

VALIDATION REPORT

3MW SHINAN WIND POWER PROJECT

REPORT No. GHGCC(A)08-022

REVISION No. 05

GHG Certification Office

KOREA ENERGY MANAGEMENT CORPORATION



VALIDATION REPORT

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Approved by: Lee, Jae Hoon (Director)	Organisational unit: Korea GHG Certification Office, Korea Energy Management Corporation
Client: Ecoeye, Co. Ltd.	Client ref.: Ms. Lee, Jung-Eun
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First PDD (version and date)	Version 01, 08/12/2008
Final PDD (version and date)	Version 02.4, 20/10/2009
<p>Summary:</p> <p>The Korea Energy Management Corporation (KEMCO) has performed a validation of the “3MW Shinan Wind Power Project” in Korea on the basis of all applicable CDM requirements, which include the CDM modalities and procedures and subsequent decisions by the CMP and documents released by the CDM Executive Board and available on the UNFCCC CDM website (together referred to as CDM requirements). This validation report summarizes the findings of the validation.</p> <p>Shinan Wind Power Project is a small scale grid-connected renewable energy project with a total capacity of 3MW, three 1MW turbines. This project is to be constructed on Bigum island and is expected to generate an estimated 6,400 MWh of electricity per year, which is to be provided to Korea Power Exchange through grid connection. Its GHG emission reductions are estimated at 3,901 tCO₂/yr by displacing electricity that would otherwise be generated by fossil fuel-based power plants.</p> <p>The validation consisted of following three phases;</p> <ol style="list-style-type: none"> 1) Desk review of the project design, baseline and monitoring plan 2) On-site assessment and follow-up interviews with project stakeholders, and 3) Resolution of outstanding issues and the issuance of the final validation report and opinion <p>In summary, it is KEMCO’s opinion that the project, as described in the project design document as of 20 Oct 2009, meets all applicable UNFCCC requirements for the CDM and correctly applies the approved baseline and monitoring methodology AMS I.D. (version 13). Hence, KEMCO requests the registration of the “3MW Shinan Wind Power Project” as a CDM project activity.</p>	

Report No.: GHGCC(A)-08-022	Subject Group:	
Report title: 3MW Shinan Wind Power Project		
Work carried out by: Woo, Jae Hak, Park, Kyung Soon, Hwang In-Chul		
Work verified by: Han, Seung-ho		
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Indexing terms

UNFCCC/Kyoto Protocol/CDM

Validation / Verification

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Abbreviations

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

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

Conversion Factors and Definitions

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



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1 INTRODUCTION

The Ecoeye Co., Ltd. has commissioned Korea Energy Management Corporation (KEMCO) to perform a validation of the “3MW Shinan Wind Power Project” in Korea (hereafter called “the project”). This report summarises the findings of the validation of the project, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The validation team consisted of the following personnel:

Role	Name	Organization	Scope of work
Team Leader, Validator	Woo, Jae Hak	KEMCO GHG Certification Office	Baseline and Monitoring methodology, Estimation of GHG emission reductions
Lead Validator	Park, Kyung-Soon	KEMCO GHG Certification Office	Sustainable Development, Environmental impacts, Stakeholder comments
Validator (On-the-job trainee)	Hwang, In-Chul	KEMCO GHG Certification Office	Sustainable Development, Environmental impacts, Stakeholder comments

1.1 Objective

The purpose of a validation is to have an independent third party assessment of the project design. In particular, the project baseline, the monitoring plan, and the project’s compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

1.2 Scope

The validation scope is defined as an independent and objective review of the project design document, the project’s baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations including Clean Development Mechanism (CDM) Validation and Verification Manual (Version 01, EB44 Annex3). KEMCO has, based on the recommendations in the Validation and Verification Manual (IETA/PCF, version 3.3, March 2004) employed a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of CERs.

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

Examples of Documents to review as part of scope shall include, but shall not be limited to ;

- Terms of Reference



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- Project Design Document
- Baseline and Monitoring Methodology
- Environmental Impact Assessment
- Summary of Comments by Local Stakeholders

1.3 GHG Project Description

Shinan Wind Power Project is a small scale grid-connected renewable energy project with a total capacity of 3MW, three 1MW turbines. This project is to be constructed on Bigum island and is expected to generate an estimated 6,400 MWh of electricity per year, which is to be provided to Korea Power Exchange through grid connection.

