

VALIDATION REPORT

SUNGSAN WIND POWER PROJECT

REPORT No. CDMC06-009

REVISION No. 09

GHG Certification Office

KOREA ENERGY MANAGEMENT CORPORATION



VALIDATION REPORT

Date of first issue: 21/12/2006	Project No.: CDMC06-009
Approved by: Jae-Hoon Lee (Director)	Organisational unit: GHG Certification Office, Korea Energy Management Corporation
Client: Ecoeye Co., Ltd.	Client ref.: Mr. Anh, Sang-Jeon
Period for Comments	27/12/2006 - 25/01/2007.
Category (Sectoral Scope)	Energy Industries (renewable-/non-renewable sources) (1)
First PDD (version and date)	Version 01, 27/11/2006
Final PDD (version and date)	Version 09, 15/06/2011
<p>Summary:</p> <p>The Korea Energy Management Corporation (KEMCO) Validation Team has conducted validation of the “Sungsan Wind Power Project” in Korea 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.</p> <p>The validation consisted of following three phases:</p> <ol style="list-style-type: none"> 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. <p>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 and regional 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.</p> <p>In summary, KEMCO is of the opinion that the project, as described in the project design document as of 15/06/2011, 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 “Sungsan Wind Power Project” as a CDM project activity.</p>	

Report No.: CDMC06-009	Subject Group:	
Report title: Sungsan Wind Power Project		
Work carried out by: Seung-Ho Han, Kyung-Soon Park		
Work verified by: Jin-Young Park		
Date of this revision: 15/06/2011	Rev. No.: 09	Number of pages: 70

Indexing terms

UNFCCC/Kyoto Protocol/CDM

Validation / Verification

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



 VALIDATION REPORT

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.



 VALIDATION REPORT

<i>Table of Contents</i>	<i>Page</i>
1 INTRODUCTION	3
1.1 Objective	3
1.2 Scope	3
1.3 GHG Project Description	4
2 METHODOLOGY	5
2.1 Review of Documents	7
2.2 Follow-up Interviews	7
2.3 Resolution of Clarification and Corrective Action Requests	7
2.4 Internal Quality Control	8
3 VALIDATION FINDINGS	9
3.1 Approval	9
3.2 Participation	9
3.3 Project Design Document	10
3.4 Project Description	10
3.5 Baseline and Monitoring Methodology	10
3.5.1 Applicability of the selected methodology to the project activity	10
3.5.2 Project boundary	11
3.5.3 Baseline identification	12
3.5.4 Algorithms and/or formulae used to determine emission reductions	12
3.6 Additionality	14
3.6.1 Prior consideration of the clean development mechanism	14
3.6.2 Identification of alternatives	16
3.6.3 Investment analysis	16
3.6.4 Barrier analysis	21
3.6.5 Common practice analysis	21
3.7 Monitoring Plan	22
3.8 Local Stakeholder Consultation	23
3.9 Environmental Impacts	23
4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS	24
5 VALIDATION OPINION	24
6 REFERENCES	26

Appendix A: Validation Protocol

Appendix B: CVs of Validation Team and Technical Reviewer



 VALIDATION REPORT

1 INTRODUCTION

Korea Southern Power Co., Ltd. has commissioned Korea Energy Management Corporation (KEMCO) to perform a validation of the “Sungsan Wind Power Project” in Korea (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,	Seung-Ho Han	KEMCO GHG Certification Office	Baseline and Monitoring methodology, Estimation of GHG emission Reductions, Environmental impacts,
GHG Validator	Kyung-Soon Park	KEMCO	Assessment of Additionality
Technical Reviewer	Jin-Young Park	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.



VALIDATION REPORT

1.3 GHG Project Description

The Sungsan Wind Power Project is a grid-connected wind power plant which will be located in Susan-Ri, Sung san-eup, Sogwipo City, Korea. The proposed project will generate electricity using wind resources with the total installed capacity of 20 MW ($2 \text{ MW} \times 10 \text{ units}$), which will be delivered into the sub-station about five km away from the project site and sold into the Korea Power Exchange. The annual generation of electricity is estimated at 49,406 MWh and resulting emission reductions will arrive at 35,265tCO₂e/year, by displacing electricity generation by fossil fuel-fired plants.

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

- 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 wind power-related technology; and,
- Economically satisfying growing energy demands to allow the country and region to develop and alleviate poverty.



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:

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



 VALIDATION REPORT

Figure 1 Validation protocol tables

Validation Protocol Table 1: Mandatory Requirements			
Requirement	Reference	Conclusion	Cross reference
<i>The requirements the project must meet.</i>	<i>Gives reference to the legislation or agreement where the requirement is found.</i>	<i>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.</i>	<i>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.</i>

Validation Protocol Table 2: Requirement checklist				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
<i>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.</i>	<i>Gives reference to documents where the answer to the checklist question or item is found.</i>	<i>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.</i>	<i>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.</i>	<i>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.</i>

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
<i>If the conclusions from the draft Validation are either a Corrective Action Request or a Clarification Request, these should be listed in this section.</i>	<i>Reference to the checklist question number in Table 2 where the Corrective Action Request or Clarification Request is explained.</i>	<i>The responses given by the Client or other project participants during the communications with the validation team should be summarised in this section.</i>	<i>This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".</i>



 VALIDATION REPORT

2.1 Review of Documents

The Project Design Document (PDD) version 01 dated 27/11/2006 submitted initially and final Version 09/1/ dated 15/06/2011 along with additional background document /2/ - /23/ 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 19/12/2006, KEMCO performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. The Director of Korea Southern Power Co., Ltd. and project consultants of Ecoeye Co., Ltd. were interviewed. The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organisation	Interview topics
Korea Southern Power Co., Ltd.	<ul style="list-style-type: none"> ➤ 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
Ecoeye Co., Ltd.	<ul style="list-style-type: none"> ➤ Application of selected baseline and monitoring methodology ➤ Baseline determination ➤ Emission reduction calculation ➤ Emission reduction monitoring plan

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 document. The Corrective Action Requests and Clarification Requests raised by KEMCO, presented to the project participant in KEMCO's NC report as of 19/12/2006 were 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.

Since modification to the project design were necessary to resolve KEMCO's concerns, the client decided to revise the PDD and resubmitted the PDD as Version 09. After reviewing and assessing the revised PDD, KEMCO issued this final validation report and opinion.



VALIDATION REPORT

2.4 Internal Quality Control

The final validation report underwent technical review before requesting registration of the project activity. The technical review was 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.



VALIDATION REPORT

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 ten Corrective Action Requests and two 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 09, dated 15/06/2011) and re-submitted supporting documentation.

3.1 Approval

The Republic of Korea ratified the Kyoto Protocol on 08/11/2002, and established DNA within the Prime Minister's Office. The DNA of Republic of Korea has issued a Letter of Approval (LoA) dated 12/02/2010, precisely referring to the title of the project activity and confirming that participation is voluntary, and the project assists in achieving sustainable development.

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

3.2 Participation

The DNA of Korea has issued a Letter of Approval (LOA) dated 12/02/2010, authorizing Korea Southern Power Co., Ltd. as a project participant. Validation checked it by telephone communication with DNA.

The validation did not reveal any information indicating that the project can be seen as a diversion of official development assistance (ODA) funding towards Korea.



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 Sungsan Wind Power Project is a large scale grid-connected renewable energy project with a total of 20 MW, i.e. ten 2 MW turbines. The turbine model is V80-2.0MW manufactured by Vestas. Each wind turbine has 3 blades and is the pitch-regulated, upwind type.

This project is to be constructed on the Jeju Island and is expected to generate an estimated 49,406 MWh of electricity per year, which is to be provided to Jeju Province. The expected lifetime of the project is about 20 years. A renewable crediting period of 7 years has been chosen for the project, starting from 01/06/2010 (or the registration date, which is later). But, it is confirmed the starting date of the crediting period will also be subject to the most recent procedure, Paragraph 25, EB 59, Annex 12. The emission reductions are estimated to be 35,265tCO₂/year and 246,854 tCO₂ over the seven years of crediting period by displacing electricity that would otherwise be generated by fossil fuel-based power plants. No project emissions are generated by the project since net amount of electricity generation will be monitored.

Technical descriptions are sufficiently provided regarding installed capacity of wind turbines and generators. In addition, the estimated annual power generation and plant load factors for the project activities were confirmed by cross-check with the Feasibility Study Report prepared by a research institute, Korea Institute of Energy Research and the official document submitted for the approval of the Provincial Government on the wind power plants.

In addition, validation team confirmed that there is no need to consider additional project emission except for those defined in ACM0002 (ver12.1.0). Especially validation team checked the existence of fossil fuel generation plant for emergency situation on project site and determined that this fossil fuel generation for emergency will not be installed because it needs more investment.

In conclusion validation team determined that PDD has adequate accuracy and completeness in its description. Validation team also checked the document which states that this project is not related to official development assistance from Annex I Parties.

