p>CAR is closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<p><input type="checkbox"/> To be checked during the first periodic verification</p> <p><input checked="" type="checkbox"/> Appropriate action was taken</p> <p><input type="checkbox"/> Project documentation was corrected correspondingly</p> <p><input type="checkbox"/> Additional action should be taken</p> <p><input checked="" type="checkbox"/> The project complies with the requirements</p>

Finding B17			
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	Annex 3 of the PDD does not provide the information necessary to establish the emission factor. Correction is requested.		
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	Details of data source to calculate the emission factor has been published in Annex 3 of the revised PDD.		



Finding B17	
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Ok, the PDD does include all information necessary to calculate the emission factor. The data has been checked during site visit and EF has been re-calculated by the validation team. No mistakes have been observed. Furthermore an interview with the responsible person of EVN providing the data has been conducted to confirm the correctness of the specific data for the power plants. <sup>/BS//XLS//IM04/</sup>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input type="checkbox"/> The project complies with the requirements

Finding C1			
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The date indicated in section C.2.1.1. as starting date of the first crediting period is not reasonable and not matching with information provided in previous sections of the PDD. Correction is requested.		
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The starting date of the first crediting period has been corrected to be realistic.		
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Ok, the correction has been made to August 2010 which is reasonable. CAR is closed.		
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input type="checkbox"/> The project complies with the requirements		

Finding D1			
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR

Finding D1	
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>The information provided in section D of the PDD is not sufficient. It is stated that "(...) the water flow of the Nam Mu stream will be not affected in quality and quantity". The following should be clarified:</p> <ol style="list-style-type: none"> <li>1. Two rivers are affected by the project activity according to figure 2 on page 6. A precise and accurate description should be provided explaining the impacts of both rivers.</li> <li>2. In the same figure the two affected rivers are named "Nam Ngan" and "Vat". However, the name of the river indicated in section D is Nam Mu. Clarification and correction is requested.</li> <li>3. Furthermore information should be provided more detailed especially on the impact of fauna and flora (e. g. fish migration).</li> </ol>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>Section D has been revised accordingly for "1.1.2 Impacts on water flow". Also, "1.1.3 Impacts on ecological system" has been further elaborated with more detailed information especially addressing on "Impact on flora and fauna", and "Impact on water flow of Vat and Nam Ngan stream".</p>
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<ol style="list-style-type: none"> <li>1. Further description is provided to provide a clearer picture of the impacts caused by the project activity. The environmental impact assessment has been checked to confirm this.<sup>/EIA/</sup> Corrections are assessed to be appropriate.</li> <li>2. PDD has been correct. The correct river name is now included.</li> <li>3. The PDD contents more information on impacts on flora and fauna which is consistent to the information derived from the EIA. The impacts are mainly caused during the construction due to noise, dust and occupied land.</li> </ol> <p>Relevant sections in the PDD have been revised. CAR is closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<p> <input type="checkbox"/> To be checked during the first periodic verification  <input checked="" type="checkbox"/> Appropriate action was taken  <input checked="" type="checkbox"/> Project documentation was corrected correspondingly  <input type="checkbox"/> Additional action should be taken  <input type="checkbox"/> The project complies with the requirements         </p>

Finding D2	
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>According to Vietnamese Law local impacted people must be compensated for occupied land. This is a mitigation measure to reduce negative impacts thus should be included in section D.1. Correction is requested.</p>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The mitigation measure to reduce the socio-economic impacts: "Implement the compensation plan for the local impacted people according to the government law" has been added in to section D.1.3.2.</p>

	Finding D2
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Ok, PDD has been revised including the requested information. The compensation approval has been checked by the validation team and it is confirmed that local stakeholders have been compensated. <sup>/MOS/</sup> CAR is closed.
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input type="checkbox"/> The project complies with the requirements

	Finding D3
<b>Classification</b>	<input type="checkbox"/> CAR <input type="checkbox"/> CL <input checked="" type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	During the first periodic verification the verifier should check if the necessary surface water license is obtained as indicated under section D.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The water license will be ready for the first periodic verification.
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Will be checked in the first periodic verification.
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input checked="" type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Appropriate action was taken <input type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input type="checkbox"/> The project complies with the requirements

	Finding E1
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	Information and explanation should be provided in section E.1. how stakeholders have been invited to give comments.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	Further Information and explanation on the invitation process have been provided in section E.1. One invitation letter is attached.

	Finding E1
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>According to Vietnamese regulations impacted stakeholders have to be involved in the decision making process from the very beginning. Information is provided in the PDD that residents have been invited to provide comments. TÜV NORD has checked invitation letter and minutes of meeting to confirm that stakeholders were involved<sup>/MOS/</sup>. By means of on-site visit interviews have been conducted with residents which could confirm the involvement.<sup>/IM03/</sup> Necessary information has been added to section E in the PDD. Therefore, CAR is closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<p> <input type="checkbox"/> To be checked during the first periodic verification  <input checked="" type="checkbox"/> Appropriate action was taken  <input checked="" type="checkbox"/> Project documentation was corrected correspondingly  <input type="checkbox"/> Additional action should be taken  <input type="checkbox"/> The project complies with the requirements         </p>

## 5 VALIDATION ASSESSMENT SUMMARY

### 5.1 General Description of the Project Activity

#### 5.1.1 Participation

##### LOA

Letter of Approval for the proposed project from the host country Vietnam <sup>/LOA/</sup> has been issued by Ministry of National Resources and Environment which serves as the DNA of Vietnam. The content of the LOA is fully matching with the CDM requirements.

The Letter of Approval from Annex I country (Germany) is issued by the Deutsche Emissionshandelsstelle which serves as the DNA. The content of the LOA is fully matching with the CDM requirements.

The authenticities of the approvals have been confirmed by means of interview (representative of the Vietnamese DNA <sup>/IM06/</sup>) and check of the relevant website (German DNA provides a database indicating approvals issued).

#### Project Participants

The project participants are *Nam Mu Hydropower Joint Stock Company, Energy and Environment Consultancy Joint Stock Company* and *swb Erzeugung GmbH & Co. KG*. The entities from Vietnam have been approved by their respective DNA. The project participants are listed in tabular form in section A.3 and Annex 1 of the PDD <sup>/PDD-2/</sup>.

swb Erzeugung GmbH & Co. KG is confirmed as project participant by the DNA of Germany. The respective LOA has been checked.

#### 5.1.2 Contribution to Sustainable Development

In the letter of approval of the host Party <sup>/LOA/</sup>, it is confirmed that the proposed CDM project activity assists Vietnam in achieving sustainable development. Several sustainability targets have been defined in the PDD and could be confirmed by the validation team.

### **5.1.3 PDD editorial Aspects**

The PDD of the project is based on the latest SSC PDD Template (Version 03) and complies with the Guidelines for Completing the PDD (Version 05).

### **5.1.4 Technology to be employed.**

A physical site visit was conducted to confirm that the description in the PDD reflects the real situation of the proposed CDM project activity. The technological parameters of turbine and generators indicated in A.4.2.2 of the PDD are consistent with the feasibility study report<sup>/FSR/</sup>, the approval of the FSR<sup>/IL/</sup>, technical specification<sup>/TD/</sup> and oral confirmation by project owner<sup>/IMO1/</sup>. The project does not involve alteration of an existing installation or process. It is a Greenfield project.

A clear description of the differences between the project scenario and the scenario existing prior to the start of the implementation of the project which is also the baseline scenario is provided. The project is a hydropower project, and the technology employed is environmentally safe and sound.

### **5.1.5 Small Scale Projects**

The propose project is a small scale activity type I. It is a hydro project with a capacity of 13.5 MW, lower than the threshold 15 MW. The proposed project correctly applies AMS I.D. Version 16. It can be confirmed that the project is not a debundled part of a large scale project.

## **5.2 Project Baseline, Additionality and Monitoring Plan**

### **5.2.1 Application of the Methodology**

The project applies the approved small scale methodology AMS I.D. "Grid connected renewable electricity generation" (Version 16).

In order to determine the emission factor of the grid the project is connected to, the latest version of the methodological tool, "Tool to calculate the emission factor for an electricity system" (Version 2) is utilized. To evidence an investment barrier the "Tool for the demonstration and assessment of additionality" (version 5.2) is correctly applied.

The applied methodology and methodological tools are available on UNFCCC website.

All the applicability conditions of the methodology AMS I.D. are met, and the project activity is not expected to result in leakage emissions, and any other significant emissions not addressed by the applied methodology. Since the power density of the

proposed project is higher than 10 W/m<sup>2</sup> project emissions don't need to be considered.

### 5.2.2 Project Boundary

According to methodology AMS-I.D. (version 16), the project boundary encompasses the physical, geographical site of the renewable generation source. For the proposed project, the boundary therefore is the project power plant including the dam, and the power house and all other hydrological utilities implemented to make use of the hydrological potential.

### 5.2.3 Baseline Identification

The DOE confirms that the procedure contained in the methodology to identify the most reasonable baseline scenario has been correctly applied, and the description of baseline identification in the PDD is transparent and verifiable.

According to applied methodology AMS I.D., "(...) the baseline scenario is the electricity delivered to the grid by the project activity that otherwise would have been generated by the operation of grid-connected power plants and by the addition of new generation sources."

According to paragraph 104 of the VVM<sup>VVM/</sup>, the applied methodology AMS I.D. prescribes the baseline scenario and no further analysis is required in identification of alternatives.

### 5.2.4 Calculation of GHG Emission Reductions

The emission reduction calculation is conducted as per applied methodology AMS I.D. and the methodological tool "Tool to calculate the emission factor for an electricity system" and correct equations and parameters have been used accordingly.

The emission reductions (ER<sub>y</sub>) of the project activity are the difference between the baseline emissions (BE<sub>y</sub>), project emissions (PE<sub>y</sub>) and the leakage emissions (L<sub>y</sub>) as follows:

$$ER_y = BE_y - PE_y - LE_y$$

#### **Baseline emission:**

BE<sub>y</sub> is calculated by multiplying the net electricity supplied to the Vietnamese grid (EG<sub>BL,y</sub>) with combined margin emission factor (EF<sub>CO2,grid,y</sub>):



$$BE_y = EG_{BL,y} \times EF_{CO2,grid,y}$$

The emission factor ( $EF_{CO2,grid,y}$ ) is calculated by using the latest version of the “Tool to calculate the emission factor for an electricity system”. It is determined ex-ante and consists of the weighted average factors of operating margin ( $EF_{OM}$ ) and build margin ( $EF_{BM}$ ) resulting in the combined margin emission factor ( $EF_{CM}$ ).

The data source and process of calculation OM and BM are based on the data that is available at the time of submission of the CDM-PDD to the DOE for validation. It is derived from data provided by the Institute of Energy, an entity legally related to the grid operator EVN.<sup>/COB/, /BS/, /IM05/</sup> The data vintages and calculation have been checked and were assessed as correct.

$EF_{OM}$  and  $EF_{BM}$  are calculated as 0.6017 tCO<sub>2</sub>e/MWh and 0.4191 tCO<sub>2</sub>e/MWh. In accordance with ACM0002 that weight factors of  $w_{OM} = w_{BM} = 0.5$  have been used to calculate the grid emission factor  $EF_{grid,CM,y}$  (0.5104 tCO<sub>2</sub>e/MWh).

### **Project emissions:**

According to AMS I.D., the project emissions need to be considered when the power density of the reservoir is below 10 W/m<sup>2</sup>. The methodology clearly references the large scale methodology ACM0002 to calculate the project emissions. However, since the design of the reservoir leads to a power density of 10.3 W/m<sup>2</sup> project emissions are not considered ex ante. However, it should be noted that the monitoring plan includes all relevant parameters to determine the project emissions ex-post, if necessary.

### **Leakage:**

According to AMS I.D., the leakage is zero since the technology utilized is new and not transferred from another project activity.

### **Emission reductions:**

The annual net generated electricity of the project is estimated to be 23,960 MWh (based on the FSR). According to above information, the emission reductions of the project is calculated as following:

$$ER_y = BE_y - PE_y - LE_y = BE_y = EG_{BL,y} \times EF_{CO2,grid,y}$$

The annual GHG emission reductions cover the first crediting period are estimated ex-ante as 29,322 tCO<sub>2</sub>e.

It is confirmed by the DOE by cross-checking the whole calculation process<sup>/XLS/</sup> against all referenced data sources and the requirements of applied methodology and methodological tools that:

- a) All data sources and assumptions used are listed and referenced in the PDD and are appropriate. Calculations are correct, applicable to the proposed CDM project activity and will result in a conservative estimation of the emission reductions;



- b) All documentation used by project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PDD;
- c) All values used in the PDD are considered reasonable in the context of the proposed CDM project activity;
- d) The baseline methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions;

All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD.

### 5.2.5 Additionality Determination

#### Consideration of CDM in decision making (if project start before validation)

The validation started after the project started. The starting date is defined as 2006-12-10 which is the earliest date on which the project owner committed to expenditures.<sup>/CON/</sup> This is in accordance to the Glossary of CDM Terms.

The project participants provide a transparent and clear presentation of the milestones for project implementation and CDM consideration in the PDD. The information provided have been substantiated with documented evidences which have been verified by the validation team.<sup>/CDMD/, /CON/, /EPC/, /FSR/</sup> The documents have been assessed as reliable. Furthermore the project owner was interviewed to cross check the information. Documentation and oral confirmation are consistent.

Since the project start date is before August 2008 the proposed project is defined as "existing" in accordance to EB49, Annex 22, paragraph 6. The DOE confirms that the proposed project activity meets all stipulations as set out in EB49, Annex 22, paragraph 6 to 8.

#### Application of methodology / methodological tools

The additionality was demonstrated acc. To § 28 of the simplified modalities and procedures for small-scale CDM project activities in connection with attachment A to appendix B as a barrier analysis.<sup>/SMP/</sup>

#### Barrier analysis

The individual arguments presented in the PDD to justify the additionality were summarised in table below. This table also includes the assessment of the validation team.

