



VALIDATION REPORT

DAK PSI 3 AND 4 HYDROPOWER PROJECT

REPORT No. GHGCC(A)-10-003

REVISION No. 02.5

GHG Certification Office

KOREA ENERGY MANAGEMENT CORPORATION



VALIDATION REPORT

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Summary: The Korea Energy Management Corporation (KEMCO) Validation Team has conducted validation of the “Dak Psi 3 and 4 Hydropower Project” in Viet Nam to ensure that the proposed project is in conformity with all applicable CDM requirements including the CDM modalities and procedures, and relevant decisions by the COP/MOP and the CDM Executive Board. The validation consisted of following three phases: 1) Desk review of the project design, baseline methodology and monitoring plan, and relevant data and information; 2) On-site assessment and follow-up interviews with relevant stakeholders in the host country, personnel with knowledge of the project design and implementation; and, 3) Resolution of outstanding issues and issuance of the final validation report and opinion. During the validation, the Team assessed, using objective evidence, the completeness and accuracy of the claimed emission reductions and conservativeness of the assumptions made in the project design document (PDD). In addition, based on its sectoral expertise, the Team assessed whether the project activity complies with the relevant requirements set out in the CDM modalities and procedures, the applicability conditions of the selected methodology and guidance issued by the CDM Executive Board. In summary, KEMCO is of the opinion that the project, as described in the project design document as of 02/11/2011, meets all applicable UNFCCC requirements for the CDM and correctly applies the approved baseline and monitoring methodology ACM0002 (version 12.1.0). Hence, KEMCO requests the registration of the “Dak Psi 3 and 4 Hydropower Project” as a CDM project activity.	

Report No.: GHGCC(A)-10 -003	Subject Group:	
Report title: Dak Psi 3 and 4 Hydropower Project		
Work carried out by: Jin Young PARK(Team leader) Jong Hak KIM(Team member) Song Kwen KANG(Trainee)		
Work verified by: Seung Ho HAN		
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Indexing terms

UNFCCC/Kyoto Protocol/CDM
Validation / Verification

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Abbreviations

Explain any abbreviations that have been used in the report here.

BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CL	Clarification request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DNA	Designated National Authority
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
KEMCO	Korea Energy Management Corporation
LOA	Letter of Approval
MP	Monitoring Plan
NGO	Non-governmental Organisation
ODA	Official Development Assistance
OM	Operating Margin
PDD	Project Design Document
UNFCCC	United Nations Framework Convention on Climate Change
(CDM) VVM	Clean Development Mechanism (CDM) Validation and Verification Manual

Conversion Factors and Definitions

Insert and describe any conversion factors used in the report here. In addition, define any specific terminology used in the report.



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1 INTRODUCTION

Vitol S.A has commissioned Korea Energy Management Corporation (KEMCO) to perform a validation of the “Dak Psi 3 and 4 Hydropower Project” in Viet Nam (hereafter called “the project”). This report summarises the validation findings for the project, as well as means of validation to assess the correctness of the information provided by the project participants.

The validation team consisted of the following personnel:

Role	Name	Organization	Scope of work
Team Leader, Validator	Jin Young PARK	KEMCO GHG Certification Office	Assessment for Baseline & Monitoring
GHG Validator	Jong Hak KIM	KEMCO GHG Certification Office	Analysis for Additionality
Trainee	Song Kwen KANG	KEMCO GHG Certification Office	Training
Technical reviewer	SeungHo HAN	KEMCO GHG Certification Office	Technical review

1.1 Objective

The purpose of validation is to ensure a thorough, independent assessment of proposed project activities submitted for registration as a proposed CDM project activity against all applicable CDM requirements. In particular, application of the baseline and monitoring methodology and demonstration of the project additionality is validated through document review, on-site observation, and interviews with relevant stakeholders and personnel.

1.2 Scope

The validation scope is defined as an independent and objective review of:

- Technical description of the project;
- GHG sources and types to be included within the project boundaries;
- Baseline scenario;
- Project additionality;
- Monitoring plan;
- Environmental impacts by the proposed project; and,
- Comments by local stakeholders

The validation scope can be extended depending on project-specific situations or required by relevant decisions by the COP/MOP and the CDM Executive Board.



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1.3 GHG Project Description

The Dak Psi 3 and 4 Hydropower Project is a run-of-river hydropower plant and connected into the grid. The proposed project activity has been planned as two cascades which includes Dak Psi 3 and Dak Psi 4. Dak Psi 3 and 4 will be situated in Dak Ha and Tu Mo Rong Districts and will generate electricity using water resources of the Dak Psi River which is a branch of the Krong Ko Po river.

The annual generation of electricity is estimated at 170,755 MWh with the total installed capacity of 45 MW (Dak Psi 3 cascade : 5MW*3 units, Dak Psi 4 cascade : 10MW*3 units), and resulting emission reductions will arrive average at 88,752 tCO₂e/year which is 64,576 tCO₂e/year during first two years and 98,423 tCO₂/year during the next five years for the first seven year crediting period by displacing electricity generation by fossil fuel-fired plants.

The project has the following positive impacts with respect to contribution to sustainable development in Viet Nam:

- environmentally offsetting fossil fuel use and lowering greenhouse gas emissions;
- socially providing jobs, development of a cultural house, ensuring reliable electricity supply, roads;
- technologically transfer of hydropower-related technology; and,
- economically satisfying growing energy demands to allow the country and region to develop and alleviate poverty.



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2 METHODOLOGY

The validation may consist of the following three phases:

- 1) Desk review of the project design, baseline methodology and monitoring plan, and relevant data and information;
- 2) On-site assessment and follow-up interviews with relevant stakeholders in the host country, personnel with knowledge of the project design and implementation; and,
- 3) Resolution of outstanding issues and issuance of the final validation report and opinion.

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

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

The validation protocol consists of three tables. The different columns in these tables are described in Figure1. The completed validation protocol is enclosed in Appendix A to this report.

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

- i) Mistakes have been made with a direct influence on project results;
- ii) Validation protocol requirements have not been met; or
- iii) There is a risk that the project would not be accepted as a CDM project or that emission reductions will not be certified.

The validation team may also use the term Clarification, which would be where:

- i) Additional information is needed to fully clarify an issue.



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Validation Protocol Table 1: Mandatory Requirements			
Requirement	Reference	Conclusion	Cross reference
The requirements the project must meet.	Gives reference to the legislation or agreement where the requirement is found.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) of risk or non-compliance with stated requirements. The corrective action requests are numbered and presented to the client in the Validation report.	Used to refer to the relevant checklist questions in Table 2 to show how the specific requirement is validated. This is to ensure a transparent Validation process.

Validation Protocol Table 2: Requirement checklist				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organised in seven different sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) due to non-compliance with the checklist question (See below). Clarification is used when the validation team has identified a need for further clarification.

Validation Protocol Table 3: Resolution of Corrective Action and Clarification Requests			
Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
If the conclusions from the draft Validation are either a Corrective Action Request or a Clarification Request, these should be listed in this section.	Reference to the checklist question number in Table 2 where the Corrective Action Request or Clarification Request is explained.	The responses given by the Client or other project participants during the communications with the validation team should be summarised in this section.	This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".

Figure 1 Validation protocol tables



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2.1 Review of Documents

The Project Design Document (PDD) version 1.2 dated 06/08/2010 /1/ submitted initially and final version dated 02/11/2011 /2/ along with additional background document /3/ - /29/ related to the project design and baseline were assessed as a part of validation.

The desk review focused mainly on the following aspects:

- Participation Requirement
- Project Design Document
- Project Additionality
- Sustainable Development and Approval by Parties involved
- Baseline Methodology and Project Baseline
- Monitoring Methodology and Plan – Coverage of Emission Sources
- Monitoring Practices and GHG Data Management

2.2 Follow-up Interviews

On 1 September 2010, KEMCO performed interviews with project stakeholders and physical site-visits to confirm selected information and to resolve issues identified in the document review. The Director of Dak Psi Hydropower Investment and Development Joint Stock Company and project consultants of KYOTOEnergy Pte. Ltd. were interviewed. The main topics of the interviews are summarized in Table 1. In addition, KEMCO interviewed with a person in charge of the DNA under the Ministry of Natural Resource and Environment (MONRE) to confirm the Grid Emission Factor completed in December 2009 and made available in March 2010.

Table 1 Interview topics

Interviewed organisation	Interview topics
Dak Psi Hydropower Investment and Development Joint Stock Company	➤ Project background information ➤ Project technology, operation, maintenance and monitoring capability ➤ Project additionality ➤ Project monitoring and management plan. ➤ Project approval status (incl. EIA approval, CDM project status) ➤ Stakeholder consultation process
KYOTOEnergy Pte. Ltd.	➤ Application of selected baseline and monitoring methodology ➤ Baseline determination ➤ Emission reduction calculation ➤ Emission reduction monitoring plan
DNA under the Ministry of Natural Resource and Environment (MONRE)	➤ Grid Emission Factor

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation was to resolve the requests for corrective actions and clarification and any other outstanding issues which needed to be clarified for KEMCO's positive conclusion on the project design. The Corrective Action Requests and Clarification Requests raised by KEMCO, presented to the project participant in KEMCO's NC report as of 09/09/2010 were



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resolved during communications between the project participants and KEMCO. To guarantee the transparency of the validation process, the concerns raised and responses given are documented in the validation protocol in Appendix A.

2.4 Internal Quality Control

The final validation report underwent technical review before requesting registration of the project activity. The technical review performed by one Review Member qualified in accordance with KEMCO's Committee Operation Procedure mainly in terms of validation procedures and results, and approved by Director of KEMCO's GHG Certification Office.



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3 VALIDATION FINDINGS

In the following sections the findings of the validation are stated. The validation findings for each validation subject are presented as follows:

- 1) The findings from the desk review of the original project design documents, and the findings from physical site inspection and interviews during the follow-up visit are summarised. These findings are in detail described in the Validation Protocol in Appendix A.
- 2) Where the validation team had identified issues that needed clarification or that represented a risk to the fulfilment of the project objectives, a Clarification or Corrective Action Request, respectively, have been issued. The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Validation Protocol in Appendix A. The validation of the Project resulted in 1 Corrective Action Request and 6 Clarification Requests.
- 3) Where Clarification or Corrective Action Requests have been issued, the communications between the Client and KEMCO to resolve these Clarification or Corrective Action Requests are summarised.
- 4) In conclusion, the validation opinion of the validation team has been presented.

The final validation findings are based on the revised project design document (version 4.0) and re-submitted supporting documentation.

3.1 Approval

The project participant at the host Party's side is Dak Psi Hydropower Investment and Development Joint Stock Company, Viet Nam. Viet Nam had ratified the Kyoto Protocol on 25 September 2002 and Ministry of Natural Resources and Environment of Viet Nam takes on the DNA function.

The DNA of Viet Nam has issued a Letter of Approval (LoA) dated 17/05/2011, precisely referring to the title of the project activity and confirming that participation is voluntary, and the project assists in achieving sustainable development.

The project participant at the investing Party's side is Vitol S.A, Switzerland. Switzerland had ratified the Kyoto Protocol on 09 July 2003 and Federal Office for the Environment FOEN, Climate Unit takes on the DNA function.

The DNA of Switzerland has issued a Letter of Approval (LoA) dated 23/12/2010, precisely referring to the title of the project activity and confirming that participation is voluntary.

There are no provisions in the LoAs stipulating special conditions with respect to the above-mentioned. KEMCO received the LoAs from the project participant. It is confirmed by comparing to the other published LoAs that the LoAs are authentic. There are no descriptions in the LoAs with respect to version number of PDD and Validation Report.



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3.2 Participation

The DNA of Viet Nam has issued a Letter of Approval (LoA) dated 17/05/2011, authorizing Dak Psi Hydropower Investment and Development Joint Stock Company as project participant.

The DNA of Switzerland has issued a Letter of Approval (LoA) dated 23/12/2010, authorizing Vitol S.A.

It was not revealed any information indicating that the project can be seen as a diversion of official development assistance (ODA) funding towards Viet Nam.

3.3 Project Design Document

The PDD is prepared in accordance with the latest template (version 03) and guidance published by the CDM EB.

3.4 Project Description

The project is a grid-connected hydro power plant of which capacity is 45 MW. By supplying electricity to the grid with renewable resources, the project will reduce greenhouse gas emissions by avoiding CO₂ emissions from electricity generation by fossil fuel power plants in Viet Nam.

The main items of equipment such as turbines, generators, governors etc are imported from China. This will contribute to the transfer of technology to Viet Nam. The electricity generated by the project will be delivered to the Viet Nam national grid via a new 110 kV transmission line.

The project will considered to be relatively environmentally safe as the plant is a run-of river project with two small run-of reservoirs

The expected lifetime of the project is about 30 years. A renewable crediting period of 7 years has been chosen for the project. The emission reductions are estimated to be 64,576 tCO₂e/year during first two years and 98,423 tCO₂/year during the next five years for the first seven year crediting period.

The PDD is in accordance with the applicable CDM requirements for completing PDDs such as forms and guidance. In conclusion, Validation team confirms that the project description of the PDD is sufficiently accurate and complete in order to comply with the applicable CDM requirements through a site visit and interviews with PPs.