3.5 Baseline and Monitoring Methodology

3.5.1 Applicability of the selected methodology to the project activity

This project is using the ACM0002 (ver 12.1.0), which is valid from 17 Sep 2010. According to ACM0002 (ver 12.1.0) the methodology is applicable under the following conditions:

- The project activity is the installation, capacity addition, retrofit or replacement of a power plant/unit of one of the following types: hydro power plant/unit (either with a run-of-river



VALIDATION REPORT

reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit;

This project is the installation of wind power plants. So, the ACM0002 (ver 12.1.0) is applicable to the project activity. In addition, it is applicable because this project is not:

- The project activity that involves switching from fossil fuels to renewable energy source at the site of project activity
- A biomass fired power plant
- Hydro power plants results in new reservoir where the power density is less than $4\text{W}/\text{m}^3$.

Validation team checked the applicability through,

- Document review
- Site visit
- Comparison analysis with other similar projects

In conclusion, it is determined that the choice of the methodology is proper and the proposed project meets all applicability conditions of the followings

- ACM0002(ver12.1.0)
- Tool to calculate the emission factor for an electricity system(ver02.1)
- Tool for demonstration and assessment of additionality(ver05.2)

Validation team also confirmed that this project is not expected to result in emissions other than those allowed by the methodology.

3.5.2 Project boundary

Validation team checked project boundary by the desk review and site visit. During the on-site assessment validation team checked the project boundary as written in PDD and got the conclusion that the spatial extent of the project boundary is clearly defined as the project site and all power plants are connected physically to the national grid system, managed by KEPCO (Korea Electric Power Corporation; www.kepc.co.kr). It is particularly noted that Jeju Island is connected to the national grid system, however, does not export electricity to the inland.

Project participants justified and chosen sources or gases to be included within the project boundary according to the methodology. Emission sources, which are expected to contribute more than 1% of the overall expected average annual emission reductions, and not addressed by the applied methodology have not been identified in this project activity boundary.



3.5.3 Baseline identification

As per ACM0002 (Ver.12.1.0), if the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario should be as follows:

- Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the “Tool to Calculate the Emission Factor for an Electricity System”.

Simple OM is calculated with weight-averaged Simple OM of both inland and Jeju Island. In addition, BM is calculated using data of recently-installed power plants in Jeju Island only considering transmission constraints.

Given that the dispatch data for electricity system in the KEPCO is not available and low-cost/must run resources constitute less than 50% of total grid generation in average of the 5 most recent years, Simple OM (Operating Margin) method was chosen. In addition, the project proponent calculated BM (Build Margin) taking into account the set of power capacity additions in the electricity system that comprise 20% of the system generation and that have been built most recently since it represents the larger annual generation than the set of five power units that have been built most recently

In conclusion, it is confirmed that PDD provides clear 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.

- **CL 1:** The determination of baseline scenario should be completed by clarifying national or sectoral policies relating to the project activities. (see Table 2. Section E.9);
 - **Corrective Actions:** The revised PDD has clarified national or sectoral policies including the Electricity Act and New and Renewable Energy Promotion Act in determining the baseline scenario for the proposed project activity.
 - **Conclusions:** It is concluded that the revised PDD sufficiently addresses national or sectoral policies relating to the proposed project activities. Therefore, the NC is closed.

3.5.4 Algorithms and/or formulae used to determine emission reductions

The algorithms and formulae in the PDD are following those in the approved methodology of ACM0002(ver 12.1.0). As per ACM0002 (ver 12.1.0) the emission reductions (ER_y) by the project activity during the crediting period is the difference between the baseline emissions (BE_y) and the project emissions (PE_y). The leakage (LE_y) is not considered according to the applied methodology.



 VALIDATION REPORT

$$ER_y = BE_y - PE_y$$

The baseline emissions (BE_y) are demonstrated in Section B.6.1 of PDD and are calculated using methodology equations as follows:

$$BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$$

Where:

BE_y = Baseline emissions in year y (tCO₂/yr)

$EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)

$EF_{grid,CM,y}$ = Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system” (tCO₂/MWh)

The calculation of $EG_{PJ,y}$ for greenfield renewable energy power plants for this project activity which involves the installation of a new grid-connected renewable power plant/unit at a site where no renewable power plant was operated prior to the implementation of the project activity, is as follows:

$$EG_{PJ,y} = EG_{facility,y}$$

Where:

$EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)

$EG_{facility,y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh/yr)

Hence, the final derived equation from the equations above is as per the methodology.

$$BE_y = EG_{facility,y} * EF_{grid,CM,y}$$

The baseline emission factor for the project is determined ex-ante as a combined margin, consisting of combination of the operating margin (OM) and build margin (BM).

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 electricity generation and fuel consumption data by plants are used quoting from Korea Electric Power Statistics published by KEPCO (Korea Electric Power Corporation). Country specific data for net calorific value (NCVi) of each plant and the IPCC 2006 default value of carbon emission factor of each type of fossil fuel are also used in calculating baseline emission factors. Three-year data from 2003 to 2005 are used for operating margin calculation. The OM is calculated to be 0.7188 tCO₂/MWh as a generation-weighted average for the consecutive three years. The BM is calculated to be 0.6987 tCO₂/MWh. Given that the weighting factors, w_{OM} and



 VALIDATION REPORT

w_{BM} are selected as 0.75 and 0.25, respectively, as stipulated by Tool to calculate the emission factor for an electricity system (ver 02.1.0), the combined margin calculated is 0.7138 tCO₂/MWh which is fixed ex-ante for the crediting period.

This figure has been slightly corrected with 2006 IPCC lower emission factors comparing to the web-hosted PDD and is confirmed by the Validation Team by cross-checking the calculation spreadsheets and the KEPCO statistics which is made public on its website. It is also verified that the GHG calculations are accurate, complete and transparent. It is further confirmed that the national grid data used are most recently available at the point of the commencement of validation.

With regards to Baseline and Monitoring Methodology 2 CARs was raised and closed;

- **CAR 1:** The PDD does not specify how the baseline alternatives are identified and nor provide any justification for the baseline alternatives identified. (see Table 2. Section E.7);
 - **Corrective Actions:** Three alternative scenarios are identified, and justification for selection of the most likely scenario is provided.
 - **Conclusions:** Selection of the most likely baseline scenario is sufficiently justified. Therefore, the NC is closed.
- **CAR 2:** There are errors in calculating OM and BM: The weight value for OM and BM are incorrectly assigned. The carbon emission factors should be updated in line with the Tool to calculate the emission factor for an electricity system (Annex 8, EB 60). (see Table 2. Section E.12);
 - **Corrective Actions:** The correct weight value for OM and BM are assigned in calculation of the combined margin emission factor.
 - **Conclusions:** The combined margin emission factor is correctly determined. Therefore, the NC is closed.

3.6 Additionality

The project is a large scale project. Therefore, in accordance with ACM0002, the additionality of the project was demonstrated based on the valid version of the “Tool for demonstration and assessment of additionality (Ver 05.2, EB39)” and the Guidelines on the Assessment of Investment Analysis (Ver 03.1).

3.6.1 Prior consideration of the clean development mechanism

It is first confirmed that in line with the “Glossary of CDM terms (ver05) the starting date of the proposed project activity is chosen as the date when the project proponent committed to expenditures related to the implementation of the project activity: Equipment Purchase Contract (06/07/2006) between Korea Southern Power Co., Ltd. and STX Engine Co., Ltd.



VALIDATION REPORT

The project is an existing project as per EB 41, Annex 46. As the starting date is before the date of the commencement of validation (Period for global stakeholder comments: 27 Dec 2006 to 25 Jan 2007), it has been assessed whether or not the incentive of the CDM was seriously considered in the decision to proceed with the project activity.

To validate the prior consideration of CDM benefits the Validation Team then checked the MOU contract which was signed on 13/09/2005 between the project owner and the consultation company before signing the contract for main equipment purchase on 06/07/2006. In addition, the validation contract with DOE is signed on 04/12/2006. 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.

- **CAR 3:** As per the Glossary of CDM terms (version 05), the starting date of a CDM project activity is the earliest date at which either the implementation or construction or real action of a project activity begins. In light of the above definition, the start date shall be considered to be the date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity. This, for example, can be the date on which contracts have been signed for equipment or construction/operation services required for the project activity. But, the start date of the project activity is not justified by the evidences as provided above. (see Table 2. Section F.3);
 - **Corrective Actions:** The start date of the proposed project has been determined as the date when the equipment purchase contract was signed.
 - **Conclusions:** The determination of the start date of the proposed project has been sufficiently substantiated. Request for corrective actions is therefore cleared.

- **CAR 4:** As per the Guidelines on the Demonstration and Assessment of Prior Consideration of the CDM (Annex 22, EB 49), proposed project activities with a start date before 2 August 2008, for which the start date is prior to the date of publication of the PDD for global stakeholder consultation, are required to demonstrate that the CDM was seriously considered in the decision to implement the project activity. In this regard, the project participant must indicate awareness of the CDM prior to the project activity start date, and that the benefits of the CDM were a decisive factor in the decision to proceed with the project. Further, the project participant must indicate, by means of reliable evidence, that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation. But these issues are not provided in the PDD. (see Table 2. Section F.6);
 - **Corrective Actions:** It is described that the MOU contract was signed on 13/09/2005 between the project owner and the consultation company before signing the contract for main equipment purchase on 06/07/2006. In addition, the validation contract with DOE is signed on 04/12/2006.



VALIDATION REPORT

- **Conclusions:** Prior consideration of CDM benefits is sufficiently addressed. Therefore, the NC is closed.