**Table:** Additionality assessment

Type of barrier <sup>1)</sup>	Argument	Assessment
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Type of barrier <sup>1)</sup>	Argument	Assessment
(a)	<p>The PP chooses the investment barrier analysis to proof additionality: The after-tax project IRR is 9.58% without CDM revenue, thus lower than the benchmark value of 13.61% which is calculated as Weighted Average Cost of Capital (WACC). Thus the project scenario is not the most economically feasible without benefits from CER sales.</p> <p>4 parameters are chosen for sensitivity analysis: Feed in tariff, O &amp; M costs, total investment and exported electricity. The PP has evaluated the possibility that the variations reach the benchmark. However, it is clearly shown in the PDD and based on the calculation that this is unlikely.</p> <p>The assessment strictly follows annex 51 of EB51 "Guidance on the Assessment of Investment Analysis" and Validation and Verification Manual<sup>/VVM/</sup>.</p>	<p><input type="checkbox"/> Argument not justified</p> <p><input type="checkbox"/> Argument not convincing</p> <p><input type="checkbox"/> Argument justified but not a decisive barrier</p> <p><input checked="" type="checkbox"/> Argument justified / significant barrier</p>
<b>Assessment of the validation team</b>		<p><input checked="" type="checkbox"/> Project is additional</p> <p><input type="checkbox"/> Project is not additional</p>

The assessments of the figures of the investment and values as outcome of the sensitivity analysis are provided in Annex 3.

As to the accuracy of financial calculations carried out for any investment analysis, the DOE have:

- Conducted a thorough assessment of all parameters and assumptions used in calculating the IRR and WACC. The assessment of accuracy and suitability of these parameters are summarized in Annex A3 using the available evidences and expertise in relevant accounting practices;
- Cross-checked the parameters against third-party or publicly available sources, such as governmental statistics;
- Reviewed the feasibility study report, governmental regulations and necessary documents related to the proposed CDM project activity and the project participants;
- Assessed the correctness of computations carried out and documented by the project participants by reproducing the IRR and benchmark calculation in accordance with industrial/local regulations;
- Assessed the sensitivity analysis to determine under what conditions variations in the result would occur, and the likelihood of these conditions.

The DOE confirm the suitability of any benchmark applied in the investment analysis:

- a) Project IRR was identified as the financial/economic indicator which is suitable for the project type and decision context;
- b) It is ensured that any risk premiums applied in determining the benchmark reflect the risks associated with the project type or activity;
- c) It is reasonable to assume that no investment would be made at a rate of return lower than the benchmark.

The project participants took the decision to invest in the project based on a draft version of the feasibility study which was available in June 2005. This report shows in a condensed form that the financial figures of the proposed project are not in favour of the expectations of the project owner. Hence, they decided to apply for CDM in February 2006. The final version of the Feasibility Study Report<sup>/FSR/</sup> has been provided in July 2006. It incorporates the figures already indicated in the pre version of the FSR. The first contract has been signed in December 2006.<sup>/CON/</sup> In February 2007 the Peoples' Committee of Ha Giang Province issues the investment licenses<sup>/IL/</sup> where the financial and technological figures are confirmed. The DOE ensures that:

- a) The data provided in the FSR has been the basis of the decision to proceed with the investment in the project under consideration of CDM benefits.
- b) The values used in the PDD and IRR calculation spreadsheet are fully consistent with the FSR, governmental regulations or other sources as indicated in Annex 3 to this report. All these sources were used to decide whether an investment will be conducted;
- c) The input values from the FSR, governmental regulations and other can be confirmed as valid and applicable at the time of the investment decision by cross-checking on the basis of specific local and sectoral expertise, interviews and background research. Considering the time range between finalisation of FSR and CDM decision which is about 1.5 years (from pre-feasibility to first contract) this conclusion is evident.

Hence, stipulations in VVM, Version 1.1, paragraph 112 are fulfilled.

## Summary

The DOE assessed and verified the reliability and credibility of all data, rationales, assumptions, justifications and documentation provided by project participants to support the demonstration of additionality by critically assessing the presented evidences using local knowledge and sectoral and financial expertise.

In conclusion, the proposed CDM project activity is assessed as additional.

## 5.2.6 Monitoring Methodology

The monitoring plan is in compliance with the applied monitoring methodology AMS I.D. "Grid-connected renewable electricity generation" Version 16.

### **5.2.7 Monitoring Plan**

The DOE applied a two-step process to assessing compliance with the requirements of monitoring plan, as follows:

- a) Compliance of the monitoring plan with the approved methodology:
  - (i) Identified the list of parameters required by the selected approved methodology by means of document review;
  - (ii) Confirmed that the monitoring plan contains all necessary parameters, that they are clearly described and that the means of monitoring described in the plan complies with the requirements of the applied methodology AMS I.D.;
- b) Implementation of the plan:
  - (i) The monitoring arrangements described in the monitoring plan are feasible within the project design;
  - (ii) The means of implementation of the monitoring plan, including the data management and quality assurance and quality control procedures, are sufficient to ensure that the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified.

The assessment has been conducted by the DOE by means of reviewing of the documented procedures, interviewing with relevant personnel, project plans and physical inspections of the proposed CDM project activity site.

### **5.2.8 Project Management Planning**

The operational and management structure that the project operator will implement in order to monitor emission reductions is described in the PDD. It clearly indicates the responsibilities and institutional arrangements for data collection and archiving.

### **5.2.9 Crediting Period**

The project activity applies a renewable crediting period and the length of the first crediting period is 7 years according to the PDD.

The starting date of the 1<sup>st</sup> renewable crediting period of the proposed CDM project is 2010-08-01 or the date of registration, whichever is later. This is assessed as appropriate.

### **5.2.10 Environmental Impacts**

The project participants have undertaken an analysis of environmental impacts and an environmental impact assessment in accordance with procedures which is required by Vietnam. A summary of results of the Environmental Impact Assessment Report is described in the PDD.

Project participants have submitted to the DOE documentation on the analysis of the environmental impacts of the project activity<sup>/EIA/</sup>, there's no transboundary impact and no impacts are considered significant by the project participants or the host Party. The EIA has been approved<sup>/AEIA/</sup> by Peoples Committee of Ha Giang Province on 2005-10-04.

### **5.2.11 Comments by Local Stakeholders**

Local stakeholders have been invited by the PPs to comment on the proposed CDM project activity in 2005 which is prior to the publication of the PDD on the UNFCCC website. Brief description of how comments by local stakeholders have been invited and compiled was presented in the PDD.

The DOE confirms following statements by means of document review and interviews with local stakeholders:

- a) Comments by local stakeholders that can reasonably be considered relevant for the proposed CDM project activity have been invited<sup>/IM03/, /MOS/</sup>;
- b) The summary of the comments received as provided in the PDD is complete.

The project participants have taken due account of any comments received and have described this process in the PDD.

## 6 VALIDATION OPINION

swb Erzeugung GmbH & Co. KG has commissioned the TÜV NORD JI/CDM Certification Program (CP) to validate the project: "Nam Ngan Hydropower Project" with regard to the relevant requirements of the UNFCCC for CDM project activities, as well as criteria for consistent project operations, monitoring and reporting. UNFCCC criteria include article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakech Accords) and the relevant decisions by COP/MOP and CDM Executive Board.

In the course of the validation 21 Corrective Action Requests (CARs) and 4 Clarification Requests (CLs) were raised and successfully closed. 1 FAR has been raised which should be considered during the 1<sup>st</sup> periodic verification.

The review of the project design documentation and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and review of comments by parties, stakeholders and NGOs have provided TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria.

In detail the conclusions can be summarised as follows:

- The project is in line with all relevant host country criteria (Vietnam) and all relevant UNFCCC requirements for CDM. Project activity approval has been obtained from DNA of Vietnam vide the Letter of Approval (HCA) dated 2007-07-30. DNA of Germany provides the LOA dated 2010-07-09.
- The project additionality is sufficiently justified in the PDD.
- The monitoring plan is transparent and adequate.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 205,254 tCO<sub>2</sub>e are most likely to be achieved within the (1<sup>st</sup> renewable) crediting period.

The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation.

Essen, 2010-07-19



Martin Saalmann  
TÜV NORD JI/CDM CP  
Validation Team Leader

Essen, 2010-07-19



Rainer Winter  
TÜV NORD JI/CDM CP  
Final Approval

## 7 REFERENCES

**Table 7-1:** Documents provided by the project participant

Reference	Document
/AEIA/	Approval of Environmental Impact Assessment (2005-10-04)
/BEN/	Relevant governmental decisions for benchmark calculation: <ul style="list-style-type: none"> <li>• DEC. No. 709/QD-NLDK</li> <li>• DEC. No. 2014/QD-BCN</li> </ul> Morningstar Report (2005)
/BET/	Sources for Beta and expected market return: <a href="http://www.stern.nyu.edu/~adamodar/pc/archives/emergcompfirm04.xls">http://www.stern.nyu.edu/~adamodar/pc/archives/emergcompfirm04.xls</a> <a href="http://www.cophieu68.com/">http://www.cophieu68.com/</a>
/BS/	Baseline Study, carried out by the Institute of Energy which is under supervision of EVN; Contract with Institute of Energy for EF calculation
/BUL/	Business license of Nam Mu Hydropower Joint Stock Company
/CA/	Compensation Approval with the impacted residents (2007-01-19)
/CDMD/	CDM Management decision related documents: <ol style="list-style-type: none"> <li>1. Minutes of stakeholder meeting introducing CDM (2005-08-15)</li> <li>2. Consultancy contract with VNEEC (2006-11-22)</li> <li>3. Letter of Application from project owner to the Peoples' Committee of Ha Giang Province for requesting approval to receive CDM benefits (2006-10-28)</li> <li>4. Letter of the Peoples' Committee of Ha Giang Province to the Vietnamese DNA to verify that project owner applied for approval to receive CDM status of Nam Ngan project (2006-10-31)</li> <li>5. Minutes of Meeting from Board of Directors of Nam Mu Hydropower Joint Stock Company indicating that CDM benefits are necessary to make the project financial viable and thus to apply CDM (2006-02-25)</li> <li>6. ERPA signed between project owner and swb (2008-01-15)</li> </ol>
/COB/	Contract for providing the baseline study between VNEEC and Institute of Energy
/CON/	Contract evidencing the start date of the project activity between the project owner and Song Da Joint Stock Company No 9 with the purpose of constructing the project (2006-12-10)
/EIA/	Environmental Impact Assessment (June 2005)



Reference	Document
/EPC/	Equipment purchase contract (2007-02-07)
/FC/	Financial closure (2009-03-12)
/FSR/	Feasibility Study Report compiled by Song Da Ucrin Consulting Engineering Co. Ltd. (July 2006)
/HSE/	Hanoi Stock Exchange <a href="http://hnex.vn/Thongtin_Giaodich.asp?actType=1&amp;menuup=402000&amp;TypeGrp=1&amp;MenuId=114000&amp;StockType=1&amp;IssuerID=698">http://hnex.vn/Thongtin_Giaodich.asp?actType=1&amp;menuup=402000&amp;TypeGrp=1&amp;MenuId=114000&amp;StockType=1&amp;IssuerID=698</a> (print out of website available to TÜV NORD)
/IL/	Investment License issued by the Peoples' Committee of Ha Giang Province, approving the technical and financial parameter. Permission to start construction. (2007-02-27)
/LAW/	Relevant laws and regulations provided by Vietnamese Government: 1. Decision No. 709/QĐ – NLĐK Ministry of Industries (13 Apr. 2004) 2. Decision No. 2014/QĐ – BCN Ministry of Industries (13 Jun. 2007) 3. Permission No. 329/QĐ – UBND; Investment license no. 23121000018; 4. Decision no. 30/2006/QĐ-BCN Ministry of Industry (31. Aug. 2006) 5. Decision No. 164/2003/ND-CP (22. Dec. 2003) 6. Circular No. 05/2006/TT-BTC, Ministry of Finance 19. Jan. 2006 7. Viet Nam Construction Code – TCXDVN 285:2002 8. Government Decree No 45/2001/ND-CP (2. Aug. 2001) 9. Prime Ministers Decision No. 176/2004/QĐ-TTg 10. Decision No. 3454/QĐ-BCN (18. Oct. 2005) by Ministry of Industry
/LC/	1. Loan contract with Bank of Agriculture and Rural Development (2006-03-01) 2. Loan contract with Bank of Agriculture and Rural Development (2006-07-04)
/LIF/	Letter of Independent Financial Expert from Alpha Securities Joint Stock Company from 2009-04-17
/LOA/	1. Letter of Approval of Viet Nam (date 2007-07-30) 2. Letter of Approval of Germany (date 2010-07-09)
/MOC/	Modalities of Communication
/MOS/	<ul style="list-style-type: none"> <li>• Invitation to stakeholder meeting (2005-08-01)</li> <li>• Minutes of stakeholder meeting to introduce the project and CDM and requesting comments (2005-08-15)</li> <li>• Approval of Compensation Expenditures</li> </ul>

Reference	Document
/OSA/	Figure indicating the organisational structure of getting approval for hydro power projects by Vietnamese government
/PDD/	<ol style="list-style-type: none"> <li>1. "Nam Ngan Hydropower Project", Version 1.0, 2008-10-01</li> <li>2. "Nam Ngan Hydropower Project", Version 2.3, 2010-04-26</li> </ol>
/PPA/	<ul style="list-style-type: none"> <li>• Pre-negotiation of tariff (2007-09-18)</li> <li>• Power Purchase Agreement of electricity price between PO and EVN (2008-03-24)</li> </ul>
/PFS/	Pre-Feasibility Study compiled by Song Da Ucrin Consulting Engineering Co. Ltd. (June/ July 2005)
/QFP/	Business License issued by Vietnamese Government - Evidence for qualification that <i>Song Da Ucrin Consulting Engineering Company Limited</i> has necessary expertise to compile the FSR and Environmental Impact Assessment.
/SAB/	Statistical Annual Book of Viet Nam 2007
/TC/	Training Contract (2008-11-07)
/TD/	Technical drawings/ specification and site lay out
/TET/	Table with electricity tariffs usually paid for Independent Power Producers as justification for the applied tariff.
/WD/	Wiring Diagram
/XLS/	<ul style="list-style-type: none"> <li>• IRR and benchmark calculation provided in Excel sheet</li> <li>• Emission factor and emission reductions calculation provided in Excel sheet</li> </ul>