Regarding the project description, one CL was raised and closed as below ;

- **CL2:** The project participant stated the project activity will be built in two cascades namely Dak Psi3 and Dak Psi 4. When it is explained the project description, the explanation didn't distinguish two cascades, in particular ; 1. Facilities location on a schematic representation, 2. Plant Load Factor, and 3. Annual power supplied to the grid and Power density. (see Table 2. Section D.1) ;



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- **Corrective Actions:** PP described the project description such as facilities location, Plant Load Factor and Power Density in detail for each cascade in the revised PDD.
- **Conclusions:** Location of each cascade was updated based on the schematic representation and technologies specification was checked by reviewing the FSR and name plates. The validation team that the project activity of each cascade has properly been described in Section A.4.3 of the revised PDD. The NC therefore is closed.

3.5 Baseline and Monitoring Methodology

The proposed project appropriately applied ACM0002, “Consolidated Methodology for Grid Connected Electricity Generation from Renewable Sources” (Version 12.1.0). Compliance with each applicability condition as listed in the chosen baseline and monitoring methodology ACM0002 ver 12.1.0 has demonstrated and the version applied of ACM0002 is valid.

ACM0002 (version 12.1.0) relates to renewable electricity generation for a grid like the proposed project. It is shown transparently in Section B.2 in the PDD that the proposed project meets the applicability conditions. The validation team checked the project activity as below,

- The proposed project activity is the installation of new hydropower plant.
- The project activity results in new reservoirs that the power density(PD) is over 4W/m^2 . The surface area of the run-of-river reservoir was validated by cross-checking the Feasibility Study Report. It is confirmed that the power density of proposed project is 94.74 W/m^2 and regarding the surface area of each cascade, the surface are of Dak Psi 3 cascade is $207,000\text{m}^2$ and the surface area of Dak Psi 4 cascade is $268,000\text{m}^2$.

The project boundary established encompasses the physical, geographical site of the proposed project and the connected electricity system in Viet Nam. For hydro power plants, emissions of CH_4 from the reservoir should be accounted as per approved methodology. It was confirmed that the Power density was calculated using the surface area which was cross-checked with FSR. The power density of the power plant is 94.74W/m^2 , greater than 10W/m^2 , the project emissions from the reservoir are zero.

The emission reduction ER_y by the project during the crediting period is the difference between baseline emissions (BE_y), project emissions (PE_y) and emissions due to leakage (L_y).

With regard to calculation of GHG emission reductions, one CL was raised and then closed as follows;

- **CL3:** The project proponent calculated emission factor using historical data from 2003 to 2007. It is therefore requested to justify the historical data are most recent available at the validation by validation team (see Table 2. Section E.11);
- **Corrective Actions:** The project proponent updated the grid emission factor with the GEF published by the Viet Nam DNA in the report “STUDY, DEFINITION OF VIET NAM GRID EMISSION FACTOR”. The calculation of emission factor was completed by the DNA in December 2009 and made available in March 2010.



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Conclusions: KEMCO interviewed with the responsible person of DNA in Viet Nam on 17 Nov 2010 and confirmed that the GEF was properly calculated in line with Tool to calculate the emission factor for an electricity system (version 01.1) although the latest available version of the Tool is 2.0 because the only difference between version 1.1 and 2.0 of the Tool was the addition of the option to include off-grid generation and the result of using either version would yield the same results. It is further confirmed that the national grid data used are most recently available at the point of the commencement of validation and ver 01.1 of the tool was the latest version of the tool available when the DNA completed the Study. It was confirmed that GEF published by the Viet Nam DNA is calculated based on the Simple OM emission factor calculation method and BM option (b). For the calculation of the OM, the Simple OM emission factor calculation method is selected because low cost/must run resources constitute less than 50% of the total grid generation in average of the five most recent years and data is not available for applying the dispatch data analysis. The OM is calculated to be 0.6465 tCO₂ /MWh as a generation-weighted average for the consecutive three years (2006~2008). And selection BM option (b) is justified by showing that the set of power capacity additions in the electricity system that comprise 20% of the system generation and that have been built most recently, comprises the larger annual generation than the set of five power units that have been built most recently. The BM is calculated to be 0.5764t CO₂/MWh. Given that the weighting factors, wOM and wBM are selected as 0.5 and 0.5, respectively, as stipulated by Tool to calculate the emission factor for an electricity system (ver 01.1). Therefore NC is closed.

The proposed project participant calculated baseline emissions with the combined margin published by Viet Nam DNA that is fixed ex-ante for the crediting period as below.

- 1) Baseline emissions: Baseline emissions (BE_y in tCO₂) are the product of the baseline emission factor (EF_y in tCO₂/MWh) times the electricity supplied by the project to the grid (EG_y in MWh). For calculation emission reduction ex-ante, the electricity supplied by the project to the grid is the net electricity based on FSR.

For first two years,

$$0.5764 \text{ tCO}_2\text{e/MWh} \times 112,034 \text{ MWh} = 64,576 \text{ tCO}_2\text{e},$$

For next years,

$$0.5764 \text{ tCO}_2\text{e/MWh} \times 170,755 \text{ MWh} = 98,423 \text{ tCO}_2\text{e},$$

- 2) Project emissions: Project emissions from reservoirs of a hydropower plant are zero since the power density is greater than 10W/m². It was concluded that greenhouse gas emissions occurring within the proposed CDM project activity boundary as a result of the implementation of the proposed CDM project activity which are expected to contribute more than 1% of the overall expected average annual emissions reductions, which are not addressed by the applied methodology is zero.
- 3) Leakage: There is no emission sources as leakage in accordance with ACM0002(ver 12.1.0) since the energy generating equipment isn't transferred from another activity.
- 4) Emission reductions : baseline emissions(BE_y) minus project emissions(PE_y) and leakage emission(LE_y)



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For first two years,

$$64,576 \text{ tCO}_2\text{e} - 0 - 0 = 64,576 \text{ tCO}_2\text{e}$$

Next five years,

$$98,423 \text{ tCO}_2\text{e} - 0 - 0 = 98,423 \text{ tCO}_2\text{e}$$

Validation team confirmed that GHG emission reduction calculation is complete, accurate and transparent in line with the approved methodology ACM0002 and Tool to calculate the emission factor for an electricity system. And it is further confirmed that the national grid data used are most recently available at the point of the commencement of validation. Therefore it was concluded that the identified boundary, sources and gases are justified for the project activity.

3.6 Additionality

In order to demonstrate additionality, the PDD employed benchmark analysis and PP showed that the project is not financially attractive under the baseline scenario by using the “Tool for the demonstration and assessment of additionality (ver 05.2)”.

It is confirmed that the start date of the project activity was on 27 April 2008 when the contract for civil construction was signed between PP and a construction company in accordance with the “Glossary of CDM terms” during the site visit, therefore the proposed project is classified as an existing project activity since it started before 2 August 2008.

It was checked if the CDM benefits were sufficiently considered in the decision to proceed with the project activity because the start date of the project is prior to the date of publication of the PDD for GSC and the type of project is a existing project activity in line with Guidelines on the Demonstration and assessment of prior consideration of the CDM. To validate the prior consideration of CDM benefits the Validation Team then checked the Board Resolution on Investment in the proposed project dated 14/04/2008 stating that without CDM development with revenues from carbon credits the project is not feasible. It was therefore concluded that CDM benefits were sufficiently considered by decision-makers in the decision to proceed with the project activity before the project activity started.

In addition, the project proponent presented in the PDD the chronology of events to reveal that parallel action had been taken to implement the project and to get the project registered as a CDM activity as below,

- Board of Directors meeting: 14/04/2008
- The start of proposed project activity : 27/04/2008
- Contract for CDM signed with CDM consultant : 28/10/2008
- Contract for Emissions Reductions Purchase : 14/05/2010
- Contract for CDM Validation service with KEMCO : 20/08/2010

It was therefore concluded that CDM benefits were sufficiently considered by decision-makers in the decision to proceed with the project activity before the project activity started.



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It was finally validated that all parameters and assumptions of the proposed project are accurate and suitable in light of relevant accounting practices as follows:

1. Investment cost: it is confirmed that total investment costs was based on the Feasibility Study Report on the proposed project activity. Furthermore the appropriateness of investment costs is reinforced by cross-checking the average investment costs per capacity for two cascades are 25 million VND/kW and the Vietnamese Master plan for Electricity production, “Development Plan for National Electricity, Period 2006-2015, Vision 2025 (June 2006)” which states that per kW investment costs for hydropower projects in Viet Nam have a range of 15 mil.VND/kW to 25 mil. VND/kW. Validation team cross-checked with registered projects that investment decision was implemented in 2008 like Dak Pis 3 and 4 hydropower plant. The weighted average investment cost of the registered projects is 21 million VND/kW and the maximum investment cost is 25 million VND/kW and the minimum investment cost is 17 million VND/kW.

Registration date	Ref. No	Project	Decision Date
2010-08-20	3457	Chieng Cong	2008-01-15
2010-10-27	3667	La Hieng 2	2008-04-14
2010-11-03	3421	Song Quang	2008-04-03
2010-11-06	3682	Na Hau and Nam Tang	2008-06-12
2010-12-18	3942	Dak Nong 2	2008-05-25
2010-12-25	3396	Chau Thon	2008-04-03
2011-01-08	3980	Da Den	2008-04-02

Therefore the validation team concluded that the investment of Dak Psi 3 and 4 hydropower plant is reasonable.

2. O&M costs: O&M costs for the proposed project is 0.5% of the total investment cost and it was sourced from the Feasibility Study Report and crosschecked with Decision 2014/QD-BCN,13 June 2007 of MOI which describes the typical O&M costs for over than 30MW hydropower projects as 0.5~1% of total investment costs. Escalation in O&M costs was not applied and it is conservative.
3. Electricity tariff: the electricity tariff for the project activity was confirmed by checking the Feasibility Study Report finalized on Dec. 2007 viz. 710.4 VND/kWh. It was conservative when validation team crosschecked with pre Power Purchase Agreement between the project participant and EVN on 07/09/2007 that weighted average power tariff would be 586 VND/kWh. This tariff was also confirmed to be in line with the Tentative Decisions on Assessment of Economy and Finance for Electricity Generation Projects as announced by the Ministry of Industry (Decision No. 2014QD-BCN, 13 June 2007) stating that for more than 30MW hydropower projects, power purchase price are in the range of 2.5 to 5.0 cent/kWh during the dry season and 2.0 to 4.7 cent/kWh during the rainy season respectively. Furthermore it was also higher comparing to the average power tariff, namely 676 VND/kWh of 7 registered hydropower projects in Vietnam. Since power tariff for hydropower plants is generally determined under the Power Purchase Contract with EVN



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- during long period in Viet Nam, validation team concluded that the application of the fixed electricity tariff for investment analysis was proper.
4. Tax rate: It was confirmed that tax rate was applied in IRR calculation as per Law No 14/2008/QH12 dated 03/6/2008 and Decree No.124/2008/ND-CP dated 11/12/2008 detailing the implementation of the Law on Enterprise Income Tax. Therefore the validation team concluded that the application on corporate income tax is based on official regulations and is applicable and appropriate.
 5. Plant load factor (PLF): PLF of Dak Psi 3 and 4 hydropower plant is 44.2% and it is estimated properly by an engineering company in December 2007, considering natural conditions including water flow and net head. Furthermore Validation team cross-checked with 7 registered projects that investment decision was implemented in 2008 like Dak Pis 3 and 4 hydropower plant. The weighted average Plant load factor of the registered projects is 44.3% and the maximum value is 47.4% and the minimum value is 41.2%. Therefore the validation team concluded that the PLF of Dak Psi 3 and 4 hydropower plant is reasonable.
 6. Insurance cost: It was confirmed by checking with the relating regulation, Decision of MOF No: 33/2004/QD-BTC. And even though assuming that there is no insurance cost during the operation period, it does not much effect on the project IRR showing slight increase from 8.14% to 8.43% which is quite lower than the benchmark value, 12.28%. Therefore the validation team concluded that insurance cost is reasonable.
 7. Interest rate on term loan : Validation team confirmed that the interest rate on term loan (12.28%) applied in the financial model is a commercial lending rate which was available at investment decision time and it was confirmed by crosschecking the base interest rates published on the State Bank of Vietnam website (<http://www.sbv.gov.vn>). That the value applied is appropriate was crosschecked by confirming that according to the Vietnamese civil code at the time of decision, commercial banks had their lending rates linked to base rates by legislation. Therefore it is concluded that the applied interest rate on term loan for Dak Psi 3 and 4 hydropower plant is proper.
 8. Debt/Equity ratio: The debt/equity ratio (70/30) applied is sourced from FSR. Validation team confirmed that Dak Psi 3&4 project has been approved by Ministry of Industry and Trade on April 2008 based on FSR. Furthermore validation team crosschecked with relevant regulation that the privately developed projects in host country must legally contribute a minimum of 30% of the equity of project in order to receive a bank loan (Decision No. 30/2006/QD-BCN, Promulgating the regulation on investment and construction management applicable to independent power project), thus validation team concluded that the debt/equity ratio is considered properly.
 9. Loan and moratorium period: Loan and moratorium periods (14 years with a 4 year moratorium respectively) are sourced from FSR, Validation team confirmed that Dak Psi 3&4 project has been approved by Ministry of Industry and Trade on April 2008 based on FSR. According to government Decree 2014/QD/BCN, repayment periods can be between 10 to 15 years based on projects and bank regulation and maximum moratorium periods are the construction period. Since the proposed project activity is two large cascades, 4 construction years are reasonable. Therefore validation team concluded that loan and moratorium period applied is reasonable.
 10. Natural resource tax: It was confirmed that the tax rate was applied in IRR calculation as per



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Law No 16/2008/QĐ-BTC dated 14/04/2008. Validation team concluded that the natural resource tax in IRR calculation is considered properly.