In conclusion, it is determined that the CDM was considered in the decision to implement the project activity with the requirements of EB guidance for prior consideration.

3.6.2 Identification of alternatives

According to the Tool for the Demonstration and Assessment of Additionality” approved by CDM EB (ver 05.2) the alternatives are as below.

- (a) The proposed project activity not undertaken as a CDM project activity;
- (b) A fossil fuel fired thermal power plant with comparable electricity generation;
- (c) Construction of a power plant using other sources of renewable energy such as wind, or solar with comparable electricity generation;
- (d) No project activity, in which case equivalent amount of energy would be generated by the grid electricity system through its currently operating power plants and by new capacity addition, i.e., status quo.

Since it was noted during the validation that the project was planned as one of efforts that the project participant made to expand its business to promote renewable energy. In this sense, it is confirmed that alternative (b) is not appropriate to the proposed project activity.

The project participant has successfully demonstrated that the proposed project is not economically feasible due to its high upfront costs. Therefore, it is concluded that alternative (a) is not not appropriate to the proposed project activity.

In Korea, the electricity from renewable energy source account for less than 0.2% of total annual electricity generation in 2007. Development of renewable energy is still at its initial stage with a lot of barriers. It can be therefore concluded that construction of a power plant using other sources of renewable energy with comparable electricity generation, alternative (c) is not feasible in the baseline scenario.

In conclusion, the status quo scenario that equivalent amount of energy would be generated by the grid electricity system through its currently operating power plants and by new capacity addition, is properly chosen.

3.6.3 Investment analysis

To prove additionality, the project proponent fulfilled investment analysis of step 2 in “Tool for the demonstration and assessment of additionality (ver5.2)” and selected the benchmark analysis and calculated Project IRR for the project activity. The Validation Team checked the results of IRR calculation with and without CDM revenue.

In the web-hosted PDD to receive global public comments, the total investment costs and O&M costs for the proposed project activity are not sufficiently evidenced. Also, the annual electricity



VALIDATION REPORT

generation (plant load factor) for the proposed project is not evidenced in line with the Guidelines for the Reporting and Validation of Plant Load Factors (Annex 11, EB 48). Hence, the total investment costs, O&M costs, and electricity generation of the proposed project has been revised in the final PDD. Input values such as investment costs, O&M costs are corrected in line with the Feasibility Study Report published by the Korea Institute of Energy Research and Report on Renewable Energy Feed-in Tariffs published by Ministry of Commerce, Industry, and Energy (MOCIE), March 2006. Key input values for investment analysis is properly evidenced. In addition, comparing to the start date of the project activity (Jul 2006), the date of investment decision (Sep 2005), and the publishing date of the Feasibility Study Report (Dec 2004), it is validated that the investment decision was based on the Feasibility Study Report.

With regards to benchmark analysis it is noted that the benchmark value is based on the Report on Renewable Energy Feed-in Tariffs published by Ministry of Commerce, Industry, and Energy (MOCIE), March 2006. This value was also applied in the Feasibility Study Report published by the Korea Institute of Energy Research (Dec 2004). It was validated that all parameters and assumptions of the proposed project are accurate and suitable in light of relevant accounting practices as follows:

- Investment costs: the investment costs for the proposed project activities, 42,300 mil. KRW were confirmed by cross-check with the Feasibility Study Report. It is also noted that the costs are below the actual costs incurred by the equipment purchase contract with the supplier for the proposed project. The investment costs are deemed reasonable comparing to the proposed costs, 1.7 mil. KRW/kW as reported by the government-published report on new and renewable energy feed-in tariff and RPS (publishing date: 31 Mar 2006). It is further confirmed that the input values for economic analysis of wind power projects in the published report is still valid by cross-check with the Government Notice No. 2009-96.

On the other hand, it was found that investment costs were not in line with the Feasibility Study Report published by the Korea Institute of Energy Research in the web-hosted PDD for global stakeholder's consultation. It was hence confirmed that the investment costs had been corrected accordingly in the final PDD.

- O&M costs: it is confirmed O&M costs are determined as 2.5% of initial investment costs as reported by the government-published report on new and renewable energy feed-in-tariff and RPS (publishing date: 31 Mar 2006). The report is a reference document for the Korean government to assess the economic feasibility and determine the level of subsidy for renewable energy projects. It is further confirmed by cross-checking the Government Notice No. 2009-96 that the O&M costs for economic analysis of wind power projects in the published report is still valid. The Validation Team also assessed the conservativeness of the value by checking the registered CDM project in the Jeju Island which was developed the same project participant. It is noted then the Hangeong second phase SS-wind power project (15MW) assumes approximately 3% of the initial investment cost.

On the other hand, it was found in the web-hosted PDD for global stakeholder's consultation that O&M costs were not in line with the Report on Renewable Energy Feed-in Tariffs published by Ministry of Commerce, Industry, and Energy (MOCIE),



VALIDATION REPORT

March 2006. It was hence confirmed that the O&M costs had been corrected accordingly in the final PDD.

- Electricity tariff: the electricity price used in IRR calculation, i.e. one-year (Jan 2006-Dec 2006) average electricity price for wind power projects was validated by cross-check with data down-loaded at the KPX (Korea Power Exchange) statistics webpage (<http://epsis.kpx.or.kr>). It was further confirmed that those value are most recently available at the point of the project start.

On the other hand, it was noted that the electricity price has been slightly adjusted from the value presented in the web-hosted PDD for global stakeholder's consultation. The appropriateness of the adjusted value in the final PDD has been deemed reasonable in that the value is yearly average electricity price in the year when the equipment purchase contract was signed. In conclusion, it is confirmed that the chosen tariff, 76.47 won/kWh is appropriate to the project.

- Government subsidy for renewable energy: renewable electricity generation projects in Korea have been supported by the government in two stages: In the first place the feed-in-tariff policy for renewable electricity generation was introduced pursuant to the Electric Utility Act (amended in February 1999); and then to further diffuse renewable energy use the difference between the feed-in-tariff (equating to the System Marginal Price) and the renewable electricity generation cost pre-determined by the government was compensated pursuant to the Act on the Promotion of the Development and Use of New and Renewable Resources of Energy (amended in March 2002).

In the 22nd EB meeting, the CDM executive board approved the 'Clarifications on the consideration of national and/or sectoral policies and circumstances in baseline scenarios (version 02)' which allows not to be taken into account in developing a baseline scenario, national or sectoral policies that give comparative advantages to less emissions-intensive technologies like renewable electricity generation only if the policies have been adopted after 11 November 2001.

In this regard, it is deemed appropriate that the project participants, in developing the baseline scenario for renewable electricity generation projects in Korea, may exclude the subsidy from the Korean government for renewable electricity generation which had been adopted in March 2002, i.e. the compensation of the difference between the feed-in-tariff and the renewable electricity generation cost pre-determined by the government.

- Electricity generation: the estimated annual power generation, 49,406 MWh/yr and plant load factor for the proposed project activity was confirmed by cross-check with the Feasibility Study Report prepared by a research institute contracted by the project participants, Korea Institute of Energy Research. It is thus confirmed that estimation of annual power generation and plant load factor is in line with para 3 (b) of Annex 11, EB 48.

On the other hand, it was found that the estimated annual power generation was not in line with the Feasibility Study Report published by the Korea Institute of Energy Research in the web-hosted PDD for global stakeholder's consultation. It was hence confirmed that the amount of annual power generation had been corrected accordingly in the final PDD.



 VALIDATION REPORT

- Residual value: it is confirmed that the residual value is assumed as zero in line with the Electric Business Accounting Rule (2002) because the whole technical lifetime is included in the investment analysis.
- Benchmark value: The benchmark value, 7%, is based on the Report on Renewable Energy Feed-in Tariffs published by Ministry of Commerce, Industry, and Energy (MOCIE), March 2006. This value was also applied in the Feasibility Study Report published by the Korea Institute of Energy Research (Dec 2004). It was further confirmed that those value are most recently available at the point of the project start. Meanwhile, as a conservative approach, taxation is not considered in the investment analysis.

On the other hand, it was found that the source for benchmark value was not clear in the web-hosted PDD for global stakeholder's consultation. It was hence confirmed that the source of the value had been clarified and justified in the final PDD.

- Validity of Feasibility Study Report (FSR): the project participants submitted the FSR (Dec 2004) the Feasibility Study Report prepared by Korea Institute of Energy Research, a research institute contracted by the project participants. Comparing to the dates of the MOU contract (13/09/2005) and equipment purchase contract (06/07/2006), it can be concluded that the period of time between the submission date of the document and the investment decision is sufficiently short such that it is unlikely in the context of the underlying project activity that the input values would have materially changed.

With regards to the sensitivity analysis, it was validated whether the sensitivity analysis for the project activity was properly carried out considering both negative and positive variations in major variables such as total investment costs, O&M costs, power generation, and electricity tariff.