Table 7-2: Background investigation and assessment documents

Reference	Document
/ACM0002/	Consolidated baseline methodology for grid-connected electricity generation from renewable sources (Version 11)
/AMS-ID/	Grid connected renewable electricity generation (Version 16)
/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)

Reference	Document
<b>/GAI/</b>	Guidance on the Assessment of the Investment Analysis (Version 3.1)
<b>/GCSP/</b>	UNFCCC: Guidelines for completing CDM-SCC-PDD (Version 05)
<b>/GET/</b>	Tool to calculate the emission factor for an electricity system (Version 2)
<b>/GPCC/</b>	Guidance on the demonstration and assessment of prior consideration of the CDM (EB 49)
<b>/IPCC/</b>	Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual
<b>/MA/</b>	Decision 3/CMP.1 (Modalities and procedures for a clean development mechanism as defined in Article 12 of the Kyoto Protocol)
<b>/MPEE/</b>	Master Plan VI of Electricity Expansion in Vietnam
<b>/MT-AT/</b>	Tool for the demonstration and assessment of additionality (Version 05.2; EB 39).
<b>/PDD-T/</b>	PDD Template for small scale project activities (version 03)
<b>/RET/</b>	Renewable Energy Technology, Economics and Environment, page 376
<b>/VVM/</b>	Validation and Verification Manual (version 1; EB 44 and version 1.1; EB 51)

**Table 7-3:** Websites used

Reference	Link	Organisation
<b>/cd4cdm/</b>	<a href="http://www.cd4cdm.org">www.cd4cdm.org</a>	UNEP
<b>/evn/</b>	<a href="http://www.evn.com.vn">www.evn.com.vn</a>	Electricity Viet Nam
<b>/iea/</b>	<a href="http://www.iea.org/Textbase/country/n_country.asp?COUNTRY_CODE=VN&amp;Submit=Submit">http://www.iea.org/Textbase/country/n_country.asp?COUNTRY_CODE=VN&amp;Submit=Submit</a>	International Energy Agency
<b>/dna/</b>	<a href="http://www.noccop.org.vn/index.html">http://www.noccop.org.vn/index.html</a>	Ministry of Natural Resources and Environment of Vietnam serves as the DNA
<b>/sbv/</b>	<a href="http://www.sbv.gov.vn/en/home/index.jsp">http://www.sbv.gov.vn/en/home/index.jsp</a>	State Bank of Vietnam

Reference	Link	Organisation
/unfccc/	<a href="http://cdm.unfccc.int">http://cdm.unfccc.int</a>	UNFCCC

**Table 7-4:** List of interviewed persons

Reference	Mol <sub>1</sub>	Date		Name	Organisation / Function
/IM01/	V	2009-02-03	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Phiem, Ha Ngoc	Nam Mu Hydropower JSC, Director
/IM01/	V	2009-02-03	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Nang, Nguyen Duc	Nam Mu Hydropower JSC, Deputy Director
/IM01/	V	2009-02-03	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Ky, Nguyen Viet	Nam Mu Hydropower JSC, Chief of Economic & Planning Dept.
/IM01/	V	2009-02-03	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Can, Bui Cong	Nam Mu Hydropower JSC, Electricity Engineer
/IM02/	V	2009-02-03	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Tuyen, Tran Minh	VNEEC, Director
/IM02/	V	2009-02-03	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	Hanh, Dang Hong	VNEEC, Deputy Director
/IM02/	V	2009-02-03	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Hung, Vu The	VNEEC, Project Manager
/IM03/	V	2009-02-03	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Nho, Nguyen Van	Stakeholder, Deputy Chairman of Quang Ngan Commune Committee
/IM05/	V	2009-02-17	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Nguyen Anh Tuan	Chief of Power System Department, Institute of Energy, EVN
/IM06/	V	2009-02-19	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Hoang Manh Hoa	Secretary of Vietnamese DNA

<sup>1)</sup> Means of Interview: (Telephone, E-Mail, Visit)

# ANNEX

- A1:** Validation Protocol
- A2:** Assessment of Baseline Identification
- A3:** Assessment of Financial Parameters
- A4:** Assessment of Barrier analysis
- A5:** Outcome of the GSCP
- A6:** Appointment certificates of the team members

## ANNEX 1: VALIDATION PROTOCOL

**Table A-1: Requirements Checklist**

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<b>A. General Description of Project Activity</b>				
<b>A.1. Approval</b> <i>The written approval of the parties involved is a mandatory requirement</i>				
A.1.1. Has the project provided written approvals of all parties involved? (EB 51 Annex 3 §44) <i>Indicate whether a letter of approval has been received, with a clear reference to the supporting documentation.</i> <i>Indicate whether this letter was provided to the DOE by the project participants or directly by the DNA</i>	The Vietnamese government issued the letter of approval on 2007-07-30. The original document was checked during visit in the office of VNEEC.  However the letter of approval of Germany is not available at this stage of validation.	/LOA/	CAR A1	OK
A.1.2. Are the approvals issued from organisations listed as DNAs on the UNFCCC CDM website? (EB 51 Annex 3 §§ 44, 47, 48, 49 (b), 49 (c), 53) <i>Indicate the means of validation employed to assess the authenticity</i>	Yes, the letter of approval from Vietnam was issued by the Ministry of Natural Resources and Environment of Vietnam which serves as the DNA. The original document was checked during visit in the office of VNEEC.  However, CAR A1 is still open according to the pending LOA of Germany.	/unfccc/ /LOA/	CAR A1	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
A.1.3. Do the written approvals confirm that the corresponding party is a Party to the Kyoto Protocol? (EB 51 Annex 3 §45, (a))	Both parties involved (Vietnam and Germany) are parties to the Kyoto Protocol. The UNFCCC website has been checked. Nevertheless the LoA of Germany has not been issued in this stage of validation.	/unfccc/	CAR A1	OK
A.1.4. Do the written approvals confirm that the participation is voluntary? (EB 51 Annex 3 §45, (b))	Yes, the LOA of Vietnam indicates that the participation is voluntary. This has been checked by reviewing the original LOA.  However, German LOA is pending thus CAR A1 is not closed.	/LOA/	CAR A1	OK
A.1.5. Does the written approval from the host country confirm that the project contributes to the sustainable development in the country? (EB 51 Annex 3 §45, (c))	Yes, the LOA of Vietnam indicates that the project contributes to sustainable development in Vietnam. This has been checked by reviewing the original LOA.	/LOA/	OK	
A.1.6. Do the written approvals refer to the precise project title in the PDD submitted for registration? (EB 51 Annex 3 §45 (d), 50)	The LOA of Vietnam provides the correct name of the project activity as indicated in the PDD. A comparison of the LOA and the PDD has been conducted during document review. No mistake was observed.  However, German LOA is pending thus CAR A1 is not closed.	/LOA/	CAR A1	OK
A.1.7. Are the written approvals unconditional with regard to A.1.3 to A.1.6? (EB 51 Annex 3 §46)	Yes, while checking the Vietnamese LOA no observation was made that the written approval makes any restrictions. This has also been confirmed during interview with a representative of the Vietnamese DNA.  However, an assessment of the German LOA cannot be	/LOA/ /IM06/	CAR A1	OK



Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
	provided in this stage as the document is pending.			
A.1.8. Is the information regarding the project participants listed in section A3 and in Annex 1 of the PDD internally consistent to each other? (EB 51 Annex 3, § 51)	Yes, the participating entities which are indicated in the section A.3. and the Annex of the PDD are exactly the same. No deviation was observed.	/PDD/ /LOA/	OK	
A.1.9. Are all project participants listed in the PDD approved at least by one Party involved? (EB 51 Annex 3, § 51) <i>Indicate whether the participation of the project participant(s) has been approved by a Party to the Kyoto Protocol.</i> <i>Describe the means of validation employed to draw this conclusion.</i>	The two Vietnamese companies Nam Mu Hydropower Joint Stock Company and Energy and Environment Consultancy Joint Stock Company are approved by the Vietnamese DNA. This has been checked with the LOA.  The German participant swb could not be confirmed in this stage as the LOA from Germany is pending.	/PDD/ /LOA/	CAR A1	OK
A.1.10. Are any other project participants approved but not listed in the PDD? (EB 51 Annex 3, § 52)	From Vietnamese side no other participant was appointed and approved. This is verified by checking the LOA and was also orally confirmed by both participants from Vietnam.  However, the LOA from Germany is pending. Thus a final assessment cannot be taken in this stage.	/PDD/ /LOA/	CAR A1	OK
A.1.11. Does the DoE have a direct contractual relationship with the PP? (EB 51 Annex 3, §51 and EB 50, Annex 48, §§ 7-9)	Yes, a contract has been established between PP and TÜV NORD.		OK	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<b>A.2. Contribution to Sustainable Development</b>  <i>The project's contribution to sustainable development is assessed.</i>				
A.2.1. Has the host country confirmed that the project assists it in achieving sustainable development? (EB 51 Annex 3, §§ 123 – 125) <i>Contain a statement confirming whether the letter of approval by the DNA of the host party confirmed the contribution of the project to the sustainable development of the Host Party.</i>	Yes, the LOA of Vietnam which has been checked during on-site visit clearly states that the project activity assists the host country in achieving sustainable development. The original version of the LOA was presented to the validation team during on-site visit.	/LOA/	OK	
A.2.2. Will the project create other environmental or social benefits than GHG emission reductions? (EB 51 Annex 3, §§ 123 – 125) <i>Describe the other positive aspects not related to GHG emission reduction on the environment</i>	The project will create other environmental and social benefits than GHG emission reductions such as: <ul style="list-style-type: none"> <li>- Balancing the supply and demand gap of electricity in Vietnam</li> <li>- It will facilitate the exchange of goods and transportation due to the access road and bridges built by the project owner</li> <li>- Provides employment opportunities</li> <li>- Improve daily life due to new water supply and communication opportunities</li> </ul> This has been confirmed by interview with local stakeholder during site visit.	/PDD/ /XLS/ /IM03/	CAR A3	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
	Furthermore it will increase the tax income of Ha Giang province. However the values provided are not reproducible as the calculation given in the Excel sheet is not substantiated with evidences. Thus CAR A3 was raised:  Evidences should be provided regarding the share of tax to the GDP of the province (page 4).			
<b>A.3. PDD editorial aspects</b> <i>The PDD used as a basis for validation shall be prepared in accordance with the latest template and guidance from the CDM Executive Board available on the UNFCCC CDM website.</i>				
A.3.1. Has the latest version of the PDD form been applied? (EB 51 Annex 3, § 55)	Yes, the latest version of the small scale PDD template version 3 has been used. As per the UNFCCC CDM website this is the latest version and thus applicable.	PDD/ /PDD-T/ /unfccc/	OK	
A.3.2. Has the PDD been duly filled in accordance with the latest guidance(s)? (EB 51 Annex 3, §§ 56, 57)	For unique identification of the proposed project activity the longitudes and latitudes of dam and power house should be provided separately in section A.4.1.4.  Especially the footnotes in section B.5. are not providing the correct information and are not matching with references made. Correction is requested.  Annex 3 of the PDD does not provide the information necessary to establish the emission factor. Correction is requested.	/PDD/ /GCSP/	CAR A2  CAR B15  CAR B17	OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (Means and results of assessment)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<b>A.4. Technology to be employed</b>  <i>Validation of project technology focuses on the project engineering, choice of technology and competence/maintenance needs. The DOE should ensure that environmentally safe and sound technology and know-how is used.</i>				
<p>A.4.1. Does the PDD contain a clear, accurate and complete project description? (EB 51 Annex 3, §§ 58, 59)</p> <p><i>The PDD shall contain a clear description of the project activity which provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation.</i></p> <p><i>Pl. consider esp. chapters A.2, A.4.2 and A.4.3 (in case of LSC PDD) for assessment.</i></p> <p><i>Describe the process undertaken to validate the accuracy and completeness of the project description.</i></p> <p><i>Contain the DOE's opinion on the accuracy and completeness of the project description.</i></p>	<p>The project description is mainly given in section A.4.2. of the PDD. In general the project description can be assessed as clear, accurate and complete to provide the reader with a sufficient understanding of the project activity.</p> <p>For assessment the validation team has</p> <ul style="list-style-type: none"> <li>(1) reviewed the PDD in detail,</li> <li>(2) checked the feasibility study report,</li> <li>(3) carried out a site visit and</li> <li>(4) carried out interviews with the PPs and local stakeholders.</li> </ul> <p>No major areas of incompleteness, inconsistencies or misleading information have been observed.</p> <p>However, the following should be corrected:</p> <p>The table 1 provided on page 7 is inconsistent according to values checked from nameplates during on-site visit. Deviations were observed according to the classification of the turbine, the turbine discharge and efficiency of generator.</p>	/PDD/ /IM01/ /IM03/ /FSR/	CAR A4	OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (Means and results of assessment)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
	Correction is requested.			
A.4.2. Is this description in accordance with the real situation or (in case of greenfield projects) is it most likely that the project will be implemented acc to the project description	<p>The project consists of an overflow dam in the Nam Ngan River which is 53 m high and 140 m long. The dam is used to divert the water from Nam Ngan River to an intake canal and afterwards to a pressure pipe with 400 m length. The water feeds two Francis turbines which drive two generators each with a capacity of 6.75 MW. Afterwards the water is discharged to Vat River. During on-site visit in February 2009 the progress of construction was advanced. The turbines and generators were already installed in the power house. Therefore the nameplates were checked to confirm the information given in the PDD. No major deviations were observed.</p> <p>The project design is based on the feasibility study report which was provided by the qualified third party Song Da Ucrin Consulting Engineering Co. Ltd. The business license indicating the qualification has been checked to confirm the expertise of the consulting company. Furthermore the project got the construction permission from the Vietnamese Government (investment license), where the technical and financial parameters are approved.</p> <p>The information provided in the FSR is the basis of the bidding documents which were prepared to find an appropriate technology supplier. The contract with the</p>	/PDD/ /FSR/ /IL/ /QFP/ /EPC/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
	<p>Chinese technology provider has been checked by the validation team clearly indicating the same parameters as set out in the FSR.</p> <p>All these documents providing the same information as given in the PDD. No major deviations were observed during on-site visit by checking the already installed technology. Thus the validation team came to the conclusion after, that the project activity will be implemented in accordance to the description in the PDD.</p>			
<p>A.4.3. In case the project involves alteration of the existing installation or process, is a clear description available regarding the differences between the project and the pre-project situation? (EB 51 Annex 3, §§63, 64)</p> <p><i>Describe the steps taken to validate this issue.</i></p>	<p>Through document check, on-site visit and interview it could be verified that no alteration of existing installations is involved in the project activity. The installations are completely new.</p>	<p>/PDD/ /IM01/ /IM02/</p>	<p>OK</p>	
<p>A.4.4. Does the project design engineering reflect current good practices?</p> <p><i>Consider the equipment specifications, literature (e.g. EU BREF papers) and professional experiences. Describe the process undertaken to assess the engineering.</i></p>	<p>Yes, in general the project will utilise the potential energy of the water flow to generate zero-emission electricity. The technology which will be employed will be state of the art as it will be new. The efficiency of the generators as indicated on the nameplate will be about 97.27 % at 100 % load. The information is also provided by the project owner during interview.</p> <p>Thus the validation team came to the conclusion that the technology is reflecting current good practice.</p>	<p>/PDD/ /FSR/ /IM01/ /EPC/</p>	<p>OK</p>	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<p>A.4.5. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?</p> <p><i>Describe the process undertaken to assess the state of the art technology.</i></p>	<p>Please refer to the information given in previous clause. As the technology will be new and as this was verified during on-site visit, the validation team came to the conclusion that the project is state of the art.</p>	<p>/PDD/ /FSR/ /EPC/</p>	OK	
<p>A.4.6. Does the project make provisions for meeting training and maintenance needs?</p> <p><i>Describe the process undertaken to assess the maintenance and training needs.</i></p>	<p>Yes, training measures are expected to be conducted especially by the technology supplier and afterwards for monitoring as set out in section A.4.2. and Annex of the PDD. This was orally confirmed by the project manager of the consultancy company and the director of the hydro power plant during interview.</p> <p>The validation team came to the conclusion that information given is sufficient. Furthermore the contract with the technology supplier clearly indicates that training will be conducted.</p>	<p>/PDD/ /IM01/ /IM02/</p>	OK	
<p><b>A.5. Small scale project activity</b></p> <p><i>It is assessed whether the project qualifies as small-scale CDM project activity</i></p>				
<p>A.5.1. Does the project qualify as a small scale CDM project activity as defined in decision 4 / CMP.1 annex II?</p>	<p>Yes, the project activity belongs to "Type (i) project activities: renewable energy project activities with a maximum output capacity equivalent to up to 15 megawatts (or an appropriate equivalent)". The proposed project is a hydro project activity</p>	<p>/PDD/ /FSR/</p>	OK	



Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<i>Describe the steps taken to validate this issue.</i>	<p>which belongs to renewable energy sector and meets the threshold of total installed capacity of 15 MW<sub>el</sub> as the capacity is 13.5 MW<sub>el</sub>.</p> <p>The project documentation has been checked and no other conclusion can be derived that the project will meet the requirements for small scale project activities.</p>	/EPC/		
<p>A.5.2. Does the project apply one of the approved small scale categories and any methodology and tool referred therein?</p> <p><i>Describe the steps taken to validate this issue. Check, if applicable the expiry dates of the applied methodology.</i></p>	Yes, the proposed project falls under category 1 of the simplified modalities and procedures. The approved small scale methodology AMS I.D. has been correctly applied. The methodology is the only reasonable choice as the applicability fully matches. Furthermore the tool for calculating a grid emission factor is applied.	/PDD/ /GET/	OK	
<p>A.5.3. Is the small scale project activity not a debundled component of a larger project activity?</p> <p><i>Describe the steps taken to validate this issue. Pl refer to the Compendium of guidance on debundling (EB 36, Annex 27).</i></p>	As evidenced by check of the UNFCCC website and the CDM pipeline other projects conducted by the same project owner could not be observed. The project owner as well as the consultant confirmed orally, that the project is the first investment in hydro technology conducted in this area. Thus debundling can be excluded.	/PDD/ /unfccc/ /cd4cdm/ /IM01 – IM02/	OK	
<b>B. Project Baseline, Additionality and Monitoring Plan</b>				

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<b>B.1. Application of the Methodology</b>				
B.1.1. Does the project apply an approved and applicable CDM methodology and a valid version thereof? (EB 51 Annex 3, §65) <i>Describe the steps taken to validate this issue.</i>	The project activity applies the SSC methodology AMS I.D. version 16. The applicability has been confirmed by consultation of the UNFCCC website. The latest version is applied.	/PDD/ /unfccc/ /AMS-ID/	OK	
B.1.2. Is the applied CDM methodology identical with the version available on the UNFCCC website? (EB 51 Annex 3, §§65, 69) <i>Describe the steps taken to validate this issue.</i>	Yes, the methodology applied from PPs is identical with the version available on UNFCCC website. This has been checked by desk review. No deviations have been observed.	/PDD/ /unfccc/ /AMS-ID/	OK	
B.1.3. Are all applicability criteria in the methodology, the applied tools or any other methodology component referred to therein fulfilled? (EB 51 Annex 3, §§66 (a), 66 (b), 68, 70, 75) <i>Describe for each applicability criterion listed in the selected approved methodology the steps taken to assess the information contained in the PDD.</i>	<p>Yes, the project is fully applicable to AMS I.D. All applicability criteria are met:</p> <ul style="list-style-type: none"> <li>• Hydro power is a renewable energy technology,</li> <li>• the proposed project supplies electricity to the Vietnamese national grid,</li> <li>• the proposed project is a Greenfield project;</li> <li>• the project activity results in a new reservoir with a power density above 4 W/m<sup>2</sup>.</li> </ul> <p>The criteria have been assessed by reviewing the baseline study provided by the Energy Institute which is supervised by the national grid operator EVN. Furthermore the power purchase agreement has been checked to ensure that the</p>	/PDD/ /AMS-ID/ /IM01/ /iea/ /PPA/	OK	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
	electricity is supplied to the grid. Finally an on-site visit was conducted to ensure that the project is a new hydro power facility with new reservoir. In accordance with AMS I.D. the PP applied the "Tool to calculate the emission factor for an electricity system" (Version 2). By reviewing the methodology the validator can confirm that the correct tool is chosen and the project is applicable.			
<p>B.1.4. Is the project in accordance to every other stipulation or requirement mentioned in all sections of the methodology? (EB 51 Annex 3, §70)</p> <p><i>Describe the steps taken to check whether the proposed project activity meets all the other possible stipulations and /or limitations mentioned in all sections of the approved methodology selected.</i></p>	The methodology does not provide other stipulations applicable to the proposed project activity.	/PDD/ /AMS-ID/	OK	
<p><b>B.2. Project Boundaries</b></p> <p><i>Project Boundaries are the limits and borders defining the GHG emission reduction project</i></p>				
<p>B.2.1. Are the project's spatial boundaries (geographical) clearly defined? (EB 51 Annex 3, §§67 (a), 77 – 79)</p> <p><i>Provide information on how the validation of the geographical boundary has been performed either based on reviewed documented evidence or by describing what was observed/viewed during a site visit.</i></p>	As per the methodology the project boundary encompasses the physical, geographical site of the renewable generation source. It is correctly stated in the PDD that the boundary includes the project activity (dams, powerhouses, intake canals etc.) and the electricity system where the project is connected to. The location and facilities of the project have been checked during on-site visit and by desk review. As the proposed project is on the territories of Vietnam the national	/PDD/ /ACM000 2/ /IM01/ /FSR/	OK	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
	<p>electricity system was correctly identified as part of the project boundary.</p> <p>The identification of the components of the proposed project activity was checked based on the design as indicated in the FSR and verified during on-site visit. The definition of the Vietnamese grid has been confirmed with documentation provided by the Institute of Energy of EVN.</p>	/BS/		
<p>B.2.2. Are all sources and GHGs included in the project boundary as required in the applied methodology? (EB 51 Annex 3, §§67 (a), 77 – 79)</p> <p><i>Provide information on how the validation of the GHGs and sources has been performed either based on reviewed documented evidence or by describing what was observed/viewed during a site visit.</i></p>	<p>Yes, as per methodology the GHG which has to be taken into account is CO<sub>2</sub> emitted by relevant sources which are connected to the national power grid. Leakage effects are not to be considered as the technology is new and was not transferred from another project site. Moreover project emissions must be accounted for according to AMS I.D. when a reservoir is part of the project. The project involves a new reservoir with a power density of 10.3 W/m<sup>2</sup>. Therefore CH<sub>4</sub> emissions must be considered, which is done in relevant sections of the PDD.</p> <p>However the following was detected in the PDD and should be revised:</p> <p>The explanation given under Figure 3 on page 10 is not comprehensible. It leads to misunderstandings as per methodology leakage must not be considered. Revision is requested.</p>	/PDD/ /AMS-ID/	CAR B1	OK
<p>B.2.3. In case the methodology allows to choose whether a source and/or gas is to be included, is the choice sufficiently explained and</p>	<p>Not applicable, since the methodology does not allow such choices.</p>	/PDD/ /AMS-ID/	N/A	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
justified? (EB 51 Annex 3, §§67 (a), 77 – 79) <i>Confirm if the justification provided by the PPs is reasonable, based on assessment of supporting documented evidence provided by the PPs or by onsite observations.</i>				
<b>B.3. Baseline Identification</b> <i>The choice of the baseline scenario will be validated with focus on whether the baseline is a likely scenario, and whether the methodology to define the baseline scenario has been followed in a complete and transparent manner.</i>				
B.3.1. What possible baseline scenarios have been considered? (EB 51 Annex 3, §§ 67 (b), 82) <i>Fill in all alternatives in table A-2.</i>	<p>According to AMS I.D. the baseline scenario for hydro power projects “(...) is the electricity delivered to the grid by the project activity that otherwise would have been generated by the operation of grid-connected power plants and by the addition of new generation sources.”</p> <p>This baseline approach should be applied for the proposed project.</p> <p>The PP chose a step-wise approach to identify the baseline, which is not in compliance with AMS I.D. Thus the following CAR was raised:</p> <p>AMS I.D. gives a clear definition of how to derive the baseline for this specific project activity (refer to AMS I.D. paragraph 9). Thus a step wise approach is not necessary. The section should be revised considering the “guidelines for completing the SSC PDD” which gives a clear explanation about the content of this section. The client is requested to revise the</p>	/PDD/ /AMS-ID/	CAR B2	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
	section accordingly.			
B.3.2. Is the list of alternatives complete? (EB 51 Annex 3, §§67 (b), 82) <i>Describe how it was validated that all alternatives are plausible and no plausible alternative is excluded from the consideration</i>	According to AMS I.D. other plausible alternatives mustn't be considered to determine the baseline scenario. Thus this criterion is not applicable.	/PDD/ /AMS-ID/	N/A	
B.3.3. What has been identified as the baseline scenario? (EB 51 Annex 3, §§80, 81, 85) <i>Describe the chosen BL scenario</i>	The baseline is the equivalent amount of net electricity supplied by the project activity to the Vietnamese grid, thus replacing fossil fuel fired power generation.	/PDD/ /AMS-ID/	OK	
B.3.4. Has the baseline scenario been determined according to the methodology? (EB 51 Annex 3, §§81, 86 (e)) <i>Describe how it is validated that the identification of the most plausible baseline scenario is carried out in accordance with the applied methodology and applied methodological tools. Please refer to table A-2.</i>	<input type="checkbox"/> The determination has been carried out as per the applied methodology. <input checked="" type="checkbox"/> The following CARs / CLs have been identified with respect to the selection of the baseline scenario: <p>According to the methodology the baseline has been determined by multiplying net electricity supply of the proposed project with the grid emission factor derived from the national grid.</p> <p>The net generation has been determined based on analysis of hydrological conditions and implementation of appropriate technology as set out in the FSR.</p> <p>As the company providing the FSR has the necessary</p>	/PDD/ /AMS-ID/ /FSR/ /GET/ /BS/	CAR B5	OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (Means and results of assessment)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
	<p>qualification/ expertise which has been evidenced by their business licenses issued by Vietnamese government and approvals of the FSR from Vietnamese government bodies, the validation team concluded that the assumptions are reflecting the real project situation and the projected amount of electricity will most likely be supplied to the grid.</p> <p>The emission factor was determined according to methodology and stipulations as set out in the grid emission factor tool. It is based on the data provided by the Institute of Energy which is under supervision of the national grid operator EVN.</p> <p>The methodology provides two approaches to calculate the emission factor. One is based on the combined margin (CM) approach as set out in the “Tool to calculate the emission factor for an electricity grid” the other possibility is a weighted average approach accounting for emissions of the current generation mix. The first option CM approach has been chosen.</p> <p>As per the referenced tool the CM is a combination of the operating margin (OM) and the build margin (BM).</p> <p><i>Operating Margin:</i></p> <p>The OM can be determined by four different approaches. The PP chose to calculate the simple OM. The simple OM is applicable since low-cost/must-run resources constitute less than 50 % of total grid generation based on average of five most recent years. This has been calculated based on the</p>			



Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
	<p>years 2003 – 2007. The source of this data is derived from the information provided by the Institute of Energy of EVN. The calculation has been assessed by the DOE. No mistakes were detected thus the simple OM approach is correct.</p> <p>The simple OM can be calculated based on three possible options. The PP chose option A, as this is the preferred approach as indicated in the tool and information is available on fuel consumption and net electricity generation of each power plant is available. The data availability has been checked by the validation team considering the information provided by the Electricity Institute of EVN. The approach to choose option A is correct. The value calculated is assessed to be correct: <b>0.6017 tCO<sub>2</sub>/MWh</b>.</p> <p><i>Build Margin:</i></p> <p>The BM has been calculated based on the guidance provided in the tool. The project participant chose the 20 % most recent capacity additions as this comprises the larger annual generation. This has been checked with the available data and can be confirmed by the validation team.</p> <p>The value calculated is assessed to be correct: <b>0.4191 tCO<sub>2</sub>/MWh</b>.</p> <p><i>Combined Margin:</i></p> <p>The CM has been calculated by choosing the 50:50 approach for hydro power projects as stipulated by the tool. In conclusion the formulae applied are matching with the tool. No significant mistakes were detected.</p>			