11. Depreciation and Salvage cost: As per articles relating to depreciation in Viet Nam tax law, Circular Guiding regime on management, use and calculation of depreciation of fixed assets, No. 203-2009-TT-BTC, the equipment assets and civil works can be considered to be fully depreciated after 10 and 20 years respectively and the technical lifetime of the project can be considered to be 30 years. Since the fixed assets of the project are fully depreciated within the project lifetime and the period for financial analysis is the same as the project lifetime, there is no need to consider salvage cost. But 5% of fixed assets are applied by the PP as a salvage cost for the conservative approach. Therefore validation team concluded the application of depreciation and salvage cost is considered as appropriate.
12. Formulae and calculation processes of Project IRR are validated by reviewing calculation spreadsheets submitted by the project proponent.
13. Validity of FSR: the Feasibility Study Report for the proposed project was prepared by an engineering company, in Dec 2007. Comparing to the date of investment decision (14 April 2008), the start date of the project activity (27 April 2008), and the publication date of the Report, it is deemed reasonable to conclude that the investment decision was based on the Feasibility Study Report. The administration and other costs expenses are taken from approved feasibility study report. In Viet Nam, feasibility studies must be approved by the People's Committee. As the costs are approved by this local government authority, they are considered to be appropriate.
14. Benchmark value: the selected benchmark value is 12.28% and it is determined theoretically as 150% of the base rate as determined by the Bank of Viet Nam because the relevant civil code allows that commercial banks, when lending, charge up to 150% of the base rate while some banks were going beyond their permitted limits when validation team checked interest rates through the web sites (Viet Nam Business News, Viet Nam Banking Finance News). Since local commercial lending rate is an appropriate benchmark for a project IRR in line with Guidelines on the assessment of investment analysis, it was concluded that the selected benchmark value is proper.

With regards to the investment analysis, one CAR and one CL was raised and closed as below,

- **CAR1:** IRR calculation needs to be revised as per the following issues ;
 - 1) The criteria of Input parameter in the IRR calculation needs to be substantiated, in particular ; i) contingency (standby cost), other cost, ii) cumulative loss for 5 years
 - 2) equity ratio in the PDD is wrong referred to FSR
 - 3) with regards to depreciation, it doesn't reflect salvage value in the sheet "income statement" and it doesn't calculate until Year 22 in sheet "cash flow". (see table2, Section F.9)

■ **Corrective Actions:**

- 1) PP submitted the relevant documents for substantiating the criteria of contingency, other cost and cumulative loss for 5 years, which are the Circular 05/2007/TT-BXD



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OF July 25 2007 on contingency and other costs and the Law on Enterprise Income Tax(No. 14/2008/QH12) on cumulative loss.

2) PP updated equity ratio from 30 percentage to 70 percentage based on the FSR.

3) PP reflected salvage value in the IRR calculation..

- **Conclusions:** The contingency of Dak Psi 3&4 was cross-checked with FSR and it was confirmed that the ratio of contingency is 9.9% and it meets the relevant regulation that states contingency expenses are equal to 10% of total investment costs for projects with an execution during of up to 2 years. The costs considered in other costs were submitted in detail. The cumulative loss was also applied in accordance with the Law on Enterprise Income Tax(No. 14/2008/QH12). Furthermore “other costs” e.g. project management etc. are deemed suitable / reasonable as the FSR and has been approved by the local authorities. The NC therefore is closed.
- **CL1.** The project proponent selected the benchmark analysis to demonstrate additionality. With regards to benchmark value the followings were detected i) PP doesn’t describe clearly the applied period of benchmark value and ii) The benchmark value in the PDD is not consistent with value in a spread sheet of IRR calculation(see table2, Section F.10).
 - **Corrective Actions:** PP submitted the revised PDD including the applied period of benchmark value and also updated the IRR calculation spread sheet with the proper benchmark value.
 - **Conclusions:** PP selected the three year weighted average lending rate which is available at the investment decision making, from 15 April 2005 to 14 April 2008 and the benchmark is 12.28%. The validation team crosschecked the lending rate of the State Bank of Viet Nam. The NC therefore is closed.

It was found that the sensitivity analysis for the project activity was carried out considering both negative and positive variations in major variables such as total investment cost, O&M costs, power generation and electricity tariff. The parameters included in the sensitivity analysis constitute either more than 20% of either the total project costs or total project revenues and also considered O&M costs that occurs during the whole lifetime of the project activity and is the main operating cost associated with the project.

1. Total investment costs: For sensitivity analysis -10% variations was applied at the total investment cost. To reach 12.28% benchmark, total investment costs would need to decrease by 27.3%. According to World Economic Outlook provided by International Monetary Fund, inflation of average consumer prices in a host country has risen by 11.9% annually in 1990~2008. Thus -27.3% variation in total investment cost is not likely to occur. The conclusion is that the most likely scenario is for total investment to increase.
2. O&M costs: For sensitivity analysis -10% variation was applied at O&M cost. And to reach 12.28% benchmark, total investment costs should decreased by 955%. According to World Economic Outlook provided by International Monetary Fund, inflation of average consumer prices has risen by 11.9% annually in the period 1990~2008. Thus -955% variation in O&M cost is not likely to occur. The conclusion is that if there is a change, it is most likely that the



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cost of O&M will increase.

3. Power generation: For sensitivity analysis, +10% variations was applied at power generation (Plant Load Factor). And to reach 12.28% benchmark, Plant Load factor should increased by 36.85%. Electricity generation has been estimated based on climatic condition study which is carried out over a period of 46 years (1960~2006), that has been also assessed in FSR by an engineering company (Manh Viet construction Consultancy). In Viet Nam, companies approved by government have a qualification to undertake FSR and it can be confirmed that power generation have been estimated reasonably. Therefore +36.85% variations in power generation are not likely to occur. The conclusion is that it there is unlikely to be any significant variation in PLF.
4. Electricity tariff: For sensitivity analysis, +10% variations was applied at electricity tariff. And to reach 12.28% benchmark, electricity tariff should increased by 36.85%. Since power tariff for hydropower plants is generally determined under the Power Purchase Contract with EVN during long period in Viet Nam, +36.85% variations in power tariff is not likely to occur. The conclusion is that electricity sales prices are unlikely to change.

Results of the sensitivity analysis were confirmed by assessing the appropriateness of the assumed variations in the cash flow and noting that the IRR remains below the benchmark value under the favorable conditions assumed. Therefore validation concluded that the sensitivity analysis has been carried out appropriately as per Guideline on the assessment of the investment analysis.

With regards to barrier analysis and common practice, two CLs were raised and closed as below

- **CL4:** Other barriers analysis needs to be justified according to Guideline for objective demonstration and assessment of barrier (see table2, Section F.12).
 - **Corrective Actions:** PP demonstrated additionality using investment analysis as per Tool for the demonstration and assessment of additionality (ver05.2, EB39). In revised PDD, PP skipped the other barriers analysis.
 - **Conclusions:** the additionality of the proposed project has been demonstrated through investment analysis, in that case barrier analysis is optional. Therefore the demonstration for the additionality through only investment analysis is in line with Tool for the demonstration and assessment of additionality (ver05.2, EB39) and the NC is closed.
- **CL5:** The common practice analysis for the proposed project was carried out. Definition of the projects which is similar to the proposed project should be substantiated with supporting documents(see table2, Section F.14).
 - **Corrective Actions:** PP submitted the relevant documents such as Strategy and Program Assessment published by Asian Development Bank (ADB) in November 2005 to demonstrate that there is distinction between government and privately developed projects.
 - **Conclusions:** Through the supporting documents regarding investment climate and accessibility of financing which were submitted to the validation team, the validation team concluded that the activities with similar ownership have been selected as similar projects with Dak Psi 3 and 4 hydropower and the NC is therefore closed.



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The project participant analyzed common practice and applied three conditions including location, investment climate and scale to identify similar projects to the proposed project activity. Validation team validated three conditions as below;

Projects located in Viet Nam

Validation Team assessed the appropriateness of the geographical scope for the assessment of common practice related to hydro power projects. It is deemed reasonable that the common practice analysis for the proposed project was carried out across the national boundary. It was reinforced by crosschecking the National Power Development Plan published by Viet Nam government which does not differentiate among plants depends on the area such north or south.

Projects developed by private company

Among the criteria selected by the PP, distinction between government and privately developed projects was confirmed by crosschecking with the following sources;

- 1) the relevant legislation (Law No. Decree 151/2006/ND-CP) regulates that Private entities are required to contribute a minimum of 30% equity in order to secure a commercial bank loan, though the legislation does not apply in the case of state owned enterprises(SOEs) as for example evidence was provided that showed an SOE only being required to contribute 15% equity for a state involved power producer and,
- 2) an assessment of Viet Nam's Private Sector Assessment implemented by ADB which states "SOEs enjoy preferred access to credit, land and markets which deters private enterprises from making the investments required to successfully compete against them" and "Private enterprises continue to find it difficult to borrow from the commercial banking sector".

Therefore it was concluded that there are differentiates differences between private owned enterprises and state owned enterprises in aspect to investment climate and financial accessibility so it is reasonable that for common practice analysis state owned or government involved enterprises are excluded because the proposed project activity is developed by a private entity.

Projects with similar capacity

According to the guidelines on investment analysis for energy generation projects published by the Government of Viet Nam (2014/QD-BCN, dated as 13/06/2007), less than 30 MW and more than 30 MW hydropower projects are required to apply different values for their investment analysis such as electricity purchase price, O&M costs and operating hours. More than 30MW hydropower projects are deemed a suitable category since not only physical capacity but also assumptions for economic analysis is similar to the proposed project activity. In addition to this categorisation, PP considered the UNFCCC's definition of "large" and "small" scale plants (above and below 15MW capacity). Validation team confirmed that the approach is more conservative than similar capacity projects where more than only 30MW threshold was applied, and there is no upper limit in this method of categorizing "large scale". Therefore it was concluded 15MW threshold is proper and conservative.

As above discussion, validation team concluded conditions to define similar activities were applied in line with Tool for the demonstration and assessment additionality (ver 5.2).



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With respect to VVM 120(b), the validation team also checked that for the common practice analysis, the whole lists of hydropower plants identified by the PP are assessed with references that are the following official Vietnamese government documents and EU study on hydropower development in Viet Nam

- Ministry of Industry (MOI) / Electricity of Vietnam (EVN) / Institute Of Energy (IOE): National Power Development Plan (2006-2015) and 2025 Outlook (Vol.1), Nov. 2006 page XIV 30-31. *This is the main policy and planning document which lays out Government power development strategy in Viet Nam*
- Overview of Policy Instruments for the Promotion of renewable energy and energy efficiency in Viet Nam, Background report published by Asian Institute of Technology.

Furthermore it was evidenced by the letter from the responsible person in the government that confirming the list of power plants collected from references is the latest and best available information at the time of validation in line with VVM120(b) requires the DOE to use local expertise. Therefore the validation team concluded that the official sources/references were referred to analyze the existence of similar projects.

Under the classification, 13 hydropower projects(of identified projects) would be privately owned and only 1 project of projects developed by private sector would cross the CDM large scale / small scale threshold of 15MW generation capacity as Dak Psi 3 and 4 does. It was assessed that the majority of hydro power plants in Vietnam are large scale and developed by the State in the form of state owned IPPs, EVN ownership or by the state taking a shareholding in the power producer (96 of identified projects). Furthermore it was confirmed that this one project was built in 1943 and hence in a non-comparable investment environment.

<Summary of a common practice analysis>

Projects type	No. of projects
1.The type of Project lists	109(the projects which are operational hydropower plants)
1.1 Developed by Government side	96
1.2 Developed by private sector	13 - 1 (the project was not developed by the state developed and is with similar size, more than 15MW as Dak Psi 3 and 4 project is) - 12 (the projects are operated and developed by a private company but project size is less than 15MW)
2.hyropower CDM projects	115

In addition the Validation team assessed the changed data in between PDD for GSC and the revised PDD and confirmed that as the PP had used multiple data sources, some projects were listed twice (e.g. different spellings when translated into standard Latin alphabet, e.g. “Tra Som / Tra Xom”, please see below) and also since many projects have been considering as CDM projects, such projects should therefore not be considered as per the Additionality Tool.



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<Comparison on similar projects to the proposed project before and after the Request for Review>

Contents	Common practice analysis in PDD for GSC	Common practice analysis in Final PDD	The reason of changed data
Identified hydropower plants in Viet Nam	143 ¹⁾	109 ¹⁾	Excluded CDM projects and double counting projects
Similar projects which are operational by a private ownership with 15MW and more than 15MW	Na Le, Tra Som, Da M'bri, Cua Dat, Ha Rao Quan, Dien gio&NLM(Binh Thuan) ²⁾	Suoi Vang	Excluded or not considered in case of not operational or CDM projects or wind power project

Notes on the above table:

Note 1) 19 projects have been validated or registered as a CDM project, 10 projects were listed twice, 1 project is a government owned type and 4 were not operational. So 34 projects have been re-classified in the list of identified projects during the validation by DOE.