In the web-hosted PDD, the past trends on the electricity tariff were not reflected in the sensitivity analysis. According to Paragraph 18 of the Guidelines on the assessment of investment analysis (Version 03.1), the investment analysis has been updated such that 16% of average increase rate between 2003 and 2006 in SMP for wind powers was considered in the sensitivity analysis. It is furthered assessed that the range of 16% is reasonable because the KPX (Korea Power Exchange) report in 2007 estimated the future projection of SMP (System Marginal Price) towards with the range of 67.29~77.11 KRW/KWh on average between 2007 ~ 2020 and the 5th National Electricity Supply and Demand Basic Plan (2010~2024) targets the stabilization of SMP by continually expanding the national electricity generation capacity in the coming years.

Results of the sensitivity analysis are 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.

- **CAR 5:** As per the Guidance on the Assessment of Investment Analysis (Version 03.1), input values used in all investment analysis should be valid and applicable at the time of the investment decision taken by the project participant. But, investment costs and O&M costs are not sufficiently evidenced. Further it is not confirmed that those values are valid and applicable at the point of investment decision. (see Table 2. Section F. 9);



VALIDATION REPORT

- **Corrective Actions:** Input values such as investment costs, O&M costs are corrected in line with the Feasibility Study Report published by the Korea Institute of Energy Research and Report on Renewable Energy Feed-in Tariffs published by Ministry of Commerce, Industry, and Energy (MOCIE), March 2006.
 - **Conclusions:** Key input values for investment analysis is properly evidenced. In addition, comparing to the start date of the project activity (Jul 2006), the date of investment decision (Sep 2005), and the publishing date of the Feasibility Study Report (Dec 2004), it is validated that the investment decision was based on the Feasibility Study Report. Therefore, the NC is closed.
- **CAR 6:** As per the Guidelines for the Reporting and Validation of Plant Load Factors (Annex 11, EB 48), the plant load factor shall be defined ex-ante in the CDM-PDD according to one of the following three options: (a) The plant load factor provided to banks and/or equity financiers while applying the project activity for project financing, or to the government while applying the project activity for implementation approval; (b) The plant load factor determined by a third party contracted by the project participants (e.g. an engineering company); But, the plant load factor for the proposed project is not evidenced by the options above. Further it should be confirmed that the factor was valid and applicable at the point of investment decision. (see Table 2. Section F.9);
 - **Corrective Actions:** The plant load factor has been corrected in line with the Feasibility Study Report published by the Korea Institute of Energy Research.
 - **Conclusions:** The plant load factor is properly substantiated. The NC is therefore closed.
 - **CAR 7:** As per with the Guidance on the Assessment of Investment Analysis (Version 03.1), in cases where a benchmark approach is used the applied benchmark shall be appropriate to the type of IRR calculated. Local commercial lending rates or weighted average costs of capital (WACC) are appropriate benchmarks for a project IRR. Required/expected returns on equity are appropriate benchmarks for an equity IRR. Benchmarks supplied by relevant national authorities are also appropriate if the DOE can validate that they are applicable to the project activity and the type of IRR calculation presented. The benchmark value used in the investment analysis should be therefore justified and evidenced by reliable sources. (see Table 2. Section F.10);
 - **Corrective Actions:** The benchmark value is based on the Report on Renewable Energy Feed-in Tariffs published by Ministry of Commerce, Industry, and Energy (MOCIE), March 2006. This value was also applied in the Feasibility Study Report published by the Korea Institute of Energy Research (Dec 2004).
 - **Conclusions:** It is confirmed that the benchmark value is properly evidenced. Therefore, the NC is closed.



 VALIDATION REPORT

In conclusion, it is confirmed that all assumptions and financial calculations used in investment analysis are appropriate, correct, and consistent between PDD and calculation spreadsheets, and that the IRRs with and without CDM revenue, 3.24% and 5.57% are properly calculated. With regards to changes between input values of initial and final PDD, please refer to Chapter 5.

3.6.4 Barrier analysis

Barrier analysis is not used to demonstrate the additionality of the proposed CDM project activity.

3.6.5 Common practice analysis

With regards to the common practice analysis, the Validation Team assessed the appropriateness of the geographical scope of the common practice analysis for the assessment of common practice related to wind power projects. It is deemed reasonable that the common practice analysis for the proposed project was carried out across the national boundary. It is also noted that as described in the PDD, most of wind power projects in Korea has been developed as a CDM project. It is therefore concluded that similar activities to the proposed project cannot be observed in the baseline scenario.

Specifically, it is confirmed by cross-checking the 2007 KEPCO statistics available at the website: <http://www.kepc.co.kr>, that only three wind power plants were in operation in Jeju Island by 2007, i.e. Hangwon Wind Power Plants, Hangeong first phase wind power and second phase wind power. The Hangwon Wind Power Plant is 10MW and had been initiated by the provincial government as a pilot project. The Hangeong first phase wind power is 6MW and had been initiated as a pilot project by the same project participant as this proposed project. The Hangeong second phase wind power is 15MW and had already been registered as a CDM project. Having said that, the proposed project is the largest project in Jeju island and can not be viewed as a common practice. In addition, all the wind power projects with more than 10MW capacity in the country, Gangwon Wind Park Project and Youngduk wind park project had also been registered as a CDM project. Further, from 2007 onwards most of wind power projects with more than 10MW in the country have been developed as a CDM project as illustrated by the table below (source: 2009 Electricity Generation Facility Status at <http://www.kpx.or.kr>).

NO	Construction year	CDM project title	Capacity (kW)	CDM status
1	2004	Hangeong first phase wind power project	1500×4	-
2	2004	Youngduk wind park project	1650×24	registered
3	2005	Gangwon wind park project	2000×49	registered
4	2006	Yangyang renewable energy project	1500×2	registered



 VALIDATION REPORT

5	2007	Hangyeong second phase ss-wind power project	3000×5	registered
6	2008	The Korea Hydro & Nuclear Power Co. Renewable Energy Project	750×1	registered
7	2009	3MW Shinan wind power	1000×3	registered
8	2009	Daegi wind power project	2000×1 750×1	-
9	2009	Taegisan wind power project	2000×20	registered
10	2009	Yeongyang 61.5MW windfarm project	1500×41	registered
11	2009	Sungsan wind power project	2000×10	The proposed project
12	2009	Samdal wind power project	3000×11	At validation

- **CAR 8:** The common practice analysis is not clearly referenced. In addition, essential distinctions are not sufficiently provided between the proposed CDM project activity and any similar projects that are widely observed and commonly carried out. (see Table 2. Section F.14);
 - **Corrective Actions:** It is described that most of wind power projects in Korea has been developed as a CDM project.
 - **Conclusions:** Request for corrective actions is cleared.

As a result, it is finally confirmed that a wind power project like the proposed project is not widely observed and commonly carried out in Korea.

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 02.1.0).”

The grid emission factor ($EF_{\text{grid,CM,y}}$) doesn't have to be monitored because combined margin emission factor (CM) is determined ex-ante based on the most recently available information.

The net electricity generated ($EG_{\text{facility,y}}$) from the project will be measured continuously and recorded at least on a monthly basis. This data will be cross verified against the sales receipt from the grid.

During the site visit, the Validation Team witnessed the transmission line available for the proposed project and confirmed that the proposed project was a grid-connected power generation project. It was also checked that the monitoring of power generation and parasitic consumption



VALIDATION REPORT

by the wind power plant would be implemented properly. No emergency power generators have been identified at the project site.

One CAR regarding the monitoring plan was raised and closed out as follows;

- **CAR 9:** The monitoring plan, and operational and management structure for monitoring should be elaborated in the project design document. (see Table 2. Section G.2);
 - **Corrective Actions:** The monitoring plan has been detailed in the PDD in terms of measurement, calibration, regular check, etc.
 - **Conclusions:** Request for corrective actions is cleared.

Especially validation team checked the existence of fossil fuel generation plant for emergency situation on project site and determined that this fossil fuel generation for emergency will not be installed because it needs more investment.

It is confirmed that the monitoring arrangements described in the monitoring plan are feasible within the project design by document review and site visit.

The monitoring and QA/QC procedures including responsibilities and authorities for project management, calibration of metering equipment, double-check of key monitoring indicators are provided in the PDD and validation team confirmed that project participants have enough ability to the monitoring plan.

3.8 Local Stakeholder Consultation

Several stakeholder meetings with local residents had been held near the project site. Each round of discussions about construction plan and economical support for local residents at the stakeholder meetings, are provided in Section E.1. At the consultation meeting, the construction plan for the proposed project and the plan to support the local community are introduced.

Local residents are consulted with respect to use of the agricultural land. Proceedings for public meeting are provided in the PDD. It was noted that compensation for damages due to construction of the wind power plants are agreed upon between the Korea Southern Power Co., Ltd.

The Validation Team checked the attendance list and minutes of the meetings and concluded that the process of receipt of stakeholder's comments was appropriately implemented.

3.9 Environmental Impacts

As for its environmental impacts on the local area, before the project implementation, PERS (Pre Environmental Review System) was performed in line with the Environmental Policy Act. The Validation Team checked the PERS 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 the Jeju Special Self-Governing Province on 28/02/2008. 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 “Sungsan Wind Power 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 27/12/2006 to 25/01/2007. No comments were received during the period.

5 VALIDATION OPINION

KEMCO has undertaken the validation of Sungsan Wind Power Project which claimed approximately 35,265CO₂eq ton annually by generating electricity utilizing wind 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 nine Corrective Action Requests (CARs) and one Clarification Request (CL) 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 the significant CARs and CLs issued had been cleared.