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
	<p>The value calculated is assessed to be correct: <b>0.5104 tCO<sub>2</sub>/MWh</b>.</p> <p>The calculation of the emission factor follows the methodology and the tool. However the following was detected: As per the "Tool to calculate the emission factor for an electricity system" the parameter FE<sub>EL,m,y</sub> should be calculated based on appropriate option given in step 3 (a) for the simple OM calculation. Clarification should be provided which option was chosen.</p>			
<p>B.3.5. Has any plausible alternative scenario been excluded? (EB 51 Annex 3, § 82)</p> <p><i>Describe how it is validated that no plausible alternative scenario has been excluded.</i></p>	<p>A scenario approach is not stipulated by the methodology. Thus this clause is not applicable.</p>	<p>/PDD/ /AMS-ID/</p>	N/A	
<p>B.3.6. Has the baseline scenario been determined using conservative assumptions where possible? (EB 51 Annex 3, §§ 83 - 86(a)-(c))</p> <p><i>Describe whether the choice of the identified baseline scenario is reasonable by validating the <u>key assumptions, calculations and rationales</u> used in the PDD. Describe whether these are <u>conservatively interpreted</u> in the PDD.</i></p>	<p><input checked="" type="checkbox"/> The baseline scenario has been determined using conservative assumptions where possible. Please refer to comments in table A-2 and sections B.3.2 to B.3.5 above.</p> <p><input type="checkbox"/> The following CARs / CLs have been issued because assumptions used in the baseline determination have been assessed to be not conservative</p> <p>The baseline has been determined based on information provided by the Institute of Energy, which is under supervision of the state owned monopoly EVN. The information was provided under a contractual agreement with the project consultant/ participant VNEEC. The contract as well as the information provided has been checked.</p>	<p>/PDD/ /BS/ /IM05/</p>	OK	

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (Means and results of assessment)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
	<p>Furthermore an interview was conducted by the validator face to face with the responsible person of the Institute of Energy to confirm the information provided.</p> <p>The validation team came to the conclusion that the information provided is appropriate, as it is sourced from the entity which has the overall control of the electricity system in Vietnam. However, the DOE also wants to point out that this information is so far not publicly available and further information to cross-check is not available as the electricity market is quite intransparent in Vietnam. But considering that the data provided by an Institute of the state-owned electricity company, the validation team assessed it as reliable and conservative.</p>			
<p>B.3.7. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations? (EB 51 Annex 3, §§ 84, 86(d))</p> <p><i>Describe whether the PP has shown that all relevant policies and circumstances have been identified and correctly considered in the PDD in accordance with the guidance by the Board. Pl. consider the guidance EB 22 annex 3 (regarding E+ and E- policies).</i></p>	<p>Yes, as the data is provided by the state owned company EVN which supervises all electricity generating facilities in Vietnam it can be concluded that all relevant policies have been taken into account to establish the baseline. Favourable policies have not been detected by local validation team members with regard to E-/E+ policy.</p>	<p>/PDD/ /BS/</p>	<p>OK</p>	
<p>B.3.8. Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced? (EB 51 Annex 3, § 86 (a) – (c))</p> <p><i>Describe whether the documents and sources referred to in</i></p>	<p>Please refer to the statement under B.3.6.</p>	<p>/PDD/ /BS/ /IM05/</p>	<p>OK</p>	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<i>the PDD are correctly quoted and clearly referenced.</i>				
B.3.9. Does the PDD contain a <i>verifiable</i> description of the identified baseline scenario, including a description of the technology that would be employed and/or the activities that would take place in the absence of the proposed CDM project activity. (EB 51, Annex 3, §85)	Yes, the baseline identified is verifiable. Relevant sources have been provided like master plan and summary of power plants connected to the state grid.  TÜV NORD cross checked the information with interview and publicly available sources like IEA data.  Baseline is verified.	/MPEE/ /BS/ /IM05/ /iea/	OK	
<b>B.4. Additionality Determination</b>  <i>The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.</i>				
<b>B.4.1. Methodology</b>				
B.4.1.1. Did the additionality justification follow the requirements of the applied methodology and/or methodological tools? (EB 51 Annex 3, §§67 (d), 93, 94)  <i>Describe how it is validated that additionality justification is carried out in accordance with the applied methodology and/or applied methodological tools.</i>	AMS I.D. does not provide provisions for the additionality justification. Hence, generally Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities has to be applied in order to justify project's additionality. The PP assessed additionality by providing an analysis of a financial barrier.	/PDD/ /AMS-ID/ /SMP/	OK	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<b>B.4.2. Consideration of CDM before project start</b>				
<p>B.4.2.1. Is the project starting date reported in accordance with the CDM glossary of terms? (EB 51, Annex 3, §103 (a))</p> <p><i>Describe the steps taken to validate this issue.</i></p>	<p>Yes, the earliest time point where real action was taken has been chosen. 2006-12-10 has been identified as the starting date of the project activity as this is the date where the first contract has been signed and the project owner has committed to expenditures.</p> <p>During on-site visit this has been confirmed by reviewing the specified contract and by oral confirmation given by the project owner.</p> <p>The DOE can confirm that the chosen time point is in accordance with the CDM Glossary of Terms.</p>	<p>/PDD/ /IM01/ /CON/</p>	OK	
<p>B.4.2.2. In case the project start date is on or after 2<sup>nd</sup> August 2008 has the PP informed the DNA and UNFCCC about the intension to seek CDM status? (EB 51 Annex 3, §§ 98, 99, 100)</p> <p><i>Describe whether the evidence to support such consideration is adequately and transparently described in the PDD.</i></p>	N/A			
<p>B.4.2.3. In case the project start date is before commencing of validation and 2<sup>nd</sup> August 2008, was the incentive from the CDM seriously considered and are details given in the PDD? (EB 51 Annex 3, §§ 99, 101)</p>	<p>The project start date is before August 2008. Hence, the project is defined as existing.</p> <p>Several documents have been provided to the validators which show that CDM benefits have been seriously considered before project start date. All the documents listed in table 7.1. under reference /CDMD/ have been checked on-</p>	<p>/PDD/ /CDMD/ /GPCC/</p>	CAR B4	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
	<p>site. However, the information provided in the PDD is not in line with guidance given by EB 41. Thus the following CAR was raised:</p> <p>Section B.5. of the PDD should include a clear description of the milestones for the action taken to secure CDM benefits as per EB41, Annex 46, paragraph 5. The client is also requested to include important milestones of project implementation (e.g. start of construction etc.).</p>			
<p>B.4.2.4. How and when was the decision to proceed with the project taken? <i>Describe the steps taken to validate the starting date.</i></p>	<p>The decision to proceed with the project activity was taken by the Director of the project owning company on 2006-02-25. This is indicated in the written decision provided to the validation team. The original version of the written decision has been checked by the validation team during interview and assessed to be reliable.</p>	/CDMD/	OK	
<p>B.4.2.5. Is the project start date consistent with the available evidences? (EB 51 Annex 3, §101) <i>Describe the evidence assessed regarding the prior consideration of the CDM (if necessary). Describe whether the evidence to support such consideration is adequately and transparently described in the PDD.</i></p>	<p>Based on the evidences provided, the validation team comes to the conclusion that CDM benefits were considered before the starting date of the project activity.</p> <p>As stated above the first contract of the construction service (2006-12-10) has been chosen correctly as starting date of the project activity. The decision to proceed with the project was taken on 2006-02-25. Information given is in accordance with the documented evidences provided. However, CAR B4 must be closed first before forming a final conclusion.</p>	/PDD/ /CDMD/	CAR B4	OK
<p>B.4.2.6. Was the decision to proceed with the project taken by a person which has the authority to do so? (EB 51 Annex 3, § 101)</p>	<p>Yes, as already mentioned above the decision was taken by the director Mr. Ha Ngoc Phiem. During interview he confirmed this. Hence, TÜV NORD came to the conclusion</p>	/PDD/ /CDMD/	OK	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<i>Describe the steps taken to validate this issue.</i>	that authority is sufficient.	/IM01/		
<b>B.4.2.7.</b> How was the CDM involved in the decision making process? (EB 51 Annex 3, § 101) <i>Describe the steps taken to validate this issue.</i>	<p>In the very beginning of project development CDM was involved. This is shown by the documentation provided the project participants. Already in August 2005 CDM was introduced to the stakeholders as possible financing source. This has been confirmed during interview with effected stakeholders. Furthermore the company representatives requested governmental bodies, also the Vietnamese DNA, to receive support in getting CDM status.</p> <p>All the documents have been checked to be reliable. Oral confirmation was given by the project owner and the DNA representative. Thus the validation team is convinced that CDM was seriously considered and continuous action was taken to secure CDM. Thus the DOE can confirm that the provisions as stipulated in EB 41, Annex 46, clause 5 are fully met.</p>	/PDD/ /CDMD/ /IM01/ /IM06/	OK	
<b>B.4.2.8.</b> Can the CDM involvement in the decision assessed as serious? (EB 51 Annex 3, § 103 (b) – (c)) <i>Describe whether or not the project would have been undertaken without the incentive of the CDM.</i>	Please refer to the comments above.	/PDD/ /CDMD/	OK	
<b>B.4.3. Identification of alternatives Step 1</b> (in case of SSC projects pl. skip steps 1 and 2)				
<b>B.4.3.1.</b> Have all realistic alternatives been identified to the project? (EB 51 Annex 3,	According to the regulation for small scale project activities the additionality must be substantiated with identification of	/PDD/	OK	



Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
§§ 104 – 106) <i>Describe whether the list of alternatives is complete. Describe how it is validated that the alternatives are realistic.</i>	barriers as per the guidance given in Attachment A to Appendix B of the simplified modalities and procedures. Thus the identification of project alternatives is not necessary.	/SMP/ /AMS ID/		
B.4.3.2. Contains the list of alternatives at least the status-quo situation and the project not undertaken as a CDM project? (EB 51 Annex 3, §§ 104 – 106) <i>Describe the steps taken to validate this issue.</i>	Please refer comment above.	/SMP/ /AMS ID/	N/A	
B.4.3.3. Do all identified alternatives comply with applicable regulation? (EB 51 Annex 3, §§ 105 (c)) <i>Describe the steps taken to validate this issue. Refer to the regulations.</i>	Please refer comment above.	/SMP/ /AMS ID/	N/A	
<b>B.4.4. Investment analysis Step 2</b> <i>In case the investment analysis as per step 2 is chosen to justify the additionality Annex 2 "Assessment of Financial Parameters" has to be used to provide additional details of the the calculation parameters..</i>				
B.4.4.1. Is an appropriate analysis method chosen for the project (simple cost analysis, investment comparison analysis or benchmark analysis)? (EB 51 Annex 3, §107, EB 39 Annex 10) <i>Describe why the selected analysis method is appropriate under consideration of potential revenues and costs,</i>	The PP chose an investment analysis comparable to the step 2 of the additionality tool to substantiate an investment barrier.  A benchmark rate analysis is used to justify the investment barrier. The project IRR benchmark is derived from a formula provided by the Ministry of Industries as guidance for	/PDD/ /MT-AT/	OK	

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (Means and results of assessment)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<p><i>potential project alternatives and potential available benchmark values.</i></p>	<p>investment in power projects.</p> <p>According to the regulations of the CDM a benchmark approach is an appropriate method to be used for assessing additionality.</p>			
<p>B.4.4.2. Is a clear, viewable and unprotected Excel spreadsheet available for the investment calculation? (EB 51 Annex 3, §109, EB 51, Annex 58, §8)</p> <p><i>Describe the steps taken to validate this issue.</i></p>	<p>Yes, the consultancy company provided an unprotected Excel sheet. All information provided are clear, viewable and traceable. However, several issues were detected and should be clarified or corrected. This is summarized in the following findings:</p> <p>With regard to the IRR calculation the following was detected:</p> <ol style="list-style-type: none"> <li>1. The unit of surface area of reservoir is not indicated in sheet "Project Info". Revision is requested.</li> <li>2. The electricity revenues calculated in sheet "Project cash flow" are including VAT. However, according to EB 41, Annex 45, paragraph 5 taxation should be excluded, if the IRR is calculated on after tax basis. Please clarify this and ensure that it is made clear in the PDD, whether project IRR is calculated on after or before tax basis.</li> <li>3. In sheet "Assumption" several tables are included where the necessity is not clear. Especially the cells from column "P" need clarification.</li> </ol> <p>In the Excel sheet provided to show the calculation of benchmark and IRR of the project activity two different tariffs for electricity are indicated. It should be referred to sheet "Project Info", cell G 32, 820 VND/kWh and to sheet "Assumptions", cell E 46, 608 VND/kWh. The client is</p>	<p>/XLS/ /PDD/ /GAI/</p>	<p>CAR B12 CL B11 CL B14</p>	<p>OK</p>