Note 2) The reasons that 6 projects were excluded or not considered in the revised PDD, also shown below (also showing essential distinction with one remaining plant);

Project Name	Essential Distinctions Compared with the Proposed Project	Conclusions and Actions
Na Le	Not yet operational ¹	As Additionality Tool only requires operational projects to be considered, this project should not be considered.
Cua Dat	Construction start date 27/11/2010 ² , i.e. before proposed project's PDD submission to EB for registration	As Additionality Tool only requires operational projects to be considered, this project should not be considered.
Da M'bri (previously also entered "Dambri")	Planned operation for end of 2010 ³	As Additionality Tool only requires operational projects to be considered, this should not be considered.
Tra Som	Not yet operational ⁴	As Additionality Tool only requires operational

¹ <http://www.menas.co.uk/pubsamples/VF0907.pdf>

² http://www.intellasia.net/news/articles/infra_resources/111309852.shtml

³ http://www.intellasia.net/news/articles/infra_resources/111239489.shtml

⁴ <http://www.vneconomynews.com/2011/01/song-da-group-carries-out-new-projects.html>



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(previously also entered “Tra Xom”)		projects to be considered, this project should not be considered.
Ha Rao Quan	Operational 01/01/2010 ⁵	Small scale CDM project. Should not be considered.
Dien gio & NLM (previously listed twice, found to be “Binh Thuan”)	Operational 01/01/2009 ⁶	Large scale CDM wind power project. Should not be considered.

Finally, Validation team concluded the common practice analysis was applied as per Tool to demonstrate additionality and construction of hydro power plants of the size of Dak Psi 3 and 4 by private corporations is not a common practice in Viet Nam and the proposed project activity is additional.

3.7 Monitoring Plan

The monitoring plan for the project activity is established pursuant to the approved baseline and monitoring methodology, ACM0002(version 12.1.0) and “Tool to calculate the emission factor for an electricity system (ver 01.1).”

The combined margin emission factor (CM) is determined ex-ante based on the most recently available information. Hence, electricity supplied to the grid only will be monitored.

Net electricity supplied to the grid, excluding auxiliary electricity consumption within the hydropower plants, will be directly measured by bi-directional electric meters and double-checked with the receipt for sales. Especially validation team checked that there is any fossil fuel generation or not in this hydro plant for emergency and confirmed that there is no fossil fuel generation plant for emergency during the site visit and through interviewing with PPs.

The monitoring and QA/QC procedures including responsibilities and authorities for project management, calibration of metering equipment, double-check of key monitoring indicators are

⁵ http://cdm.unfccc.int/filestorage/R13Q4JVCZUPYDE5MLG02AT19FOSKB8/Ha%20Rao%20Quan%20PDD.pdf?t=b3l8MTI5NzkzMTE3NS45OA==naQWH56S4ftB7v_bAfXQ_q7ln7E=

⁶ <http://cdm.unfccc.int/filestorage/7DQXN9JEW0BGKIRYFOLU2ZVTA1H3M5/PDD%20Vietnam%20Wind%20Power%20Plant%20No%201%20-%20Binh%20Thuan%2030MW%20V2.6%20-%20Corrections%20Requested?t=Z298MTI5NzkzMTE5OS45OQ==jyxPhKQedrZqYvi7lzbLTZ9viyYU=>



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provided in the PDD. Detailed procedures will be implemented at the latest prior to the start of the crediting period to enable subsequent verification of emission reductions. It was also checked that the monitoring of power generation and parasitic consumption by the hydropower plant would be implemented properly.

- **CL6:** It is requested to clarify how to monitor the net electricity generation supplied to the grid in monitoring plan (see table2, Section G.1).
- **Corrective Actions:** PP submitted the revised PDD that net electricity generation will be monitored with bi-directional electricity meters.
- **Conclusions:** Monitoring plan regarding the net electricity generation is substantiated in the revised PDD. The NC is therefore closed.

3.8 Local Stakeholders Consultation

It was confirmed that the stakeholder meeting was held in the Administrative Building on 09 April 2010. Personal invitations were sent to community leaders, local People's Committee representatives, media etc. and public notices of the planned consultations were placed in Newspaper which is widely published and read in provinces. In the consultation meeting, presentations were made by the project owner and consultant who outlined the planned project activity in a non-technical manner (including environmental, social and technological considerations), climate change, the role of the Clean Development Mechanism and annual emission reductions potential. It is sufficiently provided how the project owner addressed the concerns of local stakeholders.

3.9 Environmental Impacts

The Validation Team checked the Environmental Impact Assessment(EIA) report which included potential environmental impacts by the proposed project to the neighboring area and how to minimize the identified impacts. The Validation Team noted EIA was approved by the People's Committee of Kon Tum Province on 18 Mar 2008. It was therefore concluded that project does not have any significant environmental impacts.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

In accordance with Paragraph 40(c) of the CDM Modalities and Procedures, the project design document of the "Dak Psi 3 and 4 Hydropower Project" had been posted on the UNFCCC CDM website for public comments and Parties, stakeholders and NGOs were through CDM website invited to provide comments during 30 days period from 24 Aug 2010 - 22 Sep 2010 (30days). Comments were received by a stakeholder during the period as below

Comments	Validation
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1. The benchmark issues As the project IRR being calculated in the PDD is project IRR after tax while the selected benchmark is local lending rate which is not clear is post tax. The question is that what is the basis for the PP to select local lending rate as post tax benchmark and how the DOE can validate that local lending rate is a post tax benchmark? In doing so, it is clear that the selected is not conservative and this is not complied with the CDM requirements. Moreover, according to the Guideline on Assessment of Investment analysis issued by EB the Project IRR should be calculated before tax, except for the cases where the PP can prove that their selected benchmark is post-tax. Please make it clear and show the evidences to demonstrate that the selected benchmark in the PDD is post-tax benchmark and the Project IRR after tax is conservative when inflation is taken account into in IRR calculation.	The project IRR is 8.14% and when income tax is excluded the project IRR is 8.85%. And the benchmark value was selected as a local commercial lending rate. Validation team concluded the benchmark value is properly selected as a local commercial lending rate is proper according to para 12 of Guidelines on the assessment of Investment analysis(version 03.1). The project is additional whether tax is included or not, even when tested with the sensitivity analysis.
2. The other barriers issue While the PDD does not clearly present the claming of other barriers in a quantitative and transparent manner. How the DOE validate the intention of technical barrier and policy barrier as per the Annex 13, EB50 “Guideline for objective demonstration and assessment of barrier”?	PP demonstrated the additionality through the investment analysis. In the revised PDD, PP skipped other barriers. Please refer to the CL 4 and corrective actions.
3. The common practice The PDD does not clearly show what the project is similar to the proposed project. And it does not list any the projects similar to the proposed project to rule out those which are not similar to the project activity as per the Additional Tool (vev05.2). The PDD is using the approach of bottom up to avoid the showing the existing projects similar, which can be existent, to the proposed project which is not consistent with the Additional Tool. Moreover, the arguments given in the PDD is not convinced and objective (e.g how the PPs can state that “The involvement of state owned companies in a country like Viet Nam helps the project significantly, as in the power purchase agreement negotiations, permit application and People” s Committee approval processes they can use their Government contacts.? The question is that how the DOE validate the projects similar to the proposed project to conclude that the proposed project is not common.	PP substantiated the similar activities with Dak Psi 3 and 4 hydropower projects in the revised PDD and submitted the supporting documents. Please refer to the CL5 and corrective actions.
4. The emission factor issue While the Viet Nam DNA has published emission factor of Viet Nam electricity grid for 2008 (e.g 0.5764tCO₂/MWh), it is not appropriate and not conservative to apply the	PP updated GEF using GEF published by DNA. Please refer to the CL2 and corrective action.



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emissions factor calculated by the PP for period of 2005-2007 (e.g 0.602 tCO₂/MWh) where the data set was used for estimate is not clear, public and accessible. The question is that how the DOE can validate the data set used by the PPs to estimate their emission factor is appropriate, accurate and reliable? Please make it clear and the source shall be disclosed to ensure the transparency.

5 VALIDATION OPINION

KEMCO has undertaken the validation of Dak Psi 3 and 4 Hydropower Project which claimed approximately 64,576 tCO₂e/year during first two years and 98,423 tCO₂/year during the next five years for the first seven year crediting period by generating electricity utilizing water resources. To ensure the transparency and integrity of the validation, the Validation Team first had established the validation protocol taking into account UNFCCC, Kyoto Protocol, Marrakesh Accords, Decision 3, 4/CMP.1 and relevant decisions of the CDM executive board. Based on the checklist the validation of the project activity was undertaken in three stages, i.e. desk review, on-site assessment and follow-up interviews, and review of corrective actions.

As a result of the desk review and on-site assessment, the validation team identified one Corrective Action Requests (CARs) and six Clarification Requests (CLs) and then requested the project proponents to take corrective actions against them. In response to the request, the project proponents submitted the revised project documentation to the Validation Team, of which the Validation Team made a full review. Then the team has fully agreed that all CARs and CLs issued had been cleared.

In conclusion, KEMCO is of the opinion that Dak Psi 3 and 4 Hydropower Project is in full compliance with all applicable requirements for the CDM by leading to emission reductions additional to what would have otherwise occurred, providing for reliable and measurable emission reductions with the well-established monitoring plan and contributing to sustainable development in Viet Nam through improvement of environmental condition, resource exploration and conservation, and socio-economic benefits.

Main changes between PDD for GSC and final PDD

item	GSC PDD	Final PDD	Note
version	01.2	4.0	-
Submission Date	06/08/2010	02/11/2011	-
Grid Emission Factor (tCO ₂ /MWh)	0.602	0.5764	-
Annual Baseline	67,444(first two years)	64,576(first two years)	Due to the updated



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Emission(tCO ₂ /y)	102,795(during next five years) 92,695(average during the first period)	98,423(during next five years) 88,752(average during the first period)	Grid Emission Factor
Project IRR(%)	9.95	8.14	Project IRR in GSC PDD is 9.95%, that was an error and the Project IRR for GSC PDD was 8.09%. The project IRR has been updated as 8.14% through the corrective actions.



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REFERENCES

Category 1: Documents and electronic files submitted by the Project Participants

- /1/ Project Design Document (Version 1.2)
- /2/ Project Design Document (Version 4.0)
- /3/ Investment Analysis Excel File (Version 1.0)
- /4/ Investment Analysis Excel File (Version 2.2)
- /5/ Minute on purchase of electricity generated by Dak Psi 3 and 4 hydropower plant between Phu Thinh company and Viet Nam Electricity, 07/09/2007
- /6/ Notification on changing of the Project Owner from Phu Thinh company to Dak Psi Hydropower Investment and Development JSC issued by Kon Tum province people committee, 07/09/2007
- /7/ Main report for Dak Psi 3&4 Hydropower project, Dec 2007 ; installation capacity(Dak Psi 3 : 15MW, Dak Psi 4 : 30MW)
- /8/ Environmental impact assessment report on the Dak Psi 3&4 hydropower project analyzed by Da Nang city environmental protection center, Jan 2008
- /9/ Hydraulic Energy Economy assessment report on the Dak Psi 3&4 hydropower project, Jan 2008
- /10/ Cost estimation, Manh Viet consultant-construction LLC, April 2008; investment cost
- /11/ Approval by People's Committee of Kon Tum Province on Environmental impact assessment of Dak Psi 3&4 hydropower project, 18/03/2008
- /12/ The board resolution to make the investment as a CDM projects, Dak Psi Hydropower Investment and Development JSC, 14/04/2008
- /13/ The construction contract between Dak Psi Hydropower Investment and Development JSC and Phu Thinh Company, 27/04/2008
- /14/ Approval by Ministry of Industry and trade on the updated parameters of Dak Psi 3&4 Hydropower project regarding from 6MW to 15 MW for Dak Psi 3 and from 18 MW to 30MW for Dak Psi 4, 29/04/2008
- /15/ The invitation of Stakeholder meeting on Lao Dong Newspaper, 29/03/2010
- /16/ Guiding the formulation and management of work construction investment expenditures, CIRCULAR 05/2007/TT-EXD OF 25/07/2007, the Construction Ministry
- /17/ VIETNAM Quarterly Construction Cost, 3 Quarter 2009, Davis Langdon&Seah ; Investment Cost
- /18/ Decision of Ministry of Industry No:2014QD-BCN
- /19/ Law No. 14/2008/QH12(June 2008) ; Corporative Income Tax, Cumulative Loss



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- /20/ Decree No. 124/2008/NĐ-CP(11/12/2008) ; Corporative Income Tax
- /21/ Present practice in Viet Nam, Decision No 206/2003/BTC on 12/12/2003 ; Depreciation
- /22/ STUDY, DEFINITION OF VIETNAM GRID EMISSION FACTOR published and made available by Ozone Layer Protection Centre, Department of Meteorology, Hydrology and Climate Change, which was completed in December 2009 and made available March 2010.
- /23/ Homepage of the State Bank of Viet Nam, <http://www.sbv.gov.vn/en/CdeCSTT-TD/laisuat2.jsp>
- /24/ 2007 International Monetary Fund, IMF Country Report No. 07/386, Viet Nam: Statistical Appendix, December 2007
- /25/ Ministry of Industry, Tentative Decisions on Assessment of Economy and Finance for Electricity Generation Projects, Appendix I, 13 June 2007, page 8
- /26/ MOI, EVN, IOE, National Power Development Plan (2006-2015) and 2025 Outlook (Vol.1), Nov. 2006 page XIV 30-31
- /27/ Civil law No. 33/2005QH, 14 June 2005
- /28/ A letter of approval by Viet Nam, 17/05/2011
- /29/ A letter of Approval by Switzerland, 23/12/2010