In conclusion, KEMCO is of the opinion that Sungsan Wind Power 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 Korea through improvement of environmental condition, resource exploration and conservation, and socio-economic benefits.

- Main changes between GSC and final PDD

Item	GSC PDD	Final PDD	Note
Version	01	09	
Submission Date	20/12/2006	15/06/2011	
Credit Period Starting	01/12/2007	01/06/2010	The effective date of registration
GEF (tCO ₂ /MWh)	0.7281	0.7138	KEPCO 2003~2005,



 VALIDATION REPORT

			2006 IPCC Guidelines
Annual Reduction (tCO ₂ /y)	47,022.6	35,265	
Project IRR (%)	2.85	3.24	
Investment Cost (mil.Won)	46,853	42,300	FSR
O&M Cost	1,799 (mil.Won/year)	2.5%	Government Report
Electricity Generation	64,580	49,406	FSR (Plant Load Factor: 28.2%)
Electricity Tariff	75.85	76.47	KPX Homepage
Sensitivity Analysis	+10%	+16%	Electricity price



6 REFERENCES

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

- /1/ Ecoeye Co., Ltd. Project Design Document, Version 09, 15/06/2011
- /2/ Ecoeye Co., Ltd. Baseline Emissions Factor Excel Sheet, dated 24/05/2011
- /3/ Ecoeye Co., Ltd. Financial Analysis Excel Sheet, dated 24/05/2011
- /4/ Korea Institute of Energy Research, Feasibility Study for the Construction of New and Renewable Energy Electricity Generating Plants of Korea Southern Power Co., Ltd., Dec 2004
- /5/ Equipment Purchase Contract, Korea Southern Power Co., Ltd. and Vestas., 06/07/2006
- /6/ Electric Power Statistics Information System, Korea Power Exchange, <http://epsis.kpx.or.kr/>
- /7/ CDM Consulting MOU Contract, Korea Southern Power Co., Ltd. and Ecoeye Co., Ltd., 13/09/2005
- /8/ License for Development of Sungsan Wind Power Project, Jeju Special Self-Governing Province, 28/02/2008
- /9/ Letter of Approval for Sungsan Wind Power Project, Ministry of Knowledge Economy, 12/02/2010

Category 2: Documents and websites referred to by KEMCO

- /10/ Clean Development Mechanism Validation and Verification Manual (Version 01.1)
- /11/ ACM0002 Consolidated Methodology for Grid Connected Electricity Generation from Renewable Sources (Version 12.1.0)
- /12/ Tool to calculate the emission factor for an electricity system (Version 02.1.0)
- /13/ Glossary of CDM terms (ver05),
- /14/ Tool for the demonstration and assessment of additionality (ver05.2)
- /15/ Guidance on the Assessment of Investment Analysis (ver03.1)
- /16/ <http://cdm.unfccc.int/DNA/index.html>
- /17/ IPCC Guideline (2006)
- /18/ <http://www.moleg.go.kr> (Ministry of Government Legislation, in Korean only)
- /19/ <http://www.kpxj.or.kr/> (Jeju Branch, Korea Power Exchange)
- /20/ Korea Electric Power Statistics 2003-2005 (published in 2004-2006 respectively)
- /21/ Report on Feed-in Tariff for New and Renewable Energy and RPS, Ministry of Knowledge Economy, 31 March 2006



VALIDATION REPORT

- /22/ Projection of Long-term SMP using P-Pool Model, Korea Power Exchange, Sep. 2007
- /23/ 2009 Electricity Generation Facility Status, Korea Power Exchange, Sep. 2010

Persons interviewed:

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

Korea Southern Power Co., Ltd.

Mr. Oh, Wang Taek (Manager, Wind Power Plant Construction Department)

Ecoeye Co., Ltd.

Mr. Ahn, Sang Jeon

Jeju Special Self-Governing Province

Mr. Kang, Si Chul (Manager, Energy Policy Development)

Mr. Kim, Dong Seong (Manager, Clean Energy Department)

- oOo -



Appendix A

Validation Protocol

 VALIDATION REPORT

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	Checked	The LoA from Korea has 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	Checked	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	Checked	The validation did not reveal any information that indicates that the project can be seen as a diversion of ODA funding towards Korea.
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)	Checked	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 27 Dec 2006 to 25 Jan 2007 (30days). No comments were received during the period.

VALIDATION REPORT

REQUIREMENT	Reference	Conclusion	Comments
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	Checked	The PDD is in line with the latest UNFCCC CDM-PDD format. 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	Checked	Table 2, Section D.1
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	Checked	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	Checked	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	Checked	Table 2, Section E.6
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	Checked	Table 2, Section E.6

VALIDATION REPORT

REQUIREMENT	Reference	Conclusion	Comments
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	Checked	Table 2, Section E.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 paragraph 37(d), 43, CDM VVM para. 94	Checked	Table 2, Section F.1-13
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	Checked	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	Checked	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. 106	Checked	Table 2, Section F.9-11

VALIDATION REPORT


REQUIREMENT	Reference	Conclusion	Comments
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. 113	Checked	Table 2, Section F.12-13
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. 117	Checked	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. 120	Checked	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. 123	Checked	Table 2, Section A.1 The LoA from Korea has 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. 126	Checked	Table 2, Section H.1

VALIDATION REPORT


REQUIREMENT	Reference	Conclusion	Comments
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. 129	Checked	Table 2, Section I.1

VALIDATION REPORT


Table 2. Requirements Checklist

 KEMCO	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 and CDM project activities shall assist Parties not included in Annex I to the Convention in achieving sustainable development.</i>							
	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 (Para49) (Para127)	/9/	Document Review	1. Checked: The project participants at the host Party's side are Korea Southern Power Co., Ltd. and Ecoeye Co., Ltd., Korea. The Republic of Korea ratified the Kyoto Protocol on 08/11/2002, and established DNA within the Prime Minister's Office. 2. The DNA of Korea has issued a Letter of Approval (LOA) dated 12/02/2010, precisely referring to the title of the project activity, and confirming that the project assists in achieving sustainable development. KEMCO received this letter from the project participant.	OK	
	A.2. Is the letter(s) of approval unconditional with respect to A.1 above?	Para 46	/9/	Document Review	1. Checked: there are no provisions in the LoA 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 is the letter(s) of approval valid for the proposed CDM project activity under validation?	Para 47	/9/	Document Review	1. Checked: KEMCO received the LoA from the project participants. It is confirmed by comparing to the other published LoAs that the LoAs are authentic.	OK	


VALIDATION REPORT

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	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)	/9/	Document Review	1. Checked: It is confirmed by comparing to the other published LoAs that the LoA are authentic.	OK	
	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)	/9/	Document Review	1. Checked: the information on the project participant is described consistently across the PDD. 2. The participation of the project participants has been approved by the LoA of Korea which is authorizing Korea Southern Power Co., Ltd., and Ecoeye Co., Ltd. as project participants.	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	/9/	Document Review	1. Checked: It is confirmed by comparing to the other published LoAs that the LoA is authentic.	OK	


VALIDATION REPORT

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
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 template and guidance from the CDM Executive Board available on the UNFCCC CDM website.</i>		Para 55					
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 58					
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/ /4/	Document Review Interview	1. Checked: the proposed project aims to generate renewable-based electricity by utilizing wind resources. The total capacity of the propose project is 20 MW and the capacity of each wind turbine is 2 MW.	OK	
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;		Para 60	/1/ /4/	Document Review	1. Checked: On 19/12/2006, the Validation Team performed a site visit and interview with project stakeholders to confirm selected information and to resolve issues identified in the document review	OK	


VALIDATION REPORT

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	(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.						
	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 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>	Pars 62			N.A.		


VALIDATION REPORT

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	<p>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?</p>	Para 63	/1/ /4/	Document Review	1. Checked: the proposed project is a new wind power project.	OK	
	<p>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></p> <p><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></p> <p><i>The DOE shall ensure that the selected methodology applies to</i></p>	Para 65 Para 66 Para 67 (Para 135)					


VALIDATION REPORT

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	<p><i>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></p> <p><i>(If small-scale CDM project activity) The DOE shall determine whether a proposed small-scale CDM project activity meets the requirements of the simplified modalities and procedures for small-scale CDM project activities.</i></p>						
	<p><i>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.</i></p>	Para 68 Para 69					
	<p>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?</p>	Para 70	/1/ /2/ /11/ /12/	Document Review	1. Checked: the ACM0002 (ver 12.1.0) has been applied, which is valid until 25 Oct 2010.	OK	
	<p>E.2. (If small-scale CDM project activity) During its validation of a small-scale project activity, has it been confirmed that:</p> <p>(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;</p> <p>(b) The project activity conforms to one of the</p>	Para 136			N.A.		