The project started on 20/08/2008, aiming 01/06/2009 or the registration date as the starting date of the renewable 7 years of crediting period. The emission reduction estimation of the project will be 3,901 tonnes (CO₂) each year, with a Combined Margin emission factor of the 0.6096 tCO₂/MWh.

According to the adopted list of sectoral scopes by CDM-AP, which is based on the list of sectors and sources contained in Annex A of the Kyoto Protocol, this project fits in sectoral scope 1 Energy Industries (renewable - / non-renewable sources).



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2 METHODOLOGY

The validation may consist of the following three phases:

- I a desk review of the project design, baseline and monitoring methodology
- II on-site assessment and follow-up interviews with project stakeholders
- III the resolution of outstanding issues and the issuance of the final validation report and opinion.

Validation Schedule	1. Desk Review : 22 December 2008 ~ 13 January 2009 2. On-site Assessment : 20 January 2009 ~ 21 January 2009 3. Review of Corrective Actions : 25 February 2009 ~ 30 July 2009
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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.



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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>



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2.1 Review of Documents

The Project Design Document (PDD) version 01 dated 08/12/2008 submitted initially and final version 02.4 dated 20/10/2009 along with additional background document /2/ - /18/ 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

In the period of 20-21 January 2009, KEMCO performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Shinan Wind Power Co., Ltd., Ecoeye Co., Ltd. (project consultant), a local government official and a representative of local residents were interviewed. The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organisation	Interview topics
Shinan Wind 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. 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
Local government officials	<ul style="list-style-type: none"> ○ Environmental impact ○ Permit related to the project ○ Local stakeholder's comments

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation was to resolve the requests for corrective actions and clarification and any other outstanding issues which needed to be clarified for KEMCO's positive conclusion on the project design. The Corrective Action Requests and Clarification Requests raised by KEMCO, presented to the project participant in KEMCO's NC report as of 21 January 2009 were resolved during communications between the client and KEMCO. To



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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 02.4. After reviewing and assessing the revised PDD, KEMCO issued this validation report and opinion.

2.4 Internal Quality Control

The final validation report will undergo technical review before requesting registration of the project activity. The technical review will be performed by two committee members 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.



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 interviews during the follow up visit are summarised. A more detailed record of these findings can be found in the Validation Protocol in Appendix A.
- 2) Where KEMCO 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 four Corrective Action Requests and two Clarification Requests.
- 3) Where Clarification or Corrective Action Requests have been issued, the exchanges between the Client and KEMCO to resolve these Clarification or Corrective Action Requests are summarised.
- 4) The conclusions for validation subject are presented.

The final validation findings relate to the project design as documented and described in the revised and resubmitted project design document version 02.4 dated 20 Oct 2009.

3.1 Participation Requirement

The project has one participant of Shinan Wind Power Co., Ltd of Republic of Korea (host). The host Party Korea meets all relevant participation requirements. The Korean DNA issued a Letter of Approval (LOA) on 22 July 2009, authorizing Shinan Wind Power Co., Ltd as project participant and confirming that the project assists in achieving sustainable development after reviewing KEMCO's draft validation report.

Regarding ODA declaration, one Major NC (CAR 1) was raised and closed out as follows;

- **CAR 1:** Documented evidences representing that ODA from Annex I parties is not included in financing the project has not been provided. (see Appendix A. Checklist A.4.5);
- **Corrective Actions:** The project participant declared that no public funding has been invested for the project in its letter dated 24 Feb, 2009.
- **Conclusions:** The project participant's declaration of no public funding has been submitted to DOE. And the project is unilateral CDM project and funded by loan from local bank and equity of the project owner. The validation did not reveal any information that includes that the project can be seen as a diversion of official development assistance (ODA) funding towards Korea.

3.2 Project Design

The project is a small scale grid-connected renewable energy project with a total capacity of 3MW, three 1MW turbines. This project is to be constructed on Bigum island and is expected to



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generate an estimated 6,400 MWh of electricity per year, which is to be provided to Korea Power Exchange through grid connection.

Being a renewable electricity project, the project will reduce greenhouse gas emissions by avoiding CO₂ emissions from electricity generation by fossil fuel power plants in Korea.

Shinan Wind Power Co., Ltd. made a contract with Dongkuk S&C Co., Ltd, a wind tower manufacturer for the project construction work including equipment supply.