Category 2: Documents and websites referred to by KEMCO

- /30/ Clean Development Mechanism Validation and Verification Manual (ver 01.2)
- /31/ ACM0002 Consolidated Methodology for Grid Connected Electricity Generation from Renewable Sources (ver12.1.0)
- /32/ Tool to calculate the emission factor for an electricity system (ver1.1)
- /33/ Tool to calculate the emission factor for an electricity system (ver2.0)
- /34/ Glossary of CDM terms (ver05)
- /35/ Tool for the demonstration and assessment of additionality (ver05.2, EB39)
- /36/ Guidance on the Assessment of Investment Analysis (ver03.1)
- /37/ Guidelines for objective demonstration and assessment of barriers(ver 01, EB50)
- /38/ Guidelines on the demonstration and assessment of prior consideration of the CDM(ver03, EB49)
- /39/ Guidelines for the reporting and validation of Plant Load Factors(ver 01, EB48)
- /40/ <http://cdm.unfccc.int/DNA/index.html>
- /41/ 2006 IPCC Guidelines for National Greenhouse Gas Inventories



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- /42/ Viet Nam : 2010 Article IV Consultation-Staff Report and Public Information Notice, IMF Country Report No. 10/281, September 2010
- /43/ ADB, Strategy and Program Assessment, November 2005
- /44/ A study on project success factors in large construction projects in Viet Nam, 2004
- /45/ World Economy Outlook provided by IMF website
- /46/ Decision No. 30/2006/QĐ-BCN, Promulgating the regulation on investment and construction management applicable to independent power project published by The Ministry of Industry, 31/08/2006

Persons interviewed:

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

Dak Psi Hydropower Investment and Development Joint Stock Company

Mr. Tran Van Tien (Deputy General Director)

Mr. Vu Honi Thyen (Project Director)

Local Persons

Ms. Y nqem

Mr. A Van

KYOTOenergy Pte. Ltd.

Mr. Abraham Antony

Mr. Bui Thanh Binh

DNA under the Ministry of Natural Resource and Environment (MONRE)

Mr. Quach Tat Quang (receipt of letter and interview)

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VALIDATION REPORT

Appendix A

Validation Protocol

Table 1. Mandatory Requirements for Clean Development Mechanism (CDM) Project Activities

REQUIREMENT	Reference	Conclusion	Comments
1. All Parties involved have approved the project activity.	Kyoto Protocol (KP) Article 12.5(a), CDM Modalities and Procedures (M&P) paragraph 28, 40(a), CDM Validation and Verification Manual (VVM) para. 44	OK	The LoAs from Viet Nam and Switzerland have been received.
2. All project participants have been listed in a consistent manner in the project documentation, and their participation in the project activity has been approved by a Party to the Kyoto Protocol.	CDM VVM para. 51	OK	The participation of all participants has been approved in the form of LoA.
3. Public funding for the project from Annex I Parties shall not result in a diversion of official development assistance	Decision 17/CP.7	OK	The validation did not reveal any information that indicates that the project can be seen as a diversion of ODA funding towards Viet Nam.
4. Comments on the validation requirements shall be received, within 30 days, from Parties, stakeholders and UNFCCC accredited NGOs, and thereafter made publicly available.	CDM M&P paragraph 40(c)	OK	The PDD of the project had been posted on the UNFCCC CDM website for public comments and Parties, stakeholders and NGOs were through CDM website invited to provide comments from 24 Aug 10 ~ 22 Sep10 (30days). One comment was received during the period.
5. 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	CDM M&P paragraph 40(b), CDM VVM para. 55	OK	The PDD is in line with the latest UNFCCC CDM-PDD format.

REQUIREMENT	Reference	Conclusion	Comments
			Table2, Section C.1
6. The PDD shall contain a clear description of the project activity that provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation.	CDM VVM para. 58	OK	Table 2, Section D.1~2,5
7. The DOE shall ensure that the baseline and monitoring methodologies selected by the project participants comply with the methodologies previously approved by the CDM Executive Board.	CDM M&P paragraph 37(e), CDM VVM para. 65	OK	Table 2, Section E.1-2
8. The DOE shall validate that the selected baseline and monitoring methodology previously approved by the CDM Executive Board, is applicable to the project activity.	CDM VVM para. 68	OK	Table 2, Section E.3
9. The PDD shall correctly describe the project boundary, including the physical delineation of the proposed CDM project activity included within the project boundary for the purpose of calculating project and baseline emissions for the proposed CDM project activity.	CDM M&P paragraph 52, CDM VVM para. 78	OK	Table 2, Section E.5
10. The PDD shall identify the baseline for the proposed CDM project activity, defined as the scenario that reasonably represents the anthropogenic emissions by sources of GHGs that would occur in the absence of the proposed CDM project activity.	CDM M&P paragraph 45(b), (c), (e), CDM VVM para. 81	OK	Table 2, Section E.6
11. The steps taken and equations applied to calculate project emissions, baseline emissions, leakage and emission reductions shall comply with the requirements of the selected baseline and monitoring methodology.	CDM M&P paragraph 45(b), CDM VVM para. 89	OK	Table 2, Section E.10~11
12. The PDD shall describe how a proposed CDM project activity is additional	KP Article 12.5(c), Decision 3/CMP.1 CDM M&P	OK	Table 2, Section F.1~2

REQUIREMENT	Reference	Conclusion	Comments
	paragraph 37(d), 43, CDM VVM para. 94		
13. If the project activity start date is prior to the date of publication of the PDD for stakeholder comments it shall be demonstrated that the that the CDM benefits were considered necessary in the decision to undertake the project as a proposed CDM project activity.	CDM VVM para. 98	OK	Table 2, Section F.3~7
14. The PDD shall identify credible alternatives to the project activity in order to determine the most realistic baseline scenario, unless the approved methodology that is selected by the proposed CDM project activity prescribes the baseline scenario and no further analysis is required (e.g., methodology ACM0002).	CDM M&P paragraph 45(b), (c), (e), CDM VVM para. 105	OK	Table 2, Section F.8
15. If investment analysis has been used to demonstrate the additionality of the proposed CDM project activity, the PDD shall provide evidence that the proposed CDM project activity would not be: (a) The most economically or financially attractive alternative; or (b) Economically or financially feasible, without the revenue from the sale of certified emission reductions (CERs). The DOE shall comply with the latest version of the “Guidance on the Assessment of Investment Analysis” as provided by the CDM Executive Board.	CDM VVM para. 108	OK	Table 2, Section F.9~11
16. If barrier analysis has been used to demonstrate the additionality of the proposed CDM project activity, the PDD shall demonstrate that the proposed CDM project activity faces barriers that: (a) Prevent the implementation of this type of proposed CDM project activity; or (b) Do not prevent the implementation of at least one of the alternatives.	CDM VVM para. 115	OK	Table 2, Section F.12~13

REQUIREMENT	Reference	Conclusion	Comments
17. For large-scale CDM project activities, unless the proposed project type is first-of-its kind, common practice analysis shall be carried out as a credibility check of the other available evidence used by the project participants to demonstrate additionality. This is a test to complement the investment analysis (Step 2 of the additionality tool) or barrier analysis (Step 3 of the additionality tool) to confirm that the project activity is not widely observed and commonly carried out in the region.	CDM VVM para. 119	OK	Table 2, , Section F.14
18. The PDD shall include a monitoring plan. This monitoring plan shall be based on the approved monitoring methodology applied to the proposed CDM project activity.	CDM M&P paragraph 37(f), CDM VVM para. 122	OK	Table 2, Section G.1
19. CDM project activities shall assist Parties not included in Annex I to the Convention in achieving sustainable development.	KP Article 12.2, CDM VVM para. 125	OK	Table 2, Section A.1 The LoAs from Viet Nam and Switzerland have been received.
20. Local stakeholders shall be invited by the PPs to comment on the proposed CDM project activity prior to the publication of the PDD on the UNFCCC website.	CDM M&P paragraph 37(b), CDM VVM para. 128	OK	Table 2, Section H.1
21. Project participants shall submit documentation to the DOE on the analysis of the environmental impacts of the project activity in accordance with paragraph 37(c) of the CDM modalities and procedures	CDM M&P paragraph 37(c), CDM VVM para. 131	OK	Table 2, Section I.1

Table 2. Requirements Checklist

 Validation Checklist		VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
A. Approval <i>In this section, it is assessed that all Parties involved have approved the project activity.</i>		Para 44 Para125					
A.1. Has the written letter(s) of approval been provided by the DNA of each Party indicated as being involved in the proposed CDM project activity in section A.3 of the PDD confirming the following: (a) The party is a Party to the Kyoto Protocol (b) Participation is voluntary (c) In the case of the host Party, the proposed CDM project activity contributes to the sustainable development of the country (d) It refers to the precise proposed CDM project activity title in the PDD being submitted for registration.		Para 45 Para126 <i>(Para49)</i> <i>(Para127)</i>	/16/ /17/	Document Review	1. Checked: The project participant at the host Party's side is Dak Psi Hydropower Investment and Development Joint Stock Company, Viet Nam. Project owner was changed from Phu Thinh Company into Dak Psi Hydropower Investment and Development Joint Stock Company and the change of PO was notified to Kon Tum province people committee on 07/09/2007. 2. Viet Nam had ratified the Kyoto Protocol on 25 September 2002 and Ministry of Natural Resources and Environment of Viet Nam takes on the DNA function. 3. The DNA of Viet Nam has issued a Letter of Approval (LOA) on 17/05/2011, precisely referring to the title of the project activity, and confirming that the project assists in achieving sustainable development. The validation team received this letter from the project	OK	OK

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
					participant and checked the approval at the website of Viet Nam DNA. 4. The project participant at the investing Party's side is Vitol S.A., Switzerland. Switzerland had ratified the Kyoto Protocol on 09 July 2003 and Federal Office for the Environment FOEN, Climate Unit takes on the DNA function. 5. The DNA of Switzerland has issued the LoA on 23/12/2010, precisely referring to the title of the project activity and confirming that participation is voluntary. The validation team received this letter from the project participant and checked the approval at the website of Viet Nam DNA.	OK	
	A.2. Is the letter(s) of approval unconditional with respect to A.1 above?	Para.46	/16/ /17/	Document Review	1. Checked: there are no provisions in the LoAs stipulating special conditions with respect to A.1 above.	OK	
	A.3. Has the letter(s) of approval been issued by the respective Party's designated national authority (DNA)? and if in doubt, has it been verified with the DNA that the letter of approval is valid for the proposed CDM project activity under validation?	Para.47	/16/ /17/	Document Review	1. The letters of approval have been issued by the Viet Nam's DNA and the Switzerland DNA.	OK	
	A.4. If the DOE doubts the authenticity of the letter of approval, has it been verified with the DNA that the letter of approval is authentic?	Para.48 (Para50)	/16/ /17/	Document Review	1. Checked: The validation team received the LoAs from the project participants. It is confirmed by visiting the DNAs' websites and comparing to the other	OK	

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
					published LoAs that the LoAs are authentic.		
B. Participation <i>In this section, it is assessed that all project participants have been listed in a consistent manner in the project documentation, and their participation in the project activity has been approved by a Party to the Kyoto Protocol.</i>		Para 51					
B.1. Has it been confirmed that the project participants are listed in tabular form in section A.3 of the PDD and that this information is consistent with the contact details provided in annex 1 of the PDD? Has it been determined whether the participation of each project participant has been approved by at least one Party involved, either in a letter of approval or in a separate letter specifically to approve participation? Has it been confirmed that no entities other than those approved as project participants are included in these sections of the PDD?		Para 52 (Para54)	/16/ /17/	Document Review	1.Checked: It was confirmed that the project participants are listed in Section A.3 of the PDD are in consistent with the contact details provided in Annex I of the PDD. 2. The participation of the project participants has been approved by the LoAs of Viet Nam and Switzerland which are authorizing Dak Psi Hydropower Investment and Development Joint Stock Company and Vitol S.A. as a project participant respectively.	OK OK	
B.2. Has it been ensured that the approval of participation has been issued from the relevant DNA? If in doubt, has it been verified with the DNA that the approval of participation is valid for the proposed CDM project participant?		Para 53	/16/ /17/	Document Review	1.Checked: The validation team received the LoAs from the project participants. It is confirmed by visiting the DNAs' websites and comparing to the other published LoAs that the LoAs are authentic.	OK	
C. Project Design Document <i>In this section, it is assessed that the PDD used as a basis for validation shall be prepared in accordance with the latest</i>		Para 55					