VALIDATION REPORT

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	<p>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></p> <p>(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</p> <p>(d) Whether an assessment of the environmental impacts of the proposed CDM project activity is required by the host Party</p>						
	<p>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.</p> <p>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</p>	Para 71 (Para76) (Para77)	/1/ /2/ /11/ /12/	Document Review	1. Checked: the ACM0002 (ver 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.	OK	


VALIDATION REPORT

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	<p>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></p>						
	<p>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 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></p>	Para 72 Para 74 Para 75	/1/ /2/ /11/ /12/	Document Review	1. Checked: no clarification is required.	OK	
	<p>E.5. If the DOE determines that the proposed CDM project activity does not comply with the applicability conditions of the methodology the</p>	Para 73 Para 74	/1/ /2/ /11/ /12/	Document Review	1. Checked: no revision to or deviation from the methodology is required.	OK	


VALIDATION REPORT

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	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>						
	<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					
	<p>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?</p> <p>Has it been confirmed that all sources and GHGs required by the methodology have been included within the project boundary?</p> <p>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?</p> <p>Has it been confirmed that the justification</p>	Para 79 (Para80)	/1/ /2/ /11/ /12/ /18/ /19/ /20/	Document Review	<p>1. Checked: The project boundary established encompasses the physical, geographical site of the proposed project and the connected electricity system in Korea.</p> <p>2. Only CO₂ emissions are included within the project boundary in line with the baseline methodology.</p>	OK	


VALIDATION REPORT

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	provided is reasonable, based on assessment of supporting documented evidence provided by the project participants and corroborated by observations if required?						
	<p><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></p> <p><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></p>	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 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	Para 83	/1/ /2/ /11/ /12/ /18/ /19/ /20/	Document Review	1. CAR 1: The PDD does not specify how the baseline alternatives are identified and nor provide any justification for the baseline alternatives identified.	CAR	OK


VALIDATION REPORT

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	been excluded?						
	<p>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?</p> <p>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></p>	Para 84 (Para87) (Para88)	/1/ /2/ /11/ /12/ /18/ /19/ /20/	Document Review	1. CAR 1: refer to E.6 above	CAR	OK
	<p>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></p>	Para 85	/1/ /2/ /11/ /12/ /18/ /19/ /20/	Document Review	1. CL 1: The determination of baseline scenario should be completed by clarifying national or sectoral policies relating to the project activities.	CL	OK
	<p>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?</p>	Para 86	/1/ /2/ /11/ /12/ /18/ /19/ /20/	Document Review	1. CAR 1: refer to E.6 above	CAR	OK


VALIDATION REPORT

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	<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					
	<p>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?</p> <p>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?</p>	Para 90	/1/ /2/ /11/ /12/ /18/ /19/ /20/	Document Review	<p>1. Checked: in accordance with ACM0002 (version 12.1.0) Combined Margin for the proposed project, weighted average of Simple OM and BM option (b), is calculated using ex ante data including KEMCO grid data 2003-2005 (electricity supplied to the grid, fuel consumption, and calorific value) and 2006 IPCC emission factors.</p> <p>2. Selection of the Simple OM method is justified by showing that contribution of low-cost and must-run resources is less than 50% of total grid generation in average of the five most recent years. In addition, 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.</p>	OK	
	E.12.Has the justification given in the PDD for the choice of data and parameters used in the equations been verified?	Para 91 (Para92) (Para93)	/1/ /2/ /11/ /12/	Document Review	1. Checked: it has been confirmed by cross-checking the KEPCO's website that the national grid data used are most recently	CAR	OK


VALIDATION REPORT

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	<p>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?</p> <p>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?</p>		/18/ /19/ /20/		<p>available at the point of the commencement of validation.</p> <p>2. CAR 2: There are errors in calculating OM and BM: The weight value for OM and BM are incorrectly assigned. The carbon emission factors should be updated in line with the Tool to calculate the emission factor for an electricity system (Version 02.1.0, Annex 8, EB 60).</p>		
	<p>F. Additionality of a Project Activity <i>In this section, it is assessed that the proposed CDM project activity is additional.</i></p>	Para 94					
	<p>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></p>	Para 95 (Para97)	/3/ /4/ /5/ /6/ /7/ /14/ /15/ /21/	Document Review	1. Checked: refer to F.9 below	OK	
	<p>F.2. Have tools and documents provided by the CDM Executive Board to demonstrate the additionality of proposed CDM project activities, as well as</p>	Para 96 (Para137)	/3/ /4/ /5/	Document Review	1. Checked: Glossary of CDM terms (ver05), Additionality Tool (ver05.2), and the Guidance on the Assessment of Investment	OK	


VALIDATION REPORT

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	specific complementary or alternative requirements included in approved CDM methodology, been considered?		/6/ /7/ /14/ /15/ /21/		Analysis (ver03.1) has been followed.		
	<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/ /4/ /5/ /6/ /7/ /14/ /15/ /21/	Document Review	1. CAR 3: As per the Glossary of CDM terms (version 05), the starting date of a CDM project activity is the earliest date at which either the implementation or construction or real action of a project activity begins. In light of the above definition, the start date shall be considered to be the date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity. This, for example, can be the date on which contracts have been signed for equipment or construction/operation services required for the project activity. But, the start date of the project activity is not justified by the evidences as provided above.	CAR	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	Para 100	/3/ /4/ /5/	Document Review	1. Checked: it is confirmed that the proposed project is classified as an existing project	OK	


VALIDATION REPORT

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	start date on or after 02 August 2008) or an existing project activity (a project activity with a start date before 02 August 2008)?		/6/ /7/ /14/ /15/ /21/		activity since it started before 2 August 2008.		
	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 Board before the project activity start date, had the Project Participants informed the Host Party DNA and/or the UNFCCC secretariat in writing of the commencement of the project activity and of their intention to seek CDM status? <i>If such a notification has not been provided by the project participants within six months of the project activity start date, the DOE shall determine that the CDM was not seriously considered in the decision to implement the project activity.</i>	Para 101			N.A.		
	F.6. For an existing project activity with a start date before 2 August 2008, for which the start date is prior to the date of publication of the PDD for global stakeholder consultation, has the Project Participant's prior consideration of the CDM been sufficiently evidenced as follows? (a) Evidence that must indicate that awareness of the CDM prior to the project activity start date, and that the benefits of the CDM were a decisive factor in the decision to proceed with	Para 102	/3/ /4/ /5/ /6/ /7/ /14/ /15/ /21/	Document Review	1. CAR 4: As per the Guidelines on the Demonstration and Assessment of Prior Consideration of the CDM (Annex 22, EB 49), proposed project activities with a start date before 2 August 2008, for which the start date is prior to the date of publication of the PDD for global stakeholder consultation, are required to demonstrate that the CDM was seriously considered in the decision to implement the project activity. In this regard,	CAR	OK


VALIDATION REPORT

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	<p>the project. Evidence to support this would include, inter alia, minutes and/or notes related to the consideration of the decision by the Board of Directors, or equivalent, of the project participant, to undertake the project as a proposed CDM project activity.</p> <p>(b) Reliable evidence from project participants that must indicate that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation. Evidence to support this should include, inter 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.</p>				<p>the project participant must indicate awareness of the CDM prior to the project activity start date, and that the benefits of the CDM were a decisive factor in the decision to proceed with the project. Further, the project participant must indicate, by means of reliable evidence, that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation. But these issues are not provided in the PDD.</p>		


VALIDATION REPORT

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	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	/3/ /4/ /5/ /6/ /7/ /14/ /15/ /21/	Document Review	1. CAR 4: refer to F.6 above	CAR	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 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.	Para 106 (Para107)	/3/ /4/ /5/ /6/ /7/ /14/ /15/ /21/	Document Review	1. CAR 4: refer to E.6 above	CAR	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</i>	Para 108 Para 109 Para 110					


VALIDATION REPORT

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	<p><i>attractive alternative; or(b) Economically or financially feasible, without the revenue from the sale of certified emission reductions (CERs).</i></p> <p><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></p> <p><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 and validation of plant load factors.</i></p>						
	<p>F.9. Has the accuracy of financial calculations carried out for any investment analysis, been verified as follows?</p> <p>(a) Conduct a thorough assessment of all parameters and assumptions used in calculating the relevant financial indicator, and determine the accuracy and suitability of these parameters using the available evidence and expertise in relevant accounting practices;</p> <p>(b) Cross-check the parameters against third-</p>	<p>Para 111 (Para114)</p>	<p>/3/ /4/ /5/ /6/ /7/ /14// 15// 21/</p>	<p>Document Review</p>	<p>1. Checked: in terms of demonstration of investment barriers, the project proponent selects the benchmark analysis and calculated Project IRR for the project activity.</p> <p>2. Electricity tariff: the electricity price used in IRR calculation, i.e. one-year (Jan 2006-Dec 2006) average electricity price for wind power projects was validated by cross-check with data down-loaded at the KPX (Korea Power Exchange) statistics webpage. It was</p>	<p>CAR</p>	<p>OK</p>