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
	<p>requested to provide clarification regarding this finding.</p> <p>For cross-check purposes the client is requested to provide information about the different shares of the total investment for the equipment, construction etc.</p>			
<p>B.4.4.3. Does the period chosen for the investment analysis reflect the technical lifetime of the project activity or in case a shorter period is chosen, is the fair value of the project activity's assets at the end of the investment analysis period (as a cash inflow) included? (EB 51 Annex 3, §108; EB 51 Annex 58 § 3 – 4)</p> <p><i>Describe how the technical lifetime / period chosen for calculating financial parameter(s) is reviewed and which documents were utilised in the course of review. Describe furthermore the approach used to check the inclusion of a potential fair value.</i></p>	<p>The project participant chose a lifetime of 35 years to assess the cash flows for the project IRR. The chosen period for financial assessment is deemed to be appropriate, as it is in compliance with the guidance given by EB 51, Annex 58, paragraph 3 and EB 50 Annex 15. The project owner chose a linear depreciation over the 20 years period. No fair value remains. Please refer to comment below.</p>	<p>/XLS/ /PDD/ /GAI/</p>	OK	
<p>B.4.4.4. Is the fair value calculated in accordance with local accounting regulations (where available) or international best practice? (EB 51 Annex 3, §108; EB 51 Annex 58 §4)</p> <p><i>State the accounting regulations applied for calculating the fair value and describe why these are applicable under the project specific circumstances. Describe potential mismatches between regulations and the approach applied</i></p>	<p>The depreciation of the fixed asset investment is linear over the 20 years assessment period. Thus after 20 years the fair value is 0. No residual value is considered after 35 years of cash flow. TÜV NORD accepted this as it is most likely that the project will not have any value after this time period.</p>	<p>/XLS/ /PDD/ /GAI/</p>	OK	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<i>for calculating the fair value.</i>				
B.4.4.5. Is the book value as well as the expectation of the potential profit or loss included in the fair value calculation? (EB 51 Annex 3, §108; EB 51 Annex 58 §4)	The investment is completely depreciated. Thus no fair value remains. Please refer comment above.	/XLS/ /PDD/ /GAI/	OK	
B.4.4.6. Are depreciation and other non-cash related items added back to net profits for the purpose to calculate the financial indicator? (EB 51 Annex 3, §108; EB 51 Annex 58 §5)	Before forming a final opinion CAR B12 should be closed out.	/XLS/ /PDD/ /GAI/	CAR B12	OK
B.4.4.7. Is taxation excluded in the investment analysis or is the benchmark intended for post tax comparisons? (EB 51 Annex 3, §108; EB 51 Annex 58 §5)	Before forming a final opinion CAR B12 should be closed out.	/XLS/ /PDD/ /GAI/	CAR B12	OK
B.4.4.8. Were the input values used in the investment analysis valid and applicable at the time of the investment decision? (EB 51 Annex 3, §§108, 111; EB 51 Annex 58 §6)	According to the documentation provided the feasibility study report was provided in mid 2006, July 2006 respectively. However, the management decision was already taken in February 2006. Clarification is requested why the PP decided to apply for CDM even if the FSR was not issued during this time. Evidences should be submitted to confirm the assumptions taken to assess the financial barrier. On which basis did the PP decide to apply CDM?	/XLS/ /PDD/ /GAI/	CL B16	OK
B.4.4.9. In case of project IRR: Are the costs of financing expenditures (loan repayments and interests) excluded from the	The Excel calculation sheet provided by the project participants was checked carefully by the validation team. It can be confirmed that cost of financing expenditures are	/XLS/ /PDD/ /GAI/	OK	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
calculation of project IRR? (EB 51 Annex 3, §108; EB 51 Annex 58 §9)	excluded to calculate the project IRR. Thus it can be confirmed that the calculation is in line with EB 41, Annex 45, clause 8.			
<p>B.4.4.10. In cases where a post-tax benchmark is applied please ensure that actual interest payable is taken into account in the calculation of income tax.</p> <p>(EB 51 Annex 58 §11)</p> <p><i>As per the guidance it is recommended to select a pre tax benchmark in order to Describe the steps taken in assessing this requirement.</i></p>	<p>The IRR is calculated post tax and the PDD and IRR calculation spreadsheet is taking interest payable into consideration to ensure conservativeness.</p> <p>The PP applied the interest rate applicable at the time of investment decision derived from the annual yearbook of the state bank. The relevant evidence has been checked and the interest rate is confirmed.</p>	/ABV/ /IRR/	OK	
B.4.4.11. In case of equity IRR: Is the part of the investment costs, which is financed by equity considered as net cash outflow and is the part financed by debt excluded in net cash outflow? (EB 51 Annex 3, §108; EB 51 Annex 58 §10)	Not applicable as the IRR is calculated on project basis.	/XLS/ /PDD/	N/A	
B.4.4.12. Is the type of benchmark chosen appropriate for the type of IRR calculated (e.g. local commercial lending rates or weighted average costs of capital for project IRR; required/expected returns on equity for equity IRR)? (EB 51 Annex 3, § 110; EB 51 Annex 58 §12 – 15)	The benchmark used to substantiate an investment barrier should be discussed more detailed, as the approach given is not especially provided by the guidance from CDM EB. The client is requested to provide the sources of investigation to exclude the approaches for a benchmark stipulated by the CDM EB meeting 41, Annex 45. If the WACC approach is used, evidences should be provided with regard to utilizing standard market rates as stipulated by the additionality tool on page 6, para 9.	/XLS/ /PDD/ /GAI/ /MT-AT/	CAR B3	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
B.4.4.13. Is the benchmark value suitable for the project activity? (EB 51 Annex 3, §108; EB 51 Annex 58 §13 – 15)	Please refer to CAR B3 above.	/XLS/ /PDD/ /GAI/ /MT-AT/	CAR B3	OK
B.4.4.14. Is it ensured that the project cannot be developed by other developers than the PP? (EB 51 Annex 3, §108; EB 51 Annex 58 §13 – 14)	Please refer to CAR B3 above.	/XLS/ /PDD/ /GAI/ /MT-AT/	CAR B3	OK
B.4.4.15. Was the benchmark consistently used in the past for similar projects with similar risks? (EB 51 Annex 3, §§108, 109 (e); EB 51 Annex 58 §17 – 18)	Please refer to CAR B3 above.	/XLS/ /PDD/ /GAI/ /MT-AT/	CAR B3	OK
B.4.4.16. Does the PDD and related spreadsheets contain a sensitivity analysis and does the same contain variation of parameters which may vary throughout the project lifetime? (EB 51 Annex 3, §§108, 109 (e); EB 51 Annex 58 §17 – 18)	A discussion about the outcome of the sensitivity analysis should be provided in section B.5. Explanation should be given why it will most likely not be the case that each of the parameters will reach/ cross the benchmark.	/PDD/ /GAI/	CAR B3	OK
<b>B.4.5. Barrier analysis Step 3 or SSC additionality assessment</b>				
B.4.5.1. Are there any barriers given which have a	The project is small scale and the barrier is assessed with a	/PDD/	N/A	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
clear and definable impact on the profitability of the project?	financial analysis. Please refer to the comments given in previous chapter.			
B.4.5.2. How is it justified and evidenced that the barriers given in the PDD are real?	The project is small scale and the barrier is assessed with a financial analysis. Please refer to the comments given in previous chapter.	/PDD/	N/A	
B.4.5.3. How is it justified that one or a set of real barriers prevent(s) the implementation of the project activity?	The project is small scale and the barrier is assessed with a financial analysis. Please refer to the comments given in previous chapter.	/PDD/	N/A	
<b>B.4.6. Common practice analysis Step 4</b> (in case of SSC projects skip this step)				
B.4.6.1. Is the defined region for the common practice analysis appropriate for the technology/industry type?	The project is small scale. Thus this step is not applicable.	/PDD/	N/A	
B.4.6.2. To what extent similar projects have been undertaken in the relevant region?	The project is small scale. Thus this step is not applicable.	/PDD/	N/A	
B.4.6.3. In case similar projects are identified, are there any key differences between the proposed project and existing or ongoing projects and what kind of differences are observed?	The project is small scale. Thus this step is not applicable.	/PDD/	N/A	



Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<b>B.5. Ex-Ante Calculation of GHG Emission Reductions</b>  <i>It is assessed whether the ex-ante calculations of project emissions, baseline emissions, leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified. Furthermore calculation of emission reductions shall be assessed.</i>				
<b>B.5.1.</b> Are the equations applied correctly according to the applied approved methodology? (EB 51 Annex 3 §§67 (c), 88, 89, 91)  <i>Describe clearly the steps taken to assess whether The methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions.</i>	<input type="checkbox"/> The equations applied for calculation are correctly applied according to the approved methodology. <input checked="" type="checkbox"/> The following mistakes have been identified in this context: As per the “Tool to calculate the emission factor for an electricity system” the parameter $EF_{EL,m,y}$ should be calculated based on appropriate option given in step 3 (a) for the simple OM calculation. Clarification should be provided which option was chosen.  To ensure conservativeness the emission reductions should be down rounded. Thus the client is requested to revise all corresponding sections where the emission reductions are referenced and the corresponding Excel calculation sheet.	/PDD/ /GET/	CAR B5 CAR B6	OK
<b>B.5.2.</b> In case the methodology allows for different methodological choices, are the equations applied properly justified and have they been used reflecting the other methodological	In general the documentation given in PDD section B.6.1. includes all approaches to calculate the emission reductions. The information given is generally in compliance with the methodology and the grid emission factor tool. However,	/PDD/ /ACM000 2/	CAR B5	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
choices (i.e. baseline identification)? (EB 51 Annex 3 §§ 89, 90) <i>Describe whether proper justification has been provided (based on the choice of the baseline scenario, context of the project activity and other evidence provided) and whether the correct equations have been used reflecting the relevant methodological choices.</i>	CAR B5 was raised as an inconsistency was detected.	/GET/		
B.5.3. Have conservative assumptions been used when calculating the project emissions? (EB 51 Annex 3 §§ 89, 90) <i>Describe clearly the steps taken to assess whether all the assumptions and data used by the PP are listed in the PDD including references and sources and are conservatively interpreted in the PDD.</i>	According to AMS I.D. project emissions must only considered, when the power density of a reservoir is similar to the stipulations as provided in ACM0002. Since the power density of the reservoir is above 10 W/m <sup>2</sup> project emissions need not to be considered.	/PDD/ /AMS-ID/	OK	
B.5.4. Are all data and parameters which remain fixed throughout the crediting period correct, applicable to the project and will lead to a conservative estimation of emission reductions? (EB 51 Annex 3, § 90) <i>Describe clearly the steps taken to assess whether the values used for the fixed parameters are considered reasonable, correct and applicable in the context of the project activity. Check esp. chapter 6.2 of the PDD.</i>	The data which will remain fixed throughout the crediting period is the combined margin emission factor. This is in accordance to the applied methodology and thus correct. As these values are derived from data provided by the Vietnamese government they are assessed to be conservative. Thus projections of emission reductions are assessed to be conservative as well. The validation team checked the data provided by Vietnamese government. No mistake has been observed.	/PDD/ /AMS-ID/ /BS/ /GET/	OK	
B.5.5. Are all ex-ante calculation values for monitoring parameters (as defined as per chapter B.7.1) reasonable? (EB 51 Annex 3, § 90)	<input checked="" type="checkbox"/> All "Values of data to be applied for the purpose of calculating expected emissions reductions" are considered to be reasonable, applicable and conservative.	/PDD/ /AMS-ID/ /BS/	CAR B7	OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (Means and results of assessment)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<i>Describe clearly the steps taken to assess whether the values used for the monitoring parameters are considered reasonable, applicable and conservative in the context of the project activity</i>	<input type="checkbox"/> The following mistakes have been identified in this context. The value for net electricity generation is derived from the gross electricity generation as defined in the FSR deducted by 1 % of losses and self consumption, which is reasonable based on validators experts experience. The value for electricity generation in FSR is determined by a qualified third party who has the necessary expertise. The project design is based on long term measurements of hydrological condition. Thus the validation team came to the conclusion that the value for gross generation is reasonable.  The following was detected: In section B.6.2. the purpose of each parameter should be indicated, i.e. for calculation of EF <sub>OM</sub> or EF <sub>BM</sub> . A reference to the Annex 3 should be provided under "Value applied".	/GET/ /FSR/		
B.5.6. Are the emission reductions real, measurable and give long-term benefits related to the mitigation of climate change. <i>Describe the steps taken to validate this issue.</i>	Yes, as everything is provided as per the methodology and the referenced tool, and as the data collection and analysis as included in the FSR is done by a qualified third party, the validation team came to the conclusion that the proposed project in general provides real, measurable and long-term emission reductions.	/PDD/ /AMS-ID/ /FSR/ /GET/ /BS/	OK	

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (Means and results of assessment)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<b>B.6. Monitoring of Emission Reductions</b>  <i>It is assessed whether the monitoring plan is appropriate for the project activity and in line with the applied methodology.</i>				
<p>B.6.1. Are all monitoring parameters required by the applied methodology contained in the monitoring plan? (EB 51 Annex 3, §§ 67 (e), 120, 122 (a) , 123)</p> <p><i>Assess whether all applicable parameters listed in the methodology are included in the monitoring plan.</i></p> <p><i>Pl. check further whether the selection of parameters not to be monitored (section B.6.2) is appropriate and in line with the applied methodology.</i></p> <p><i>In case of different approaches can be chosen acc. to the methodology assess whether the selection of parameters is justified and correct.</i></p>	<p>No, the following was observed and should be corrected: The monitoring section B.7.1. needs to be revised according to the following issues:</p> <ol style="list-style-type: none"> <li>1. The client is requested to include the parameters EG<sub>EXP</sub> (Electricity Exports) and EG<sub>IMP</sub> (Electricity Imports) to derive EG<sub>y</sub>. It should be made clear for EG<sub>y</sub> that this is a calculated parameter which is determined by the exports and imports of electricity.</li> <li>2. The frequency of measurement and recording as per the methodology should be included in the table to the parameters EG<sub>EXP</sub> and EG<sub>IMP</sub>.</li> </ol> <p>Clarification is requested whether the project owner implemented an auxiliary electricity line during construction. If it is so confirmation should be given that the line will not be used during project operation. Otherwise this must be included in the monitoring plan and deducted from the emission reductions.</p> <p>The monitoring section in the Annex needs to be revised according to the following issues:</p> <ol style="list-style-type: none"> <li>1. A figure should be indicated showing meter location and bus bars used for electricity supply.</li> </ol>	<p>/PDD/ /ACM000 2/ /AMS-ID/</p>	<p>CAR B8 CL B9 CAR B10</p>	<p>OK</p>