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	<i>template and guidance from the CDM Executive Board available on the UNFCCC CDM website.</i>						
	C.1.Has it been determined whether the PDD is in accordance with the applicable CDM requirements for completing PDDs?	Para.56	/1/	Document Review	1. Checked: The PDD is in accordance with the latest template (version 03) and guidance published by the CDM EB.	OK	
	D. Project Description <i>In this section, it is assessed that the PDD shall contain a clear description of the project activity that provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation.</i>	Para.56 (Para57)					
	D.1.Has it been confirmed that the description of the proposed CDM project activity as contained in the PDD sufficiently covers all relevant elements, is accurate and that it provides the reader with a clear understanding of the nature of the proposed CDM project activity?	Para 59	/1/ /5/	Document Review Interview	1.Checked: the proposed project aims to generate renewable-based electricity by capturing potential energy from the vertical fall of the water from the upstream level to the downstream level in a new run-of-river reservoir. Specifically, the following details of the proposed project were validated during the site visit: run-of-river with a run-of-river reservoir, a weir and spillway dam, a penstock, a powerhouse and technical specification such as capacities of turbines and generators of each cascade. 2. CL2. The project participant stated the project activity will be built in two cascades namely Dak Psi3 and Dak Psi4. When it is explained the project description, the explanation didn't	OK CL	 OK

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
					distinguish two cascades, in particular : 1. facilities location on a schematic representation, 2. Plant Load Factor, and 3. annual power supplied to the grid and Power Density		
	D.2. For proposed CDM project activities in existing facilities or utilizing existing equipments, Has a physical site inspection been conducted to confirm that the description in the PDD reflects the proposed CDM project activity for the following types of CDM project activities unless other means are specified in the methodology? (a) Large scale projects; (b) Non-bundled small scale projects with emission reductions exceeding 15,000 tonnes per year; (c) Bundled small scale projects, each with emission reductions not exceeding 15,000 tonnes per year; in such case the number of physical site visits may however be based on sampling, if the sampling size is appropriately justified through statistical analysis.	Para.60 (Para64)	/1/ /5/	Document Review	1. Checked: On 01 September 2010, the Validation Team performed a site visit and an interview with the project owner and local stakeholders to confirm selected information and to resolve issues identified in the document review.	OK	
	D.3. For other individual proposed small scale CDM project activities with emission reductions not exceeding 15,000 tonnes per year a physical site visit may be conducted as appropriate.	Para.61			N.A.		
	D.4. For all other proposed CDM project activities not referred to in paragraphs 59–61, has the validation been undertaken by reviewing available designs	Pars.62			N.A.		

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	and feasibility studies and comparison analysis to equivalent projects been conducted, as appropriate? <i>The DOE may conduct physical site visit to assess the plan. For proposed CDM project activities for which the DOE does not undertake a physical site inspection this shall be appropriately justified.</i>						
	D.5. If the proposed CDM project activity involves the alteration of an existing installation or process, does the project description clearly state the differences resulting from the project activity compared to the pre-project situation?	Para.63	/1/ /5/	Document Review	1. Checked: the proposed project is a new hydropower project.	OK	
	E. Baseline and Monitoring Methodology <i>In this section, it is assessed that the baseline and monitoring methodologies selected by the project participants comply with the methodologies previously approved by the CDM Executive Board.</i> <i>To ensure that the project activity meets this general requirement, the DOE shall determine whether: (a) The selected methodology is applicable to the project activity; (b) The PP has correctly applied the selected methodology.</i> <i>The DOE shall ensure that the selected methodology applies to the project activity and has been correctly applied with respect to following: (a) Project boundary; (b) Baseline identification; (c) Algorithms and/or formulae used to determine emission reductions; (d) Additionality; (e) Monitoring methodology.</i>	Para 65 Para 66 Para 67 (Para 135)					
	Applicability of the selected methodology to the project activity: it should be validated that the selected baseline and monitoring methodology previously approved by the CDM Executive Board, is applicable to the project activity, including that the used version is valid. And it should be applied specific guidance provided by the CDM Executive Board in respect to any approved methodology.	Para 68 Para 69					

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	E.1. Is the methodology correctly quoted and applied by comparing it with the actual text of the applicable version of the methodology available on the UNFCCC CDM website?	Para 70	/1/ /2/ /20/ /21/	Document Review	1. Checked: the ACM0002 (ver 12.1.0) has been applied, which is valid.	OK	
	E.2. (If small-scale CDM project activity) During its validation of a small-scale project activity, has it been confirmed that: (a) The project activity qualifies within the thresholds of the three possible types of small-scale project activities. It may include more than one component; for example, a type III methane recovery component activity and a type I electricity component activity; (b) The project activity conforms to one of the approved small-scale categories and applies the relevant tool or methodology. <i>The DOE shall confirm that the small-scale methodologies are applied in conjunction with the General Guidelines to SSC CDM methodologies, which provides guidelines on equipment capacity, equipment performance/lifetime, baseline identification for type-II/III Greenfield project activities, sampling and other monitoring-related issues(refer to para 17. Monitoring in Guidelines to SSC CDM methodologies);</i> (c) The project activity is not a debundled component of a large-scale project, in accordance with the rules defined in appendix C of the simplified modalities and procedures for small-scale CDM project activities (d) Whether an assessment of the environmental	Para 136			2. Checked: It's not applicable since the proposed project is not small-scale CDM project.	OK	

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	impacts of the proposed CDM project activity is required by the host Party						
	E.3. A selected approved methodology applies to the project activity if the applicability conditions of the methodology are met and the project activity is not expected to result in emissions other than those allowed by the methodology. Has it been determined whether the choice of methodology is justified and the project participants have shown that the project activity meets each of the applicability conditions of the approved methodology or any tool or other methodology component referred to therein? <i>This shall be done by validating the documentation referred to in the PDD and by verifying that its content is correctly quoted and interpreted in the PDD. If the DOE, based on local and sectoral knowledge, is aware that comparable information is available from sources other than that used in the PDD, then the DOE shall cross check the PDD against the other sources to confirm that the project activity meets the applicability conditions of the methodology.</i>	Para.71 (Para76) (Para77)	/1/ /2/ /20/ /21/	Document Review	1. Checked: the ACM0002 (version 12.1.0) relates to renewable electricity generation for a grid like the proposed project. It is shown transparently in Section B.2 that the proposed project meets the applicability conditions. The validation team checked the project activity as below, - The proposed project activity is the installation of hydropower plant. - The project activity results in new reservoirs that the power density(PD) is over 10W/m². In this regard, the surface area of the run-of-river reservoir was validated by cross-checking the Feasibility Study Report. It is thus confirmed that the power density of proposed project is 94.74 W/m² and for Dak Psi 3 cascade, the power density is 72 W/m² and for Dak Psi 4 cascade, the power density is 112 W/m².	OK	
	E.4. If the DOE cannot make a determination regarding the applicability of the selected methodology to the proposed CDM project activity then the DOE shall request clarification of the methodology in accordance with the guidance provided by the	Para 72 Para 74 Para 75			1. Checked: no clarification is required.	OK	

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	CDM Executive Board. <i>If the DOE has requested clarification of, revision to or deviation from a methodology, the DOE shall not submit a request for registration until the CDM Executive Board has approved the proposed deviation or revision. Under no circumstance shall the DOE consider the submission of a request for registration as a means of seeking clarification from the CDM Executive Board on the applicability of a methodology.</i>						
	E.5. If the DOE determines that the proposed CDM project activity does not comply with the applicability conditions of the methodology the DOE may proceed by means of requesting revision to or deviation from the methodology in accordance with the guidance provided by the CDM Executive Board. <i>If the DOE has requested clarification of, revision to or deviation from a methodology, the DOE shall not submit a request for registration until the CDM Executive Board has approved the proposed deviation or revision.</i>	Para 73 Para 74			1. Checked: no revision to or deviation from the methodology is required.	OK	
	<i>Project boundary: The PDD shall correctly describe the project boundary, including the physical delineation of the proposed CDM project activity included within the project boundary for the purpose of calculating project and baseline emissions for the proposed CDM project activity.</i>	Para 78					
	E.6. Based on documented evidence and corroborated by a site visit where required by paragraphs 59–62 above, has it been determined whether the delineation in the PDD of the project boundary is correct and meets the requirements of the selected baseline methodology?	Para 79 (Para80)	/1/ /2/ /20/ /21/	Document Review	1. Checked: The project boundary established encompasses the physical, geographical site of the proposed project and the connected electricity system in Viet Nam.	OK	

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	Has it been confirmed that all sources and GHGs required by the methodology have been included within the project boundary? If the methodology allows project participants to choose whether a source or gas is to be included within the project boundary, has it been determined whether the project participants have justified that choice? Has it been confirmed that the justification provided is reasonable, based on assessment of supporting documented evidence provided by the project participants and corroborated by observations if required?				2. Only CO₂ emissions are included within the project boundary in line with the baseline methodology. 3. Since the power density (PD) of the proposed project is 94.74 W/m², greater than 10 W/m², the project emissions from the reservoir are zero.	OK OK	
	<i>Baseline identification: The PDD shall identify the baseline for the proposed CDM project activity, defined as the scenario that reasonably represents the anthropogenic emissions by sources of GHGs that would occur in the absence of the proposed CDM project activity.</i> <i>The DOE shall confirm that any procedure contained in the methodology to identify the most reasonable baseline scenario, has been correctly applied. If the selected methodology requires use of tools (such as the Tool for the demonstration and assessment of additionality and the Combined tool to identify the baseline scenario and demonstrate additionality) to establish the baseline scenario, the DOE shall consult the methodology on the application of these tools. In such cases, the guidance in the methodology shall supersede the tool. The DOE shall check each step in the procedure described in the PDD against the requirements of the methodology.</i>	Para 81 Para 82					
	E.7. If the methodology requires several alternative scenarios to be considered in the identification of the most reasonable baseline scenario, has it been determined, based on financial expertise and	Para 83	/1/ /2/ /20/ /21/	Document Review	1. Checked: three alternatives to the proposed project activity are identified and deemed relevant to the project	OK	

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	local and sectoral knowledge, whether all scenarios that are considered by the project participants and are supplementary to those required by the methodology, are reasonable in the context of the proposed CDM project activity and that no reasonable alternative scenario has been excluded?				activity in the context of the host country and proposed project. It is justified that the continuation of the current situation is the baseline scenario by describing that other two scenarios are neither credible nor realistic in the context of the host country and proposed project.		
	E.8. Has it been determined whether the baseline scenario identified is reasonable by validating the assumptions, calculations and rationales used, as described in the PDD? Has it been ensured that documents and sources referred to in the PDD are correctly quoted and interpreted? <i>The DOE shall cross check the information provided in the PDD with other verifiable and credible sources, such as local expert opinion, if available.</i>	Para.84 (Para87) (Para88)	/1/ /2/ /20/ /21/	Document Review	1. Checked: The analysis of why other two alternatives are eliminated is properly carried out: the coal power is not the option for the project company and other renewable energy projects like PV and wind powers are not widely spread. The baseline scenario of this project is based on the reasonable assumptions that the project will displace the electricity generated by power plants in the existing electricity system.	OK	
	E.9. Has it been determined whether all applicable CDM requirements have been taken into account in the identification of the baseline scenario for the proposed CDM project activity, including relevant national and/or sectoral policies and circumstances? <i>Drawing on its knowledge of the sector and/or advice from local experts, the DOE shall confirm that all relevant policies and circumstances have been identified and correctly considered in the PDD, in accordance with the guidance by the CDM Executive Board.</i>	Para.85	/1/ /2/ /20/ /21/	Document Review	1. Checked: the baseline scenario includes as an alternative, power plants in the existing electricity system as per the approved methodology ACM0002. 2. The validation team checked that the electricity has been supplied through national grid in Viet Nam has national grid and an electricity tariff for IPP hydropower plants is generally determined under the Power Purchase	OK OK	

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
					Contract with Electricity of Viet Nam (EVN). It was further confirmed during the site visit that no further financial incentives were provided by the government for the proposed project.		
	E.10. Has it been determined whether the PDD provides a verifiable 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?	Para 86	/1/ /2/ /20/ /21/	Document Review	1. Checked: Based on the national grid information from EVN, it is confirmed that other renewable energy projects like PV and wind powers are not widely spread.	OK	
	<i>Algorithms and/or formulae used to determine emission reductions: The steps taken and equations applied to calculate project emissions, baseline emissions, leakage and emission reductions shall comply with the requirements of the selected baseline and monitoring methodology.</i>	Para 89					
	E.11. Has it been determined whether the equations and parameters in the PDD have been correctly applied by comparing them to those in the selected approved methodology? If the methodology provides for selection between different options for equations or parameters, has it been confirmed that adequate justification has been provided (based on the choice of the baseline scenario, context of the proposed CDM project activity and other evidence provided) and that the correct equations and parameters have been used, in accordance with the methodology selected?	Para 90	/1/ /2/ /4/ /20/ /21/	Document Review	1. CL3. The project proponent calculated emission factor using historical data from 2003 to 2007. It is therefore requested to justify the historical data are most recent available at the validation by validation team.	CL	OK

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	E.12. Has the justification given in the PDD for the choice of data and parameters used in the equations been verified? If data and parameters will not be monitored throughout the crediting period of the proposed CDM project activity but have already been determined and will remain fixed throughout the crediting period, has it been assessed that all data sources and assumptions are appropriate and calculations are correct, applicable to the proposed CDM project activity and will result in a conservative estimate of the emission reductions? If data and parameters will be monitored on implementation and hence become available only after validation of the project activity, has it been confirmed that the estimates provided in the PDD for these data and parameters are reasonable?	Para 91 (Para92) (Para93)	/1/ /2/ /4/ /20/ /21/	Document Review	1. CL3. The project proponent calculated emission factor using historical data from 2003 to 2007. It is therefore requested to justify the historical data are most recent available at the validation by validation team.	CL	OK
	F. Additionality of a Project Activity <i>In this section, it is assessed that the proposed CDM project activity is additional.</i>	Para 94					
	F.1. Have the reliability and credibility of all data, rationales, assumptions, justifications and documentation provided by project participants to support the demonstration of additionality, been assessed and verified? <i>This requires the DOE to critically assess the presented evidence, using local knowledge and sectoral and financial expertise.</i>	Para 95 (Para97)	/3/ /22/ /23/ /24/	Document Review	1. Checked: refer to F.9 below	OK	