VALIDATION REPORT

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	<p>party or publicly available sources, such as invoices or price indices;</p> <p>(c) Review feasibility reports, public announcements and annual financial reports related to the proposed CDM project activity and the project participants;</p> <p>(d) Assess the correctness of computations carried out and documented by the project participants;</p> <p>(e) Assess the sensitivity analysis by the project participants to determine under what conditions variations in the result would occur, and the likelihood of these conditions.</p> <p>(f) Assess the consistency among the input parameters in investment analysis, for example the project lending rate and benchmark value, the escalation of O&M cost and the fixed power tariff.</p> <p>(g) Assess the validity of investment cost and other parameters used in the investment analysis by comparing with the region values.</p>				<p>further confirmed that those value are most recently available at the point of the project start.</p> <p>3. Formulae and calculation processes of Project IRR are validated by reviewing calculation spreadsheets submitted by the project proponent.</p> <p>4. 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. According to Paragraph 18 of the Guidelines on the assessment of investment analysis (Version 03.1), the investment analysis has been updated such that 16% of average increase rate between 2003 and 2006 in SMP for wind powers was considered in the sensitivity analysis. It is furthered assessed that the range of 16% is reasonable because the KPX (Korea Power Exchange) report in 2007 estimated the future projection of SMP (System Marginal Price) towards with the range of 61.8~83.2 KRW/KWh and the 5th National Electricity Supply and Demand Basic Plan (2010~2024) targets the stabilization of SMP by continually expanding the national</p>		


VALIDATION REPORT

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
					<p>electricity generation capacity in the coming years.</p> <p>5. CAR 5: As per the Guidance on the Assessment of Investment Analysis (Version 03.1), input values used in all investment analysis should be valid and applicable at the time of the investment decision taken by the project participant. But, investment costs and O&M costs are not sufficiently evidenced. Further it is not confirmed that those values are valid and applicable at the point of investment decision.</p> <p>6. CAR 6: As per the Guidelines for the Reporting and Validation of Plant Load Factors (Version 01), the plant load factor shall be defined ex-ante in the CDM-PDD according to one of the following three options: (a) The plant load factor provided to banks and/or equity financiers while applying the project activity for project financing, or to the government while applying the project activity for implementation approval; (b) The plant load factor determined by a third party contracted by the project participants (e.g. an engineering company); But, the plant load factor for the proposed project is not evidenced by the options above. Further it should be confirmed that the factor was valid</p>		


VALIDATION REPORT

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
					and applicable at the point of investment decision.		
	<p>F.10.Has the suitability of any benchmark applied in the investment analysis, been confirmed as follows?</p> <p>(a) Determine whether the type of benchmark applied is suitable for the type of financial indicator presented;</p> <p>(b) Ensure that any risk premiums applied in determining the benchmark reflect the risks associated with the project type or activity;</p> <p>(c) Determine whether it is reasonable to assume that no investment would be made at a rate of return lower than the benchmark 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.</p>	Para 112	/3/ /4/ /5/ /6/ /7/ /14/ /15/ /21/	Document Review	1. CAR 7: As per with the Guidance on the Assessment of Investment Analysis (Version 03.1), in cases where a benchmark approach is used the applied benchmark shall be appropriate to the type of IRR calculated. Local commercial lending rates or weighted average costs of capital (WACC) are appropriate benchmarks for a project IRR. Required/expected returns on equity are appropriate benchmarks for an equity IRR. Benchmarks supplied by relevant national authorities are also appropriate if the DOE can validate that they are applicable to the project activity and the type of IRR calculation presented. The benchmark value used in the investment analysis should be therefore justified and evidenced by reliable sources.	CAR	OK
	<p>F.11. In cases where project participants rely on values from Feasibility Study Reports (FSR) that are approved by national authorities for proposed CDM project activities, has it been ensured that:</p> <p>(a) The FSR has been the basis of the decision to proceed with the investment in the project,</p>	Para 113	/3/ /4/ /5/ /6/ /7/ /14/ 15// 21/	Document Review	1. Checked: the Feasibility Study Report for the proposed project was prepared by a technical institute, Korea Institute of Energy Research in Dec 2004. Comparing to the start date of the project activity (Jul 2006), the date of investment decision (Sep 2005), and the publishing date of the Report, it is deemed	OK	OK


VALIDATION REPORT

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	<p>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;</p> <p>(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;</p> <p>(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.</p>				reasonable to conclude that the investment decision was based on the Feasibility Study Report.		
	<p><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 activity (b) Do not prevent the implementation of at least one of the alternatives.</i></p>	Para 115					
	<p>F.12. Has the barrier analysis referred to either?</p> <p>(a) Risk related barriers, for example risk of technical failure, that could have negative effects on financial performance; or</p> <p>(b) Barriers related to the unavailability of</p>	Para 116	/1/	Document Review	1. Checked: The investment analysis is selected by the project participants.	OK	


VALIDATION REPORT

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	<p>sources of finance for the project activity.</p> <p>F.13.Has the barrier analysis performed been assessed as follows:</p> <p>(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></p> <p>(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</i></p>	Para 117 (Para118)	/1/	Document Review	1. Checked: The investment analysis is selected by the project participants.	OK	


VALIDATION REPORT

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	<p><i>activity being implemented, the DOE shall apply its local and sectoral expertise to judge whether a barrier or set of barriers would prevent the implementation of the proposed CDM project activity and would not equally prevent implementation of at least one of the possible alternatives, in particular the identified baseline scenario.</i></p>						
	<p><i>Common practice analysis: For proposed 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></p>	Para 119					
	<p>F.14.Has the common practice analysis been assessed using local and sectoral expertise as follows?</p> <p>(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</p>	Para 120 (Para121)	/3/ /4/ /5/ /6/ /7/ /14/ /15/ /21/	Document Review	1. CAR 8: Currently installed capacities of wind powers in Korea are provided. But, the common practice analysis is not clearly referenced. In addition, essential distinctions are not sufficiently provided between the proposed CDM project activity and any similar projects that are widely observed and commonly carried out.	CAR	OK


VALIDATION REPORT

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	<p>DOE shall assess the explanation why this region is more appropriate;</p> <p>(b) Using official sources and local and industry expertise, determine to what extent similar and operational projects (e.g. using similar technology or practice), other than CDM project activities, have been undertaken in the defined region;</p> <p>(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.</p>						
	<p>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></p>	Para 122					
	<p>G.1. Has the compliance of the monitoring plan with the approved methodology been assessed as follows?</p> <p>(a) By means of document review, identify the list of parameters required by the selected approved methodology;</p> <p>(b) Confirm that the monitoring plan contains all necessary parameters, that they are clearly</p>	Para 123 (Para124)	/1/	Document Review Interview	<p>1. Checked: in line with the ACM0002 (version 12.1.0), electricity supplied to the grid by the wind power plants, will be monitored.</p> <p>2. Net electricity supplied to the grid, excluding auxiliary electricity consumption within the wind power plants, will be directly measured by electric meters and double-checked with</p>	OK	


VALIDATION REPORT

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	<p>described and that the means of monitoring described in the plan complies with the requirements of the methodology.</p> <p>(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 electricity from the grid and on-site standby fossil fuel generation.</p>				the receipt for sales. It is also confirmed that no project emissions will be generated by the project since net amount of electricity generation will be monitored		
	<p>G.2.Has it been assessed, by means of review of the documented procedures, interviews with relevant personnel, project plans and any physical inspection of the proposed CDM project activity site in accordance with paragraphs 59-62, whether:</p> <p>(a) The monitoring arrangements described in the monitoring plan are feasible within the project design;</p> <p>(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.</p>	Para 123 (Para124)	/1/	Document Review Interview	<p>1. The calibration of the metering equipment will be done pursuant to the relevant regulations.</p> <p>2. The data from electricity sales receipts will be cross checked against meter readings taken at the project site.</p> <p>3. In conclusion, it is confirmed that the project participants has the ability to implement the monitoring plan.</p> <p>4. CAR 9: The monitoring plan, and operational and management structure for monitoring should be elaborated in the project design document.</p>	CAR	OK
	H. Local Stakeholder Consultation	Para 128					

VALIDATION REPORT

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	<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>						
	<p>H.1. Has it been determined, by means of document review and interviews with local stakeholders as appropriate, whether:</p> <p>(a) Comments by local stakeholders that can reasonably be considered relevant for the proposed CDM project activity, have been invited;</p> <p>(b) The summary of the comments received as provided in the PDD is complete;</p> <p>(c) The project participants have taken due account of any comments received and have described this process in the PDD.</p>	Para 129 (Para130)	/1/	Document Review Interview	<p>1. Checked: several stakeholder meetings with local residents had been held near the project site. Each round of discussions about construction plan and economical support for local residents at the stakeholder meetings, are provided in Section E.1. At the consultation meeting, the construction plan for the proposed project and the plan to support the local community are introduced.</p> <p>2. Local residents are consulted with respect to use of the agricultural land. Proceedings for public meeting are provided in the PDD. It was noted that compensation for damages due to construction of the wind power plants are agreed upon between the Korea Southern Power Co., Ltd.</p>	OK	
	<p>I. Environmental Impacts</p> <p><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></p>	Para 131					
	<p>I.1. Has it been confirmed, by means of a document review and/or using local official sources and</p>	Para 132 (Para133)	/1/ /8/	Document Review	<p>1. Checked: As for environmental impacts, before the project implementation, PERS</p>	OK	

VALIDATION REPORT

 KEMCO	Validation Checklist	VVM Criteria	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	expertise, whether the project participants have undertaken an analysis of environmental impacts and, if required by the host Party, an environmental impact assessment?			Interview	(Pre Environmental Review System) was performed in line with the Environmental Policy Act. The Validation Team checked the PERS 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 the Jeju Special Self-Governing Province on 28 Feb 2008. It was therefore concluded that project does not have any significant environmental impacts.		
	J. Duration of the Project/ Crediting Period <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 21 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	