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
	2. The accuracy of the meters should be provided. 3. Information should be provided if the meters are of bi-directional nature. 4. Equations need to be addressed defining how to derive to the net electricity generation of each station.			
B.6.2. Are the means of monitoring of all parameters contained in the monitoring plan in accordance with the requirements of the applied methodology? (EB 51 Annex 3, § 122 (a), 122 (b), 123) <i>Assess whether the provided information for all parameters w.r.t.</i> a) <i>Label (name of the data / parameter)</i> b) <i>data unit</i> c) <i>description</i> d) <i>source of data</i> e) <i>measurement equipment / method / procedure</i> f) <i>monitoring frequency</i> g) <i>QA/QC procedures</i> <i>are appropriately described and in compliance with the requirements of the methodology..</i>	A final assessment cannot be provided before the findings B8, B9 and B10.	/PDD/ /ACM000 2/ /AMS-ID/	CAR B8 CL B9 CAR B10	OK
B.6.3. Have all equations necessary for ex-post emission reduction calculation been described clearly and in line with the methodology? (EB	A final assessment cannot be provided before the findings B8, B9 and B10.	/PDD/ /ACM000 2/	CAR B8 CL B9	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<p>51 Annex 3 122 (b), 123)</p> <p><i>Check whether all necessary equations have been provided in the PDD. Pl. consider that ex-post and ex-ante calculations might be different.</i></p> <p><i>Please consider that additional equations might be necessary to calculate auxiliary parameters.</i></p>		/AMS-ID/	CAR B10	
<p>B.6.4. Is it likely that the monitoring arrangements described in the PDD can properly be implemented in the context of the project activity? (EB 51 Annex 3 123 (c))</p> <p><i>Assess whether the described monitoring arrangements are sufficient and realistic to enable a thorough monitoring. Pl. consider also special monitoring conditions, e.g. downtimes of monitoring equipment etc.</i></p>	In general the information given in the PDD is sufficient that arrangements can be properly implemented. During interview it was confirmed that procedures as described roughly in the PDD will be implemented.	/PDD/ /AMS-ID/ /IM01/ /IM02/	OK	
<p>B.6.5. Are the QA/QC procedures appropriate sufficient to ensure the emission reductions achieved from the project activity can be reported ex-post and verified? (EB 51 Annex 3 123 (b))</p> <p><i>Please consider the description given in section B.7.2. Describe which QA/QC provisions are considered. Address Quality Management System provisions, calibration and maintenance of equipment. Address further any review procedures.</i></p>	Yes, clear definition is given in the Annex to the PDD. However, findings 8 – 10 must be closed out before forming an opinion.	/PDD/ /AMS-ID/ /IM01/	CAR B8 CL B9  CAR B10	OK
<p>B.6.6. Are procedures identified for data management? (EB 51 Annex 3 123 (b))</p>	Yes, in the Annex to the PDD the PP provides description about data management. The validation team assessed the	/PDD/ /IM01/	OK	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<p><i>Check whether appropriate provisions are considered for data management including responsibilities, what records to keep, storage area of records and how to process performance documentation</i></p> <p><i>Check further the data archiving provisions for the project activity and ensure that provisions are made to archive data for the whole crediting period + 2 years.</i></p>	information as sufficient. It is explicitly indicated that data will be kept two years after the crediting period.	/PPA/		
<p><b>C. Duration of the Project/ Crediting Period</b></p> <p><i>It is assessed whether the temporary boundaries of the project are clearly defined.</i></p>				



Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<p>C.1. Is the project's starting date clearly defined and evidenced? (EB 51 Annex 3, §98)</p> <p><i>Check whether the starting date is correct. Apply the definition of the project starting date as per the "Glossary of CDM terms".</i></p>	<p>Yes, the earliest time point where real action was taken has been chosen. 2006-12-10 has been identified as the starting date of the project activity as this is the date where the first contract has been signed and the project owner has committed to expenditures.</p> <p>During on-site visit this has been confirmed by reviewing the specified contract (for construction of all concrete related works) and by oral confirmation given by the project owner.</p> <p>The DOE can confirm that the chosen time point is in accordance with the CDM Glossary of Terms.</p>	/PDD/	OK	
<p>C.2. Is the project's operational lifetime clearly defined and evidenced?</p> <p><i>Check whether the project lifetime is correctly defined. Consider the guidance on the assessment of investment analysis (annex to the addtionality tool).</i></p> <p><i>Check in case of phased implementation this has been reflected throughout the whole PDD incl. the financial assessment, if applicable.</i></p>	<p>The operational lifetime is 35 years which is in accordance to the guidelines provided by EB 50, Annex 15. Therefore it is assessed as appropriate.</p>	/PDD/ /GAI/	OK	
<p>C.3. Is the start of the crediting period clearly defined and reasonable?</p> <p><i>Check whether the envisaged starting date of the crediting period is realistic, taking into consideration the times needed for validation and registration.</i></p>	<p>The date indicated in section C.2.1.1. as starting date of the first crediting period is not reasonable and not matching with information provided in previous sections of the PDD. Correction is requested.</p>	/PDD/ /IM01/	CAR C1	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<b>D. Environmental Impacts</b>  <i>Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the DOE.</i>				
D.1.1. Are there any Host Party requirements for an Environmental Impact Assessment (EIA)? <i>Check the host party regulations, regarding EIA.</i>	Yes, according to Vietnamese regulation an EIA has to be conducted.  The EIA for the proposed project has been approved by the Vietnamese Government.	/EIA/ /AEIA/	OK	
D.1.2. In case an Environmental Impact Assessment (EIA) is requested by the host party, has it been carried out and if applicable duly approved? <i>Check the EIA and its approval, if applicable.</i>	Yes, please refer to statement above.	/EIA/ /AEIA/	OK	
D.1.3. Has an analysis of the environmental impacts of the project activity been sufficiently described and in line with the host party environmental legislation? <i>Check the PDD (section D). Check whether the project will create any adverse environmental effects.</i> <i>Check the relevant national environmental legislation.</i>	No, information presented in section D of the PDD is not sufficient. Therefore the following was raised: The information provided in section D of the PDD is not sufficient. It is stated that "(...) the water flow of the Nam Mu stream will be not affected in quality and quantity". The following should be clarified: 1. Two rivers are affected by the project activity according to figure 2 on page 6. A precise and accurate description should be provided explaining the impacts of both rivers. 2. In the same figure the two affected rivers are named	/PDD/ /EIA/	CAR D1 CAR D2 FAR D3	OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (Means and results of assessment)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
	<p>“Nam Ngan” and “Vat”. However, the name of the river indicated in section D is Nam Mu. Clarification and correction is requested.</p> <p>3. Furthermore information should be provided more detailed especially on the impact of fauna and flora (e. g. fish migration).</p> <p>According to Vietnamese Law local impacted people must be compensated for occupied land. This is a mitigation measure to reduce negative impacts thus should be included in section D.1. Correction is requested.</p> <p>Furthermore the following should be checked:</p> <p>During the first periodic verification the verifier should check if the necessary surface water license is obtained as indicated under section D.</p>			
D.1.4. Are transboundary environmental impacts considered in the analysis? <i>Check the documents and local official sources / expertise regarding transboundary environmental impacts.</i>	No, such impacts are not considered and not to be expected.	/EIA/	OK	
<b>E. Stakeholder Comments</b>  <i>The DOE should ensure that stakeholder comments have been invited with appropriate media and that due account has been taken of any comments received.</i>				

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (Means and results of assessment)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<p>E.1. Have relevant local stakeholders been invited to consultation prior to the publication of the PDD?</p> <p><i>Check by means of document review and interviews with local stakeholders if and when a local stakeholder consultation process has been carried out.</i></p>	<p>It is a requirement in Vietnam to start with a stakeholder process before the project starts implementation. Thus in an early stage stakeholders have been invited to give comments and were informed about the project activity. However, in the PDD it is not addressed how stakeholders have been invited which is required by the guidelines for completing PDD. Thus the following was raised:</p> <p>Information and explanation should be provided in section E.1. how stakeholders have been invited to give comments.</p>	/PDD/	CAR E1	OK
<p>E.2. Can the local stakeholder consultation process be assessed as adequate?</p> <p><i>Describe what assessment steps have been undertaken to assess the adequacy of the stakeholder consultation process. Give a final opinion on the adequacy.</i></p> <p><i>Please consider the following requirements in this context:</i></p> <p><i>(a) Comments by local stakeholders that can reasonably be considered relevant for the proposed CDM project activity, have been invited;</i></p> <p><i>(b) The summary of the comments received as provided in the PDD is complete;</i></p> <p><i>(c) The project participants have taken due account of any comments received and have described this process in the PDD.</i></p>	<p>Yes, all documents available in this stage of project implementation have been submitted and shown to the validation team. During the complete project lifetime effected stakeholders have a right to complain about negative impacts. The compensation of the stakeholders has been already negotiated and approved by the Vietnamese government. During on-site visit and interview with impacted stakeholders it could be confirmed that the procedures were followed as per regulation. The stakeholders confirmed that they have no concerns regarding the project.</p> <p>According to the documentation provided and the interviews with some stakeholders, the information provided in the PDD could be confirmed.</p>	/ACP/ /LOS/ /MOS/	OK	

## ANNEX 2: ASSESSMENT OF BASELINE IDENTIFICATION

**Table A-2:** Assessment of Baseline Identification

<input type="checkbox"/>	Baseline is not identified
<input checked="" type="checkbox"/>	Assessment of baseline see below

Baseline Alternatives identified	Inline with the Methodology?	Eliminated	Reasons for elimination / non-elimination from list of alternatives	Evidence used	DOE Assessment	
					Appropriateness of elimination	Assessment of validation team (results and means of assessment)
Equivalent amount of electricity supplied by the national grid	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Defined in applied methodology	/AMS I.D./	<input type="checkbox"/>	OK, the methodology is fully in line with the methodology.

### ANNEX 3: ASSESSMENT OF FINANCIAL PARAMETERS

**Table A-3:** Assessment of Financial Parameters

<input type="checkbox"/>	No financial parameters are used for additionality justification						
<input checked="" type="checkbox"/>	Assessment of all financial parameters see below						
Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT		
					Correctness of value applied	Appropriateness of information source	Comment
Capacity	13.5	MW	Feasibility Study Report	/FSR/	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Based on the FSR provided by the engineering company Song Da Ucrin Consulting Engineering Company Limited the capacity is defined as 13.5 MW. This has been approved by the government of Vietnam through issuing the approval of the proposed project <sup>/IL/</sup> . Song Da Ucrin Consulting Engineering Company Limited is a company with the necessary skills to determine the feasibility of hydropower plants, TÜV NORD assessed the installed capacity as reasonable. <sup>/QFP/</sup> Furthermore the equipment purchasing contract has been checked to verify the installed capacity. <sup>/EPC/</sup>
Total electricity generation	58,030	MWh	Feasibility Study Report	/FSR/	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	The value is derived from the feasibility study report which was compiled by Da Ucrin Consulting Engineering Company Limited in July 2006. The company has determined the output based on long term hydrological

							<p>conditions. The mentioned entity is an engineering company which has the necessary expertise to determine the feasibility of hydro projects.<sup>/QFP/</sup> The plant load factor is about 49 %. Considering decision in EB 48, Annex 11, clause 3 the total electricity generation is assessed as applicable. Da Ucrin Consulting Engineering Company Limited is a third party (engineering company) which has been contracted by the project owner. Furthermore the value has been approved by the government of Vietnam<sup>/IL/</sup>.</p> <p>As indicated in the PDD the amount of electricity output must be increased by 40 % to cross the benchmark. The calculation has been checked and could be verified. Considering that the hydrological conditions are based on long term measurements it is unlikely that the output will be increased by 40 % permanently. Hence, a significant improvement of the financial viability of the proposed project is unlikely.</p>
Annual Net electricity generation	57,450	MWh	Feasibility Study Report	/FSR/	☒	☒	<p>To ensure a more realistic estimation of electricity supplied to the grid the PP deducted the imports and losses from the gross electricity generation to derive the net electricity generation. It is assumed that 1 % of gross generation cannot be supplied to the grid due to imports when the power plant is not producing electricity and losses due to delivering electricity to the grid. Based on technological expertise, experiences with other hydro projects and for the sake of conservativeness the value is acceptable. In conclusion the value for net electricity</p>



							generation which is utilized to determine the revenues is assessed as appropriate.																																										
Investment costs	251,345	Mio VND	Feasibility Study Report	/FSR/	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>The value has been derived from the Feasibility Study Report. It is approved by the Peoples' Committee of Ha Giang Province.<sup>/IL/</sup></p> <p>The unit investment costs per kW are 1155 USD. Compared to other hydro projects it is reasonable. Investments in hydro projects in China, for example, are in a similar range. Furthermore the validation team has checked registered projects in Vietnam and it was observed that the investments mainly refer to a similar height as indicated in the table below.<sup>/unfccc/</sup></p> <table><tr><th>Reg. No.</th><th>Invest USD/kW</th><th>Capacity (MW)</th></tr><tr><td>2367</td><td>1117,9</td><td>5.6</td></tr><tr><td>2368</td><td>1122</td><td>5.5</td></tr><tr><td>2371</td><td>855,9</td><td>2.4</td></tr><tr><td>2372</td><td>707,3</td><td>8.7</td></tr><tr><td>2627</td><td>1261,5</td><td>15</td></tr><tr><td>2878</td><td>1244,5</td><td>15.6</td></tr><tr><td>2891</td><td>1137,7</td><td>3.6</td></tr><tr><td>2971</td><td>1225,9</td><td>20</td></tr><tr><td>2978</td><td>1127,5</td><td>18</td></tr><tr><td>3034</td><td>1192</td><td>14</td></tr><tr><td>3051</td><td>1228</td><td>19,5</td></tr><tr><td>3255</td><td>1163,5</td><td>6,4</td></tr><tr><td>3256</td><td>1115,3</td><td>7,5</td></tr></table> <p>The specific cost is in the range of the above mentioned registered projects, To summarize, TÜV NORD accepted the total</p>	Reg. No.	Invest USD/kW	Capacity (MW)	2367	1117,9	5.6	2368	1122	5.5	2371	855,9	2.4	2372	707,3	8.7	2627	1261,5	15	2878	1244,5	15.6	2891	1137,7	3.6	2971	1225,9	20	2978	1127,5	18	3034	1192	14	3051	1228	19,5	3255	1163,5	6,4	3256	1115,3	7,5
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							<p>investment figure since</p> <ol style="list-style-type: none"><li>1. The figure has been determined by an independent third engineering entity<sup>/FSR/</sup>;</li><li>2. The figure has been approved by Vietnamese government<sup>/IL/</sup>;</li><li>3. Projects of similar size in China apply same unit costs;</li><li>4. The unit costs of other registered Vietnamese hydro projects are similar.</li></ol> <p>TÜV NORD comes to the conclusion that the applied investment is applicable and appropriate.</p> <p>The sensitivity analysis which has been checked by the validation team shows that the investment must be decreased by 30 %. Considering that the consumer price indices increased over the recent years it is unlikely that the total investment can be reduced. Further the final accounting sheet has been provided showing slightly higher investment costs.<sup>/FC/</sup></p>
Electricity tariff (excl. tax)	608	VND/k Wh	Pre-negotiation Document	/PPA/	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<p>The tariff is derived from a pre-agreement with EVN of another project from end 2004. The assumption is assessed as reasonable since this tariff has been granted to other hydro projects in VN.</p> <p>The value has been checked by the validation team and it is in compliance with the experiences made during several validations conducted by TÜV NORD in Vietnam.</p> <p>The power purchase agreement has been checked and it could be confirmed that the</p>