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	F.2. Have tools and documents provided by the CDM Executive Board to demonstrate the additionality of proposed CDM project activities, as well as specific complementary or alternative requirements included in approved CDM methodology, been considered?	Para 96 (Para137)	/3/ /22/ /23/ /24/	Document Review	1. Checked: Glossary of CDM terms (ver05), Additionality Tool (ver05.2), and the Guidance on the Assessment of Investment Analysis (ver03) has been followed.	OK	
	<i>Prior consideration of the clean development mechanism: If the project activity start date is prior to the date of publication of the PDD for stakeholder comments it shall be demonstrated that the CDM benefits were considered necessary in the decision to undertake the project as a proposed CDM project activity.</i>	Para 98					
	F.3. Has it been confirmed that the start date of the project activity, reported in the PDD, is in accordance with the Glossary of CDM terms? <i>If the reported date is not in accordance with the glossary, the DOE shall raise a CAR to ensure that the start date is correctly reported in a revised PDD. In particular, for project activities that require construction, retrofit or other modifications, the date of commissioning cannot be considered the project activity start date.</i>	Para 99 (Para104)	/3/ /22/ /23/ /24/	Document Review	1. Checked: The start date of the project activity was on 27 April 2008 when the contract for civil construction was signed between PP and a construction company in accordance with the “Glossary of CDM terms.”	OK	
	F.4. Has it been determined, in accordance with the guidance from the CDM Executive Board, whether it is a new project activity (a project activity with a start date on or after 02 August 2008) or an existing project activity (a project activity with a start date before 02 August 2008)?	Para 100	/3/ /22/ /23/ /24/	Document Review	1. Checked: it is confirmed that the proposed project is classified as an existing project activity since it started before 2 August 2008.	OK	
	F.5. For a new project activity with a start date on or after 2 August 2008, for which PDD has not been published for global stakeholder consultation or a new methodology proposed to the Executive	Para 101			N.A.		

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	alia, contracts with consultants for CDM/PDD/methodology services, Emission Reduction Purchase Agreements or other documentation related to the sale of the potential CERs (including correspondence with multilateral financial institutions or carbon funds), evidence of agreements or negotiations with a DOE for validation services, submission of a new methodology to the CDM Executive Board, publication in newspaper, interviews with DNA, earlier correspondence on the project with the DNA or the UNFCCC secretariat.				- Contract for Emissions Reductions Purchase : 14/05/2010 - Contract for CDM Validation service with KEMCO : 20/08/2010 3. It was therefore concluded that CDM benefits were sufficiently considered by decision-makers in the decision to proceed with the project activity before the project activity started. In addition, the project proponent presented in the PDD the chronology of events to reveal that parallel action had been taken to implement the project and to get the project registered as a CDM activity.	OK	
	F.7. If evidence to support the serious prior consideration of the CDM as indicated above is not available, has it been determined that the CDM was not considered in the decision to implement the project activity?	Para 103			1. Checked: refer to F.6 above	OK	
	<i>Identification of alternatives: The PDD shall identify credible alternatives to the project activity in order to determine the most realistic baseline scenario, unless the approved methodology that is selected by the proposed CDM project activity prescribes the baseline scenario and no further analysis is required.</i>	Para 105					
	F.8. Has the list of alternatives given in the PDD, been assessed and has it been ensured that: (a) The list of alternatives includes as one of the options that the project activity is undertaken without being registered as a proposed CDM	Para 106 (Para107)	/3/ /22/ /23/ /24/	Document Review	1. Checked: the alternatives identified in the PDD include the option that the proposed project activity is undertaken without being registered as a CDM project	OK	

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	project activity; (b) The list contains all plausible alternatives that the DOE, on the basis of its local and sectoral knowledge, considers to be viable means of supplying the outputs or services that are to be supplied by the proposed CDM project activity; (c) The alternatives comply with all applicable and enforced legislation.				activity. 2. The alternatives provide the same outputs, i.e. electricity with the proposed project activity and have been implemented previously or are currently being introduced in the host country. 3. The alternatives identified are in compliance with all Vietnamese legal and regulatory requirements.	OK	OK
	<i>Investment analysis: If investment analysis has been used to demonstrate the additionality of the proposed CDM project activity, the PDD shall provide evidence that the proposed CDM project activity would not be: (a) The most economically or financially attractive alternative; or (b) Economically or financially feasible, without the revenue from the sale of certified emission reductions (CERs).</i> <i>Project participants can show this through one of the following approaches, by demonstrating that: (a) The proposed CDM project activity would produce no financial or economic benefits other than CDM-related income. Document the costs associated with the proposed CDM project activity and the alternatives identified and demonstrate that there is at least one alternative which is less costly than the proposed CDM project activity; (b) The proposed CDM project activity is less economically or financially attractive than at least one other credible and realistic alternative; (c) The financial returns of the proposed CDM project activity would be insufficient to justify the required investment.</i> <i>The DOE shall comply with the latest version of the Guidance on the Assessment of Investment Analysis as provided by the CDM Executive Board and with other relevant guidance including the latest guidelines on plant load factors guidelines for the reporting</i>	Para 108 Para 109 Para 110					

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	other parameters used in the investment analysis by comparing with the region values.				hydropower projects as 0.5~1% of total investment costs. Escalation in O&M costs was not applied. 4. Electricity tariff: the electricity tariff for the project activity was confirmed by checking the Feasibility Study Report finalized on Dec. 2007 viz. 710.4 VND/kWh. It was conservative comparing to pre Power Purchase Agreement between the project participant and EVN on 07/09/2007 that weighted average power tariff would be 586 VND/kWh. This tariff was also confirmed to be in line with the Tentative Decisions on Assessment of Economy and Finance for Electricity Generation Projects as announced by the Ministry of Industry (Decision No. 2014QD-BCN, 13 June 2007) stating that for more than 30MW hydropower projects, power purchase price are in the range of 2.5 to 5.0 cent/kWh during the dry season and 2.0 to 4.7 cent/kWh during the rainy season respectively. 5. Tax rate: It was confirmed that tax rate was applied in IRR calculation as per Law No 14/2008/QH12 dated 03/6/2008 and Decree No.124/2008/ND-CP dated	OK OK	

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
					11/12/2008 detailing the implementation of the Law on Enterprise Income Tax. 6. Plant load factor (PLF): PLF is estimated properly by an engineering company completed in December 2007, considering natural conditions including water flow and net head. 7. Auxiliary consumption: Line loss and auxiliary consumption, 2% of generated electricity was confirmed by crosschecking with 38 registered hydropower projects in Viet Nam showing that the range is in from 1% to 3.2% and the average is 1.6%. And even though assuming that there is no auxiliary assumption, it does not much effect on the project IRR showing slight increase from 8.14% to 8.38% which is quite lower than the benchmark value, 12.28%. 8. Insurance cost: It was confirmed by checking with the relating regulation, Decision of MOF No: 33/2004/QD-BTC. And even though assuming that there is no insurance cost during the operation period, it does not much effect on the project IRR showing slight increase from 8.14% to 8.43% which is quite lower than the benchmark value, 12.28%.	OK OK OK	

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
					9. Salvage cost: It was properly applied for investment analysis considering the fair value of the proposed project assets at the end of the assessment in line with “Guidelines on the assessment of investment analysis(version03.1).” As a conservative approach, a small amount of residual value is considered by the PP even though the assets are fully depreciated. 10. Formulae and calculation processes of Project IRR are validated by reviewing calculation spreadsheets submitted by the project proponent. 11. It was found that the sensitivity analysis for the project activity was carried out considering both negative and positive variations in major variables such as total investment costs, O&M costs, power generation, and feed-in-tariff. 12. CAR1. IRR calculation needs to be revised as per the following issues ; 1)The criteria of Input parameter in the IRR calculation needs to be substantiated, in particular ; contingency(standby cost), other cost,	OK OK OK CAR	OK

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
					cumulative loss for 5 years 2)equity ratio in the PDD is wrong referred to FSR 3)with regards to depreciation, it doesn't reflect salvage value in the sheet "income statement" and it doesn't calculate until Year 22 in sheet "cash flow".		
	F.10. Has the suitability of any benchmark applied in the investment analysis, been confirmed as follows? (a) Determine whether the type of benchmark applied is suitable for the type of financial indicator presented; (b) Ensure that any risk premiums applied in determining the benchmark reflect the risks associated with the project type or activity; (c) Determine whether it is reasonable to assume that no investment would be made at a rate of return lower than the benchmark by, for example, assessing previous investment decisions by the project participants involved and determining whether the same benchmark has been applied or if there are verifiable circumstances that have led to a change in the benchmark.	Para 112	/1/ /3/ /22/ /23/ /24/	Document Review	1. Checked: the selected benchmark value is determined theoretically as 150% of the base rate as determined by the Bank of Viet Nam because the relevant civil code requires that commercial banks, when lending, charge up to 150% of the base rate while some banks were going beyond their permitted limits. 2. CL1. The project proponent selected the benchmark analysis to demonstrate additionality. With regards to benchmark value the followings were detected - PP doesn't describe clearly the applied period of benchmark value. - The benchmark value in the PDD is not consistent with value in a spread sheet of IRR calculation.	OK CL	 OK
	F.11. In cases where project participants rely on values from Feasibility Study Reports (FSR) that	Para 113	/1/ /3/ /5/	Document Review	1. Checked: the Feasibility Study Report for the proposed project was prepared by an	OK	

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	are approved by national authorities for proposed CDM project activities, has it been ensured that: (a) The FSR has been the basis of the decision to proceed with the investment in the project, i.e. that the period of time between the finalization of the FSR and the investment decision is sufficiently short for the DOE to confirm that it is unlikely in the context of the underlying project activity that the input values would have materially changed; (b) The values used in the PDD and associated annexes are fully consistent with the FSR, and where inconsistencies occur the DOE should validate the appropriateness of the values; (c) On the basis of its specific local and sectoral expertise, confirmation is provided, by cross-checking or other appropriate manner, that the input values from the FSR are valid and applicable at the time of the investment decision.				engineering company, in Dec 2007. Comparing to the date of investment decision (14 April 2008), the start date of the project activity (27 April 2008), and the publication date of the Report, it is deemed reasonable to conclude that the investment decision was based on the Feasibility Study Report.		
	<i>Barrier analysis: If barrier analysis has been used to demonstrate the additionality of the proposed CDM project activity, the PDD shall demonstrate that the proposed CDM project activity faces barriers that: (a) Prevent the implementation of this type of proposed CDM project activity²⁹; (b) Do not prevent the implementation of at least one of the alternatives.</i>	Para 115					
	F.12. Has the barrier analysis referred to either? (a) Risk related barriers, for example risk of technical failure, that could have negative	Para 116	/1/	Document Review Interview	1. CL4: Other barriers analysis needs to be justified according to Guideline for objective demonstration and assessment	CL	OK

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	effects on financial performance; or (b) Barriers related to the unavailability of sources of finance for the project activity.				of barrier.		
	F.13. Has the barrier analysis performed been assessed as follows: (a) Determine whether the barriers are real. <i>The DOE shall assess the available evidence and/or undertake interviews with relevant individuals (including members of industry associations, government officials or local experts if necessary) to determine whether the barriers listed in the PDD exist. The DOE shall ensure that existence of barriers is substantiated by independent sources of data such as relevant national legislation, surveys of local conditions and national or international statistics. If existence of a barrier is substantiated only by the opinions of the project participants, the DOE shall not consider this barrier to be adequately substantiated. If the DOE considers, on the basis of its sectoral or local expertise, that a barrier is not real or is not supported by sufficient evidence, it shall raise a CAR to have reference to this barrier removed from the project documentation;</i> (b) Determine whether the barriers prevent the implementation of the project activity but not the implementation of at least one of the possible alternatives. <i>Since not all barriers present an insurmountable hurdle to a project activity being implemented, the DOE shall apply</i>	Para 117 (Para118)	/1/	Document Review Interview	1. CL4: Other barriers analysis needs to be justified according to Guideline for objective demonstration and assessment of barrier.	CL	OK