 VALIDATION REPORT

Table 3. Resolution of Corrective Action and Clarification Requests

Non-conformities	Reference	Corrective Actions	Comments
1. CAR 1: The PDD does not specify how the baseline alternatives are identified and nor provide any justification for the baseline alternatives identified.	Table 2. Section E.7	Three alternative scenarios are identified, and justification for selection of the most likely scenario is provided.	Selection of the most likely baseline scenario is sufficiently justified.
2. CAR 2: There are errors in calculating OM and BM: The weight value for OM and BM are incorrectly assigned. The carbon emission factors should be updated in line with the Tool to calculate the emission factor for an electricity system (Annex 8, EB 60)	Table 2. Section E.12	The correct weight value for OM and BM are assigned in calculation of the combined margin emission factor.	The combined margin emission factor is correctly determined.
3. CAR 3: As per the Glossary of CDM terms (version 05), the starting date of a CDM project activity is the earliest date at which either the implementation or construction or real action of a project activity begins. In light of the above definition, the start date shall be considered to be the date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity. This, for example, can be the date on which contracts have been signed for equipment or construction/operation services required for the project activity. But, the start date of the project activity is not justified by the evidences as provided above.	Table 2. Section F.3	The start date of the proposed project has been determined as the date when the equipment purchase contract was signed.	The determination of the start date of the proposed project has been sufficiently substantiated.

VALIDATION REPORT

Non-conformities	Reference	Corrective Actions	Comments
4. CAR 4: As per the Guidelines on the Demonstration and Assessment of Prior Consideration of the CDM (Annex 22, EB 49), proposed project activities with a start date before 2 August 2008, for which the start date is prior to the date of publication of the PDD for global stakeholder consultation, are required to demonstrate that the CDM was seriously considered in the decision to implement the project activity. In this regard, the project participant must indicate awareness of the CDM prior to the project activity start date, and that the benefits of the CDM were a decisive factor in the decision to proceed with the project. Further, the project participant must indicate, by means of reliable evidence, that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation. But these issues are not provided in the PDD.	Table 2. Section F.6	It is described that the MOU contract was signed on 13/09/2005 between the project owner and the consultation company before signing the contract for main equipment purchase on 06/07/2006. In addition, the validation contract with DOE is signed on 04/12/2006.	Prior consideration of CDM benefits is sufficiently addressed.

VALIDATION REPORT

Non-conformities	Reference	Corrective Actions	Comments
5. CAR 5: As per the Guidance on the Assessment of Investment Analysis (Version 03.1), input values used in all investment analysis should be valid and applicable at the time of the investment decision taken by the project participant. But, investment costs and O&M costs are not sufficiently evidenced. Further it is not confirmed that those values are valid and applicable at the point of investment decision.	Table 2. Section F.9	Input values such as investment costs, O&M costs are corrected in line with the Feasibility Study Report published by the Korea Institute of Energy Research and Report on Renewable Energy Feed-in Tariffs published by Ministry of Commerce, Industry, and Energy (MOCIE), March 2006.	Key input values for investment analysis is properly evidenced. In addition, comparing to the start date of the project activity (Jul 2006), the date of investment decision (Sep 2005), and the publishing date of the Feasibility Study Report (Dec 2004), it is validated that the investment decision was based on the Feasibility Study Report.
6. CAR 6: As per the Guidelines for the Reporting and Validation of Plant Load Factors (Annex 11, EB 48), the plant load factor shall be defined ex-ante in the CDM-PDD according to one of the following three options: (a) The plant load factor provided to banks and/or equity financiers while applying the project activity for project financing, or to the government while applying the project activity for implementation approval; (b) The plant load factor determined by a third party contracted by the project participants (e.g. an engineering company); But, the plant load factor for the proposed project is not evidenced by the options above. Further it should be confirmed that the factor was valid and applicable at the point of investment decision.	Table 2. Section F.9	The plant load factor has been corrected in line with the Feasibility Study Report published by the Korea Institute of Energy Research.	The plant load factor is properly substantiated.

VALIDATION REPORT

Non-conformities	Reference	Corrective Actions	Comments
7. CAR 7: As per with the Guidance on the Assessment of Investment Analysis (Version 03.1), in cases where a benchmark approach is used the applied benchmark shall be appropriate to the type of IRR calculated. Local commercial lending rates or weighted average costs of capital (WACC) are appropriate benchmarks for a project IRR. Required/expected returns on equity are appropriate benchmarks for an equity IRR. Benchmarks supplied by relevant national authorities are also appropriate if the DOE can validate that they are applicable to the project activity and the type of IRR calculation presented. The benchmark value used in the investment analysis should be therefore justified and evidenced by reliable sources.	Table 2. Section F.10	The benchmark value is based on the Report on Renewable Energy Feed-in Tariffs published by Ministry of Commerce, Industry, and Energy (MOCIE), March 2006. This value was also applied in the Feasibility Study Report published by the Korea Institute of Energy Research (Dec 2004).	It is confirmed that the benchmark value is properly evidenced.
8. CAR 8: The common practice analysis is not clearly referenced. In addition, essential distinctions are not sufficiently provided between the proposed CDM project activity and any similar projects that are widely observed and commonly carried out.	Table 2. Section F.14	It is described that most of wind power projects in Korea has been developed as a CDM project.	Request for corrective actions is cleared.
9. CAR 9: The monitoring plan, and operational and management structure for monitoring should be elaborated in the project design document.	Table 2. Section G.2	The monitoring plan has been detailed in the PDD in terms of measurement, calibration, regular check, etc.	Request for corrective actions is cleared.

VALIDATION REPORT

Non-conformities	Reference	Corrective Actions	Comments
10. CL 1: The determination of baseline scenario should be completed by clarifying national or sectoral policies relating to the project activities.	Table 2. Section E.9	The revised PDD has clarified national or sectoral policies including the Electricity Act and New and Renewable Energy Promotion Act in determining the baseline scenario for the proposed project activity.	It is concluded that the revised PDD sufficiently addresses national or sectoral policies relating to the proposed project activities.




Appendix B

CVs of Validation Team and Technical Reviewer




 VALIDATION REPORT

	<h2>Personal History</h2>		
Family name	HAN	Date of Birth	-
Given name	Seung-Ho	Sex	-
Organization	KEMCO	Phone No.	+82-31-260-4883
Position	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
	Full-time Lead Validator/verifier - KEMC-B-1100, Paragraph 6.2(1)		<input checked="" type="checkbox"/>
Sectoral Scope	Proposed Sectoral Scope		Qualification
	1. Energy industries (renewable - / non-renewable sources)	1-1 Renewable Energy Power Generation	<input checked="" type="checkbox"/>
	14. Afforestation and reforestation	14-1 Afforestation and Reforestation	<input checked="" type="checkbox"/>
	15. Agriculture	15-1 Manure Management	<input checked="" type="checkbox"/>
Work experience			
* Please describe every employment you have had			
From	to	Details of Duties	
2000-03-01	2002-01-01	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	




 VALIDATION REPORT

	<h2>Personal History</h2>		
Family name	PARK	Date of Birth	-
Given name	Kyung-Soon	Sex	-
Organization	KEMCO	Phone No.	+82-31-260-4402
Position	Associate Manager	Fax No.	+82-31-260-4886
Address	1157, Pungdukchun-2-dong, Yongin, Gyeonggi, 448-994, Republic of Korea		E-mail kspark@kemco.or.kr
Title	Proposed Title		Qualification
	Full-time Lead Validator/verifier - KEMC-B-1100, Paragraph 6.2(2)		<input checked="" type="checkbox"/>
Sectoral Scope	Proposed Sectoral Scope		Qualification
	3. Energy demand	3-1 Energy demand	<input checked="" type="checkbox"/>
Work experience			
* Please describe every employment you have had			
From	to	Details of Duties	
1996-04-08	1997-11-30	Start-up operation of nuclear power plant, KEPCO(Nuclear Power #3, 4 in Uljin)	
1997-12-01	1998-12-03	Demand side management on industry sector, Demand Side Management division, KEMCO	
1998-12-04	2004-12-31	Process consultancy, Energy Consulting Department, KEMCO	
2005-01-01	2007-01-31	Support of operational activities of KEMCO, Management Support Department, KEMCO	
2007-02-01	2009-07-31	Validation and verification of GHG reduction projects, GHG Certification Office, KEMCO	
2009-08-01	2011-03-15	Support of operational activities of KEMCO, Management Support Department, KEMCO	
2011-03-16	Present	Industrial Sector Demand Side Management, Demand Side Management Department, KEMCO	



 VALIDATION REPORT

	<h2>Personal History</h2>		
Family name	PARK	Date of Birth	-
Given name	Jin-Young	Sex	-
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		<input checked="" type="checkbox"/>
Sectoral Scope	Proposed Sectoral Scope		Qualification
	1. Energy industries (renewable - / non-renewable sources)	1-1 Renewable Energy Power Generation	<input checked="" type="checkbox"/>
		1-2 Fuel Consumption for Power or/and Heat Generation	<input checked="" type="checkbox"/>
	5. Chemical industries	5-1 N ₂ O Reduction	<input checked="" type="checkbox"/>
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	