							<p>tariff granted is 602 VND/kWh, therefore lower than the applied tariff.</p> <p>In addition other registered hydro projects in Vietnam have been checked.</p> <table><tr><th>Reg. No.</th><th>Price VND/kWh (excl. VAT)</th><th>Capacity (MW)</th></tr><tr><td>2367</td><td>602</td><td>5.6</td></tr><tr><td>2368</td><td>595</td><td>5.5</td></tr><tr><td>2371</td><td>595</td><td>2.4</td></tr><tr><td>2372</td><td>592</td><td>8.7</td></tr><tr><td>2627</td><td>603</td><td>15</td></tr><tr><td>2878</td><td>608</td><td>15.6</td></tr><tr><td>2891</td><td>595</td><td>3.6</td></tr><tr><td>2971</td><td>604</td><td>20</td></tr><tr><td>2978</td><td>602</td><td>18</td></tr><tr><td>3034</td><td>606</td><td>14</td></tr><tr><td>3051</td><td>603</td><td>19,5</td></tr><tr><td>3255</td><td>602</td><td>6,4</td></tr><tr><td>3256</td><td>608</td><td>7,5</td></tr></table> <p>The table shows that the tariff is reasonably chosen. It is the highest observed tariff granted.</p> <p>Therefore the tariff applied is assessed as acceptable and appropriately chosen.</p> <p>With regard to the sensitivity analysis an increase of 39 % must be achieved to reach the benchmark, i. e. the tariff must be increased to 845 VND/kWh. Given the electricity market situation in Vietnam (monopoly by state-owned EVN), the tariff once negotiated remains fixed long term. This might change once a competitive electricity</p>	Reg. No.	Price VND/kWh (excl. VAT)	Capacity (MW)	2367	602	5.6	2368	595	5.5	2371	595	2.4	2372	592	8.7	2627	603	15	2878	608	15.6	2891	595	3.6	2971	604	20	2978	602	18	3034	606	14	3051	603	19,5	3255	602	6,4	3256	608	7,5
Reg. No.	Price VND/kWh (excl. VAT)	Capacity (MW)																																															
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3051	603	19,5																																															
3255	602	6,4																																															
3256	608	7,5																																															

							market is established. However, so far Vietnamese market is still a monopoly and the plans to open the market are not predictable. Hence TÜV NORD accepted to apply a fixed tariff.
Operation & maintenance cost	3,300	Mio VND	Decision No. 709/QD – NLDK Ministry of Industries	/LAW/	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	The operation costs are calculated as 1.31 % of total investment according to Decision No. 709/QD – NLDK Ministry of Industries on 13 April 2004. This is assessed as reasonable and conservative as the range of O&M costs for hydro power plants is in a range of 1 – 4 % <sup>/RET/</sup> . The impact on the financial viability as shown in the sensitivity analysis is negligible.
Resource Tax	2	%	Ministry of Finance; Circular No 05 /2006/TT-BTC	/LAW/	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Based on Circular No. 05/2006/TT-BTC issued by Ministry of Finance on 19 <sup>th</sup> January 2006 the resource tax is calculated as following: net electricity generation x 700 VND x 2 %. As this costing is stipulated by Vietnamese Law, TÜV NORD assessed it as applicable. The relevant law has been checked and the information was verified.
Depreciation	20	Years	Prevailing common practice period for industrial investment project	/XLS/	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	The total investment is depreciated over 20 years with the same rate each year. This straight-line depreciation is in accordance to international accounting principles and hence accepted. No fair value remains which could be included as cash-inflow. By means of checking the calculation it is verified that depreciation is only utilized to calculate the income tax. It can be confirmed that it does not have a direct impact on cash-outflows.
Enterprise Revenue Tax	the first 4 years (0) the next 7	%	Decision No. 164/2003/ND-CP	/LAW/	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	The implementation of hydro power facilities enjoys special income tax benefits based on Decision No. 164/2003/ND-CP. The following is applied in accordance to

	years (14)  the remaining years (28)						<p>national regulations: 0 % of taxable income in the first 4 years, 14 % from 5<sup>th</sup> to 12<sup>th</sup> year, 28 % for the subsequent years. The calculation has been checked by the validation team. It can be confirmed that the calculation of income taxes follows the governmental regulation and is without any mistakes.</p>
WACC (benchmark)	13.61	%	Benchmark calculation	/XLS/	☒	☒	<p>The WACC is calculated based on the formula:</p> $WACC = \frac{E}{V} \times R_e + \frac{D}{V} \times R_d \times (1 - T_c)$ <p>Where: Re: cost of equity Rd: cost of debt E: Amount of equity in the project D: Amount of debt in the project V: Total Investment T<sub>c</sub>: Average enterprise tax rate</p> <p>The formula is correctly applied. The approach to establish a comparable benchmark to the project IRR is in compliance with EB 51, Annex 58, clause 12. The calculation was conducted without any mistakes. The result has been re-calculated by the validation team. The appropriateness of the approach is also substantiated by Decision no. 2014/QD-BCN Ministry of Industry.<sup>/LAW/</sup> In this decision the government recommends to apply the WACC to estimate the financial viability of a power generation project. Hence, TÜV NORD comes to the conclusion that the approach chosen is suitable. The benchmark is calculated based on</p>

							<p>parameters that are standard in the market. All parameters applied are assessed as correct and appropriate and chosen to ensure a high degree of conservativeness. Each parameter will be assessed subsequently.</p> <p>Compared with other registered hydro projects in Vietnam, the benchmark id of similar height even if the approach is different. Hence, TÜV NORD came to the conclusion that the benchmark applied is correct.</p>
Cost of Equity	22.45	%	Morning Star Report	/BEN/	☒	☒	<p>The cost of equity is determined by utilizing the Capital Asset Pricing Model (CAPM). The CAPM defines the compensation of investors for investments taken. One part of the formula is related to the time value of money (risk free rate) compensating for investment over a time period, the other part represents the risks for investment. This is calculated by taking a risk measure, so called beta (<math>\beta</math>). The beta compares the returns of the asset to the market over a period of time and to the market premium. The formula correctly applied is as following:</p> $R_e = R_f + \beta \times (R_m - R_f)$ <p>Where:</p> <p><math>R_e</math>: Cost of equity</p> <p><math>R_f</math>: Risk free rate</p> <p><math>\beta</math>: Beta</p> <p><math>R_m</math>: Expected market return</p> <p>The applied model is internationally known and applied in making investment decision. Hence, it is assessed to be appropriate. The relevant are assessed as following:</p> <p><b><math>R_f</math>: 9.25 %</b></p>

							<p>The risk free rate is determined by applying government bond rates from Vietnam issued for a period of 15 years on 23<sup>rd</sup> February 2006. This bond rate was available at the time of making the investment decision. The source provided by the PP has been checked.<sup>/HSE/</sup> The value applied could be verified. The value is appropriate.</p> <p><b><math>\beta</math>: 1.02</b>  The Beta was calculated based on data available for companies listed in stock markets of emerging countries like China. Figures are considered which were applicable at the time of investment decision in 2006 (from 2002 - 2005)  (<a href="http://www.stern.nyu.edu/~adamodar/pc/archives/emergcompfirm04.xls">http://www.stern.nyu.edu/~adamodar/pc/archives/emergcompfirm04.xls</a>).<sup>/BET/</sup> It should be noted that data for hydro power companies listed in the Vietnamese stock market were not available during time of CDM management decision. Therefore, the PO decided to consider companies listed in other emerging markets worldwide which provide the same service, i. e. electricity. Several companies have been identified and the average beta has been applied. The calculation and sources have been checked and no mistake could be observed. Hence, the beta is assessed as appropriate.</p> <p><b><math>R_m</math>: 26.62 %</b>  The expected market return is calculated based on average returns in Vietnamese Stock Market of the past 5.6 years till date of</p>
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						<p>management decision. The data to calculate the value has been checked. It could be verified by the validation team.<sup>/BET/</sup></p> <p>Considering the formula above the calculation resulted in cost of equity of <b>27.05 %</b>. All sources and calculation have been checked. The value is verified. It can be further confirmed that the approach is fully in line with the CDM regulations EB 51, Annex 58, clause 15 and Additionality Tool, EB 39, Annex 10, sub-step 2 b, clause 5.</p> <p>The PP contracted a financial expert to provide information and assessment about expected returns in the electricity generation sector of Vietnam. The result is a range from 23 % to 39 %. The letter provided has been checked by the validation and is assessed as reliable.<sup>/LIF/</sup> The values given substantiate that the value calculated above is in the range of expected returns.</p> <p>However, to ensure conservativeness the project participant chose to apply a value provided in the report: "International Cost of Capital Perspectives Report 2005" provided by Ibbotson Associates a subsidiary of the independent financial consultant Morning Inc. This report is listing expected returns in different emerging markets. Several values are applicable for Vietnam and the lowest of all was chosen to ensure conservativeness. The report has been checked by the validation team. The value 22.45 % could be confirmed and is assessed to be appropriate and most</p>
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							conservative.
Cost of Debt	12.6	%	Statebank of Vietnam, Annual Report 2005	/sbv/	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	As stated in the PDD the project owner choose the interest rate for a long-term loan to determine the cost of debt. The value is sourced from the Annual yearbook of the state bank of Vietnam from 2005. As correctly indicated in the PDD the PP chooses the lowest interest rate to stay conservative.
Equity share	30	%	Ministry of Industry; Decision No 709/QD-NLDK	/LAW/	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	According to Decision No 709/QD-NLDK issued on 13 <sup>th</sup> April 2004 by the Ministry of Industry, the investment capital of project sponsor (equity) in the project must be accounted for at least 30%. Hence, it is reasonable to take this value as basis for equity share. Furthermore it is common practice internationally to assume this share of equity when doing an investment. The value is appropriate.
Debt share	70	%	Ministry of Industry; Decision No 30/2006/QD-BCN	/LAW/	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Based on the definition of the equity share the share of debt is assessed as appropriate.
Average Enterprise Tax	22	%	IRR calculation; Decision No. 164/2003/ND-CP	/XLS/ /LAW/	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	The client calculated the average enterprise tax based on the tax incentives for the first years for hydropower projects and weighted it with the years where the tax rate is applied. The calculation has been computed and deemed to be appropriate as no mistake could be observed.

## ANNEX 4: ASSESSMENT OF BARRIER ANALYSIS

**Table A-4:** Assessment of Barrier Analysis

<input checked="" type="checkbox"/>		No barrier parameters are used for additionality justification		
<input type="checkbox"/>		Assessment of barriers see below		
Kind of Barrier (invest, tech, other)	Description of Barrier	Evidence used	Assessment of validation team	
			Appropriateness of information source	Explanation of final result
			<input checked="" type="checkbox"/>	
			<input checked="" type="checkbox"/>	
			<input checked="" type="checkbox"/>	
			<input checked="" type="checkbox"/>	
			<input checked="" type="checkbox"/>	
			<input checked="" type="checkbox"/>	
			<input checked="" type="checkbox"/>	
			<input checked="" type="checkbox"/>	

## ANNEX 5: OUTCOME OF THE GSCP

**Table A-5:** Outcome of the Global Stakeholder Consultation Process

<input checked="" type="checkbox"/>	No comments were received during the global stakeholder consultation period					
<input type="checkbox"/>	Comments were received during the global stakeholder consultation period. The comments (in unedited form) and the consideration/response of the validation team are presented below:					
Comment No.:	Comment by:	Inserted on:	Subject	Comment *)	Response validation team *)	Conclusion (incl. CARs CLs or FARs)

\*) In case clarifications have been requested by the validation team corresponding rows shall be added

## ANNEX 6: APPOINTMENT CERTIFICATES OF TEAM MEMBERS



### CERTIFICATE OF APPOINTMENT

**Mr. Martin Saalmann**

born on 1976-02-23

satisfies the requirements as specified in the TÜV NORD  
JI/CDM CP directives and is hereby appointed as

**TÜV NORD JI/CDM Senior Assessor**

The present appointment will terminate on 2013-03-31  
Certification registration No. 10 04 01 – 22

Essen, 2010-04-01

  
Head of TÜV NORD JI/CDM Certification Program  
of TÜV NORD CERT GmbH



### CERTIFICATE OF APPOINTMENT

**Mr. Dipl.-Ing. Rainer Winter**

born on 1963-02-21

satisfies the requirements as specified in the TÜV NORD  
JI/CDM CP directives and is hereby appointed as

**TÜV NORD JI/CDM Senior Assessor**

The present appointment will terminate on 2010-07-05  
Certification registration No. 04 02 154-03

Essen, 2007-07-06

  
Deputy of TÜV NORD JI/CDM Certification Program  
of TÜV NORD CERT GmbH



### CERTIFICATE OF APPOINTMENT

**Mr. Stefan Winter**


born on 1975-12-01

satisfies the requirements as specified in the TÜV NORD  
JI/CDM CP directives and is hereby appointed as

**TÜV NORD CDM Expert**

The present appointment will terminate on 2013-03-14  
Certification registration No. 10 03 14 – 163

Essen, 2010-03-15

  
Head of TÜV NORD JI/CDM Certification Program  
of TÜV NORD CERT GmbH