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	<i>its local and sectoral expertise to judge whether a barrier or set of barriers would prevent the implementation of the proposed CDM project activity and would not equally prevent implementation of at least one of the possible alternatives, in particular the identified baseline scenario.</i>						
	<i>Common practice analysis: For proposed large-scale CDM project activities, unless the proposed project type is first-of-its kind, common practice analysis shall be carried out as a credibility check of the other available evidence used by the project participants to demonstrate additionality. This is a test to complement the investment analysis (Step 2 of the additionality tool) or barrier analysis (Step 3 of the additionality tool) to confirm that the project activity is not widely observed and commonly carried out in the region.</i>	Para 119					
	F.14. Has the common practice analysis been assessed using local and sectoral expertise as follows? (a) Assess whether the geographical scope (e.g. the defined region) of the common practice analysis is appropriate for the assessment of common practice related to the project activity's technology or industry type. For certain technologies the relevant region for assessment will be local and for others it may be transnational/global. If a region other than the entire host country is chosen, the DOE shall assess the explanation why this region is more appropriate; (b) Using official sources and local and industry expertise, determine to what extent similar	Para 120 (Para121)	/1/ /10/ /11/	Document Review	1. Checked: It is deemed reasonable the common practice analysis for the proposed project was carried out across the national boundary. 2. CL5 : The common practice analysis for the proposed project was carried out. Definition of the projects which is similar to the proposed project should be substantiated with supporting documents.	OK CL	 OK

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	and operational projects (e.g. using similar technology or practice), other than CDM project activities, have been undertaken in the defined region; (c) If similar and operational projects, other than CDM project activities, are already widely observed and commonly carried out in the defined region, assess whether there are essential distinctions between the proposed CDM project activity and the other similar activities.						
	G. Monitoring Plan <i>It is assessed in this section that the monitoring plan is based on the approved monitoring methodology applied to the proposed CDM project activity</i>	Para 122					
	G.1. Has the compliance of the monitoring plan with the approved methodology been assessed as follows? (a) By means of document review, identify the list of parameters required by the selected approved methodology; (b) Confirm 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 methodology. (c) In case of the project which transfers the electricity generated by project activities to a grid, for example renewable energy power generation project, check the all possible project emissions including the import of	Para 123 (Para124)	/1/	Document Review	1. Checked: in line with the ACM0002 (version 12.1.0), electricity supplied to the grid by the hydropower plants, will be monitored. 2. Net electricity supplied to the grid, excluding auxiliary electricity consumption within the hydropower plants, will be directly measured by bi-directional electric meters and double-checked with the receipt for sales. 3. The electricity generation data is directly measured by kilowatt hour meters at the project site and collated according to the	OK OK OK	

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	design; (b) 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.				PDD.		
	H. Local Stakeholder Consultation <i>In this section, it is assessed whether local stakeholders have been invited by the PPs to comment on the proposed CDM project activity prior to the publication of the PDD on the UNFCCC website.</i>	Para 128					
	H.1. Has it been determined, by means of document review and interviews with local stakeholders as appropriate, whether: (a) Comments by local stakeholders that can reasonably be considered relevant for the proposed CDM project activity, have been invited; (b) The summary of the comments received as provided in the PDD is complete; (c) The project participants have taken due account of any comments received and have described this process in the PDD.	Para 129 (Para130)	/1/	Document Review Interview	1. Checked: it was confirmed that the stakeholder meeting was held in the Administrative Building on 09 April 2010. Personal invitations were sent to community leaders, local People's Committee representatives, media etc. and public notices of the planned consultations were placed in Newspaper which is widely published and read in provinces. In the consultation meeting, presentations were made by the project owner and consultant who outlined the planned project activity in a non-technical manner (including environmental, social and technological considerations), climate change, the role of the Clean	OK	

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
					Development Mechanism and annual emission reductions potential. 2. There were 24 participants attending the meeting. The questions received in the stakeholder meetings and answers from the project developers, are summarized in Section E.2. 3. It is sufficiently provided how the project owner addressed the concerns of local stakeholders.	OK	
	I. Environmental Impacts <i>In this section, it is assessed that project participants shall submit documentation on the analysis of the environmental impacts of the project activity in accordance with paragraph 37(c) of the CDM modalities and procedures.</i>	Para 131					
	I.1. I.1 Has it been confirmed, by means of a document review and/or using local official sources and expertise, whether the project participants have undertaken an analysis of environmental impacts and, if required by the host Party, an environmental impact assessment?	Para 132 (Para133)	/1/ /15/	Document Review Interview	1. Checked: the Validation Team checked the EIA report which included potential environmental impacts by the proposed project to the neighboring area and how to minimize the identified impacts. The Validation Team noted the approval letters issued by People's Committee of Kon Tum Province on 18 March 2008. 2. It was therefore concluded that project does not have any significant environmental impacts.	OK	
	J. Duration of the Project/ Crediting Period						

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	<i>It is assessed whether the temporal boundaries of the project are clearly defined.</i>						
	J.1. Is the operational lifetime of the project activity clearly defined and reasonable?		/1/	Document Review	1. Checked: the lifetime of the proposed project is 30 years	OK	
	J.2. Is the assumed crediting time clearly defined and reasonable (renewable crediting period of max. two times 7 years or fixed crediting period of max. 10 years)?		/1/	Document Review	1. Checked: the crediting period for the proposed project activity is seven years with renewal.	OK	
	J.3. Is the assumed crediting time chosen as below the operational lifetime of the project activity?		/1/	Document Review	1. Checked: it is confirmed that the assumed crediting time is chosen as below the operational lifetime of the project activity.	OK	

Table 3. Resolution of Corrective Action and Clarification Requests

Non-conformities	Reference	Corrective Actions	Comments
CAR1: IRR calculation needs to be revised as per the following issues ; 1) The criteria of Input parameter in the IRR calculation needs to be substantiated, in particular ; i) contingency(standby cost), other cost, ii) cumulative loss for 5 years 2) equity ratio in the PDD is wrong referred to FSR 3) with regards to depreciation, it doesn't reflect salvage value in the sheet "income statement" and it doesn't calculate until Year 22 in sheet "cash flow".	table2, Section F.9	1)PP submitted the relevant documents for substantiating the criteria of contingency, other cost and cumulative loss for 5 years, which are the Circular 05/2007/TT-BXD OF July 25 2007 on contingency and other costs and the Law on Enterprise Income Tax(No. 14/2008/QH12) on cumulative loss. 2)PP updated equity ratio from 30 percentage to 70 percentage based on the FSR. 3)PP reflected salvage value in the IRR calculation.	The contingency of Dak Psi 3&4 was cross-checked with FSR and it was confirmed that the ratio of contingency is 9.9% and it meets the relevant regulation that states contingency expenses are equal to 10% of total investment costs for projects with an execution during of up to 2 years. The costs considered in other costs were submitted in detail. The cumulative loss was also applied in accordance with the Law on Enterprise Income Tax(No. 14/2008/QH12). Furthermore "other costs" e.g. project management etc. are deemed suitable / reasonable as the FSR and has been approved by the local authorities. The NC therefore is closed.
CL1. The project proponent selected the benchmark analysis to demonstrate additionality. With regards to benchmark value the followings were detected i) PP doesn't describe clearly the applied period of benchmark value and ii) The benchmark value in the PDD is not consistent with value in a spread sheet of IRR calculation.	table2, Section F.10	PP submitted the revised PDD including the applied period of benchmark value and also updated the IRR calculation spread sheet with the proper benchmark value.	PP selected the three year weighted average lending rate which is available at the investment decision making, from 15 April 2005 to 14 April 2008 and the benchmark is 12.28%. The validation team crosschecked the lending rate of the State Bank of Viet Nam. The NC therefore is closed.

Non-conformities	Reference	Corrective Actions	Comments
CL2. The project participant stated the project activity will be built in two cascades namely Dak Psi3 and Dak Psi 4. When it is explained the project description, the explanation didn't distinguish two cascades, in particular ; 1. Facilities location on a schematic representation, 2. Plant Load Factor, and 3. Annual power supplied to the grid and Power density	Table 2. Section D.1	PP described the project description such as facilities location, Plant Load Factor and Power Density in detail for each cascade in the revised PDD.	Location of each cascade was updated based on the schematic representation and technologies specification was checked by reviewing the FSR and name plates. The validation team that the project activity of each cascade has properly been described in Section A.4.3 of the revised PDD. The NC therefore is closed.
CL3: The project proponent calculated emission factor using historical data from 2003 to 2007. It is therefore requested to justify the historical data are most recent available at the validation by validation team	Table 2. Section E.11	The project proponent updated the grid emission factor with the GEF published by the Viet Nam DNA in the report "STUDY, DEFINITION OF VIET NAM GRID EMISSION FACTOR". The calculation for this report was completed in December 2009 and it was made available in March 2010.	KEMCO interviewed with the responsible person of DNA in Viet Nam on 17 Nov 2010 and confirmed that the GEF was properly calculated in line with Tool to calculate the emission factor for an electricity system(version 01.1) although the latest available version of the Tool is 2.0 because the only difference between version 1.1 and 2.0 of the Tool was the addition of the option to include off-grid generation and the result of using either version would yield the same results. It is further confirmed that the national grid data used are most recently available at the point of the commencement of validation and ver 01.1 of the tool was the latest version of the tool available when the DNA completed the Study. The NC therefore is

Non-conformities	Reference	Corrective Actions	Comments
			closed.
CL4: Other barriers analysis needs to be justified according to Guideline for objective demonstration and assessment of barrier	table2, Section F.12	PP demonstrated additionality using investment analysis as per Tool for the demonstration and assessment of additionality (ver05.2, EB39). In revised PDD, PP skipped the other barriers analysis.	the additionality of the proposed project has been demonstrated through investment analysis, in that case barrier analysis is optional. Therefore the demonstration for the additionality through only investment analysis is in line with Tool for the demonstration and assessment of additionality (ver05.2, EB39) and the NC is closed.
CL5: The common practice analysis for the proposed project was carried out. Definition of the projects which is similar to the proposed project should be substantiated with supporting documents	table2, Section F.14	PP submitted the relevant documents such as Strategy and Program Assessment published by Asian Development Bank(ADB) in November 2005 that there is distinction between government and privately developed projects.	the activities with similar ownership have been selected as similar projects with Dak Psi 3 and 4 hydropower and the supporting documents regarding investment climate and accessibility of financing were submitted to the validation team. The NC is therefore closed.
CL6: It is requested to clarify how to monitor the net electricity generation supplied to the grid in monitoring plan	table2, Section G.1	PP submitted the revised PDD that net electricity generation will be monitored with bi-directional electricity meters.	Monitoring plan regarding the net electricity generation is substantiated in the revised PDD. The NC is therefore closed.



Appendix B

CVs of Validation Team and Technical reviewer



 VALIDATION REPORT

 KEMCO		Personal History	
Family name	PARK	Date of Birth	28/05/1974
Given name	Jin Young	Sex	Female
Organization	KEMCO	Phone No.	+82-31-260-4890
Position	Associate Manager	Fax No.	+82-31-260-4886
Address	1157, Pungdukchun-2-dong, Yongin, Gyeonggi, 448-994, Republic of Korea		E-mail jin@kemco.or.kr
Title	Proposed Title		Qualification
	Full-time Validator/verifier		☒
Sectoral Scope	Proposed Sectoral Scope		Qualification
	1. Energy industries (renewable - / non-renewable sources)	1-2 Energy generation from renewable energy sources	☒
	13. Waste handling and disposal	13-1 Waste handling and disposal	☒
Work experience			
* Please describe every employment you have had			
From	to	Details of Duties	
2000-03-01	2009-01-20	Supporting National Climate Change Policy, Climatic Change Mitigation Department, KEMCO	
2009-01-21	present	Conducting validation and verification of GHG reduction projects, GHG Certification Office, KEMCO	



 VALIDATION REPORT

 KEMCO		Personal History	
Family name	KIM	Date of Birth	05/27/1977
Given name	Jong-Hak	Sex	Male
Organization	KEMCO	Phone No.	+82-31-260-4888
Position	Assistant Manager	Fax No.	+82-31-260-4886
Address	1157, Pungdukchun-2-dong, Yongin, Gyeonggi, 448-994, Republic of Korea		E-mail Jonghak2000@kemco.or.kr
Title	Proposed Title		Qualification
	Full-time Validator/verifier		☒
Sectoral Scope	Proposed Sectoral Scope		Qualification
	5. Chemical industry	5-1 Chemical process industries	☒
	11. Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride	11-1 Chemical process industries	☒
	12. Solvents use	12-1 Chemical process industries	☒
Work experience			
* Please describe every employment you have had			
From	to	Details of Duties	
2004-07-1	2009-12-31	Process consultancy, Energy Consulting Department, KEMCO	
2010-02-26	Present	GHG projects audit, GHG Certification Office, KEMCO	



VALIDATION REPORT

 KEMCO	Personal History		
Family name	HAN	Date of Birth	23/06/1971
Given name	Seung-Ho	Sex	Male
Organization	KEMCO	Phone No.	+82-31-260-4883
Position	Associate Manager	Fax No.	+82-31-260-4886
Address	1157, Pungdukchun-2-dong, Yongin, Gyeonggi, 448-994, Republic of Korea	E-mail	shhan@kemco.or.kr
Title	Proposed Title		Qualification
	Lead Full-time Validator/verifier		☒
Sectoral Scope	Proposed Sectoral Scope		Qualification
	1. Energy industries (renewable - / non-renewable sources)	1-2 Energy generation from renewable energy sources	☒
	13 Waste handling and disposal	13-2 Animal waste management	☒
	14. Afforestation and reforestation	14-1 Forestry	☒
	15. Agriculture	15-2 Animal waste management	☒
Work experience			
* Please describe every employment you have had			
From	to	Details of Duties	
2000-03-01	2006-01-22	Supporting National Climate Change Policy, Climatic Change Mitigation Department, KEMCO	
2006-01-23	Present	Conducting validation and verification of GHG reduction projects, GHG Certification Office, KEMCO	