The expected lifetime of the project is 20 years. A renewable crediting period of 7 years has been chosen for the project, starting from the registration date. The emission reductions are estimated to be 3,901 tonnes (CO₂) each year and 27,310 tCO₂ over the first seven years of crediting period.

And the PDD is in accordance with the applicable CDM requirements for completing PDDs such as forms and guidance.

Regarding project description, one Minor NC (CL 1) was raised and closed out as follows;

- **CL 1:** Physical location needs to be further detailed to clearly indicate that the project site is in an island. (see Appendix A. Checklist A.4.1);
- **Corrective Actions:** The project participant revised the PDD to add the details of physical location in A.4.1.4 that the project site is in Bigeum island.
- **Conclusions:** The revised PDD clearly describes the site is located in Bigeum Island.

3.3 Baseline and Monitoring Methodology

The project applies the approved baseline and monitoring methodology for small-scale project because the total capacity (3MW) is below the limit (15MW) of small scale CDM project for renewable energy. As the project is a wind power project which supplies electricity into a grid, AMS I.D. (ver 13), “Grid connected renewable electricity generation” is applied to the project.

The spatial extent of the project boundary is clearly defined as the site of the project and all power plants connected physically to the grid of Korea Electric Power Corporation (KEPCO). The defined project boundary is in line with the applied methodology.

The most recent 5-year (2003~2007) KEPCO electricity data shows that the rate of low cost/must run is 41.49% which is less than 50% of total grid generation. Therefore, simple OM method is applied to the project for the calculation of the emissions factor. OM (Operating Margin) and BM (Build Margin) are obtained to calculate the emission factor (CM) of the project by using the “Tool to calculate the emission factor for an electricity system (ver 01.1)”. The weighting is set to be respectively $W_{OM} = 75\%$ and $W_{BM} = 25\%$ for the first crediting period and for subsequent crediting periods. The formulae for the emission factors are consistently used in the monitoring plan.

Since the start date of the proposed project, 20 Aug 2008, is after 2 August 2008 and PDD had not been published for global stakeholder consultation before the start date of the project activity, the Project Participants submitted to the Korean DNA the Letter of Intention on the project on 19 Nov 2008. A copy of the Letter was submitted to the Validation Team.

In order to demonstrate additionality, the PDD employed investment analysis, then, showed that the project is not financially attractive under the baseline scenario by using the “Indicative



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simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories (Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activity categories)". Specifically the Project Proponent performed project IRR calculations against its actual loan rate to be paid to the bank and demonstrated that project IRR remains not financially attractive under positive and negative variations of key input values.

- Investment costs: the investment costs for the proposed project described in the web-hosted PDD for global stakeholders consultation were confirmed by cross-check with the Shinan Wind Park Development Plan approved by CEO of Shinan Wind Power Co., Ltd. (23 Jun 2008). However, the Validation Team asked the project proponent to take a conservative approach to application of investment costs by selecting lower value which was determined in the Agreement on Adjusted Construction Costs (15 Dec 2008). For this reason, the investment costs and Project IRR were changed into the conservative amount in the final PDD.
- O&M costs: it is confirmed the percentage of O&M costs is within the reasonable range reported by the government-published report.
- Electricity tariff: the electricity price used in NPV calculation, i.e. recent seven-month average electricity price for wind power plants was validated by cross-check with data down-loaded at the KPX (Korea Power Exchange) statistics webpage. This period is accepted by the Validation Team since the electricity tariff for wind power projects has been increasing so far. It was further confirmed that those value are most recently available at the point of the project start. In addition, the Validation Team noted that KPX had adjusted part of data on electricity price for wind power plants after publication of the PDD for global stakeholder consultation. Thus it was accepted that the project proponent corrected the average electricity price for wind power plants accordingly in the final PDD.
- Electricity generation (Plant Load Factor): the annual power generation for the proposed project, 6,400 MWh/yr, (24.4%¹) was confirmed by cross-check with the wind energy assessment report titled as "Desk-top Review of the Energy Production of the proposed Shinan Wind Farm in Korea (21 October 2008)" which was prepared by an engineering company contracted by the project participants, Garrad Hassan. It is thus confirmed that the estimation of electricity generation are carried out in line with Para. 3(b) of EB 48 Annex 11.
- Benchmark value: the project proponent performed project IRR calculations using as a benchmark value its actual loan rate to be paid to the bank. The loan rate was validated by the Validation Team by reviewing the Loan agreement between Shinan Wind Power Co., Ltd and Woori Bank. (14 October 2008)
- Validity of FSR: to validate the investment analysis, the Validation Team reviewed mainly two documents: Desk-top Review of the Energy Production of the proposed Shinan Wind Farm in Korea prepared by an engineering company, Garrad Hassan (21 October 2008), and Shinan Wind Park Development Plan approved by CEO of Shinan Wind Power Co., Ltd. (23 Jun 2008). It is validated that the key parameters used in the

¹ The Plant Load Factor (24.4%) is calculated by dividing 6,400 MWh/yr (estimated annual electricity generation) by 26,280 MWh/yr (total generation in full operation of 8,760 hours).



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investment analysis are based on the above documents which are available at the time of investment decision, i.e. Construction Contract date, 20 Aug 2008.

It was validated that 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 cost, and electricity tariff. Results of the sensitivity analysis were confirmed by assessing the appropriateness of the assumed variations in the cash flow and noting that the Project IRR remains below the benchmark value under the favorable conditions assumed.

Regarding the investment analysis, one Major NC (CAR 2) and one Minor NC (CL 2) were raised and closed out as follows;

- **CAR 2:** The investment analysis data are not sufficiently evidenced. The source of total investment cost has not been provided. (see Appendix A. Checklist B.5.6);
- **Corrective Actions:** To substantiate the investment costs, Construction Contract and Agreement on Adjusted Construction Costs have been submitted. Another Contract on Foundation Work has been submitted to evidence the adjusted construction costs. In addition, a report by Ministry of Knowledge Economy was provided as a source of 2.2 % O&M cost.
- **Conclusions:** The Construction Contract and related documents, and the report published by Ministry of Knowledge Economy have been provided as sources of total investment cost and O&M cost. The total investment cost in the document is consistent with the figure in Table 5 of PDD and IRR calculation spreadsheets. Chapter 2 (Wind power) of the Ministry's report suggests 2.2% O&M cost for domestic wind power. The validation team concluded that investment analysis data are evidenced sufficiently.
- **CL 2:** National policies favoring the proposed project are not described. (see Appendix A. Checklist B.4.4);
- **Corrective Actions:** In Korea, government gives subsidy (feed-in tariff) to the new and renewable sources of energy project developers under "Act on the Promotion of the Development and Use of New and Renewable Sources of Energy" after 26 Sep 2002. According to decision of EB 22 meeting (Annex 3 – Clarifications on the consideration of national and/or sectoral policies and circumstances in baseline scenarios), the E-policies or regulations that decrease GHG emissions implemented since 11 November 2001 needs not be taken into consideration in developing a baseline scenario. The project participant revised the PDD to include the feed-in tariff policy in Korea.
- **Conclusions:** The revised PDD describes feed-in tariff policy which took effect on 26 Sep 2002 as e⁻ policy.

In a related matter, sources of data/parameter ($FC_{i,m,y}$, $NCV_{i,v}$) are incorrectly cited and description of data/parameter ($NCV_{i,v}$) in B.6.2 are incorrect. Thus one Major NC (CAR 3) was raised and closed out as follows;

- **CAR 3:** Sources of data/parameter ($FC_{i,m,y}$, $NCV_{i,v}$) are incorrectly cited and description of data/parameter ($NCV_{i,v}$) in B.6.2 are incorrect. (see Appendix A. Checklist B.6.2);



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- **Corrective Actions:** The source of $FC_{i,m,y}$ and $NCV_{i,v}$ has been corrected from KEMCO to KEPCO. The description of $NCV_{i,v}$ has been corrected from “amount of fossil fuel” to “calorific value.”
- **Conclusions:** Sources and description of data/parameter ($FC_{i,m,y}$, $NCV_{i,v}$) are corrected in a proper way.

The starting date of the project was 20 August 2008 on which the contract was signed for project construction work including equipment supply between Shinan Wind Power Co., Ltd, the project participant and Dongkuk S&C Co., Ltd, a wind tower manufacturer. It is in accordance with the “Glossary of CDM terms (ver 04)”, and the project is a new project by the guidance from EB 41 Annex 46.

Regarding the starting date of CDM, one Major NC (CAR 4) was raised and closed out as follows;

- **CAR 4:** The starting date of the project activity is not sufficiently demonstrated and evidenced. The project participant suggested 7 Oct 2008 on which the construction work started as the starting date of the project. According to Glossary of CDM terms, 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. (see Appendix A. Checklist C.1.1);
- **Corrective Actions:** The validation team requested the project participant to provide documents related to the starting date such as contracts for equipment or construction service. The project participant provided a contract (20 Aug 2008) with Dongkuk S&C Co., Ltd for power construction work including equipment supply /5/ and a contract with KEPCO for use of power distribution equipment (1 Oct 2008) and a consulting contract with Ecoeye (14 Jul 2008). And the project participant selected 20 Aug 2008 instead of 7 Oct 2008 as the starting date since the contract for power construction work including equipment supply can be considered to be the date on which the project participant committed to expenditures related to the implementation of the project.
- **Conclusions:** The documents related to the starting date of the project justify the starting date of 20 Aug 2008 sufficiently.

And regarding the starting date of the first crediting period, one Minor NC (CL 3) was raised and closed out as follows;

- **CL 3:** The starting date of the first crediting period is not properly stated. It needs to be before the date of registration. (see Appendix A. Checklist C.2.3);
- **Corrective Actions:** The project participant corrected the starting date of the first crediting period from “01/01/2009” to “01/06/2009 or registration date whatever is later”.
- **Conclusions:** The starting date of the first crediting period is properly stated.



3.4 Monitoring Plan

The project applies the approved monitoring methodology, AMS I.D. “Grid connected renewable electricity generation (ver 13)”. The selected monitoring methodology is applicable for the project as it involves grid-connected renewable electricity generation using wind power.

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

The net electricity generated from the project will be measured on an hourly basis and recorded on a monthly basis. This data will be aggregated weekly, monthly and yearly. Measured data will be double checked against receipt of sales.

Leakage emissions are considered as zero for the project as no equipment is transferred from another activity and biomass residues are not required by the project to generate electricity.

Monitoring of sustainable development indicators is not required by law in Korea. The monitoring and reporting procedures including responsibilities and authorities for project management, QA/QC procedures, procedures for calibration of metering equipment and procedures for training and maintenance has been elaborated in the PDD. Detailed procedures will be implemented at the latest prior to the start of the crediting period to enable subsequent verification of emission reductions.

3.5 Calculation of GHG Emissions

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

1) Baseline emissions: Baseline emissions (BE_y in tCO_2) are the product of the baseline emission factor (EF_y in tCO_2/MWh) times the electricity supplied by the project to the grid (EG_y in MWh).

2) Project emissions: There are no emissions from the project.

3) Leakage: There is no need to consider these emission sources as leakage under AMS I.D.

4) Emission reduction: $ER_y = BE_y - PE_y - Ly = BE_y - 0 - 0 = BE_y$

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.

The plant-specific electricity generation, fuel consumption, and net calorific value (NCVi) of each type of fossil fuel data from Statistic of Electric Power in 2005 to 2007 published by KEPCO are used to calculate OM. The data are publicly accessible at KEPCO website. The OM is calculated to be $0.6817 tCO_2/MWh$.

Option (b) (the set of power capacity additions in the electricity system that comprise 20% of the system generation and that have been built most recently) has been chosen as a sample group of



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power unit for calculation of BM because its annual generation is larger than that of option (a) (the set of five power units that have been built most recently).

The plant-specific electricity generation, emission factor of sample group (b) are used to calculate BM. The data are from “Statistic of Electric Power in 2005 - 2007” published by KEPCO and “Status of Generation Facilities” published by KPX (Korea Power Exchange).

The BM is calculated to be 0.3933 tCO₂/MWh.

The weighting w_{OM} and w_{BM} are selected as 0.75 and 0.25, respectively. The combined margin of 0.6096 tCO₂/MWh is fixed ex-ante for the crediting period.

The GHG calculations are complete and transparent, and their accuracy has been verified by downloading the same data at KEPCO website and recalculating the emission factor.

3.6 Environmental Impacts

According to Environmental Impact Assessment Act”, any power plant using solar, wind or fuel cell as a power source with design capacity over 100MW is required to perform EIA (Environmental Impact Assessment). The design capacity of the project is 3MW, much less than 100MW. Therefore the project does not need to perform EIA and have not performed one according to the law. There are no outstanding adverse environmental effects according to FSR. The project site is located on flat seashore and is far away from housing area.

Regarding the environmental impacts, one Minor NC (CL 4) was raised and closed out as follows;

- **CL 4:** The source and evidence of “no noise harshness” claim is not provided.(see Appendix A. Checklist D.1.2);
- **Corrective Actions:** The project participant explained that Section D.2 is applicable only in case that environmental impacts of the project are significant and environmental impacts of the project are not significant according to FSR and thus revised the Section D.2 of PDD to “N/A”
- **Conclusions:** The environmental impacts of the project are not significant according to FSR and thus revision of the Section D.2 to “N/A” is proper.

3.7 Comments by Local Stakeholders

The project participant provided a presentation on its wind power project to local residents in order to help them to understand the project on 10 April 2008. And the PP provided a sit visit to Youngduk Wind Park, a similar wind power project on seashore for the residents on 23 April 2008. Local residents held their general meeting and agreed with the project and signed on a written consent on the project on 29 April 2008. A copy of written consent was provided and reviewed by KEMCO. A representative of local residents confirmed the presentation, site visit, general meeting and agreement with the project and stated the project would help to enhance the economic and social development of the village in an interview.



VALIDATION REPORT

Regarding invitation of local stakeholders' comments, one Major NC (CAR 5) was raised and closed out as follows;

- **CAR 5:** The process of inviting local stakeholders' comments has not been sufficiently described. (see Appendix A. Checklist E.1.1);
- **Corrective Actions:** There was little description on the invitation of local stakeholders' comments. Just captured images of local press reports and written consent by local residents were shown in original PDD. The project participant supplemented the Section E.1.1 with the brief description of a series of the invitation process (presentation on the project to the residents, site visit to similar wind park, general meeting of local residents) including the dates and pictures of each event.
- **Conclusions:** The project participant description of the process of inviting local stakeholders' comments is sufficient.

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 3MW Shinan 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 14 Jan 2009 to 12 Feb 2009. No comments were received during this period.

5 VALIDATION OPINION

KEMCO has undertaken the validation of 3MW Shinan Wind Power Project which claimed approximately 3,901 tonnes (CO₂) annually by generation of electricity from wind resource in Bigeum island in Republic of Korea. To ensure the transparency and integrity of the validation, the Validation Team first had established the validation checklist 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 (22 December 2008 ~ 13 January 2009), on-site assessment (20 January 2009 ~ 21 January 2009) and review of corrective actions (25 February 2009 ~ 30 July 2009).

As a result of the desk review and on-site assessment, the validation team identified five Major non-conformities (CARs) and four Minor non-conformities (CLs) and then requested the project proponents to take corrective actions against them. In response to the request, the project proponents submitted the revised project documentation to the Validation Team, of which the Validation Team made a full review. Then the team has fully agreed that all the significant CARS and CLs issued had been cleared.

In conclusion, KEMCO is of the opinion that [3MW Shinan 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.



6 REFERENCES

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

List documents provided by the Client that relate directly to the GHG components of the project, (i.e. the CDM Project Design Document, confirmation by the host Party on contribution to sustainable development and written approval of voluntary participation from the designated national authority). These should have been used as direct sources of evidence for the validation conclusions, and are usually further checked through interviews with key personnel.

- /1/ Project Design Document (version 02.4), Ecoeye Co., Ltd., 20 Oct 2009
- /2/ Emission Factor excel sheet, Ecoeye Co., Ltd, submitted on 14 Sep 2009
- /3/ Investment Analysis excel sheet, Ecoeye Co., Ltd, submitted on 20 Oct 2009
- /4/ Desk-top Review of the Energy Production of the proposed Shinan Wind Farm in Korea, Garrad Hassan, 21 October 2008
- /5/ Shinan Wind Park Development Plan approved by CEO, Shinan Wind Power Co., Ltd., 23 Jun 2008
- /6/ Contract on Project Construction Work including Equipment Supply, Dongkuk S&C Co., Ltd. and Shinan Wind Power Co., Ltd., 20 August 2008
- /7/ Contract on Foundation Work, Dongkuk S&C Co., Ltd. and Heung Guk Construction Co., Ltd., 18 Sep 2008
- /8/ Agreement on Adjustment of Construction Costs, Dongkuk S&C Co., Ltd. and Shinan Wind Power Co., Ltd., 15 Dec 2008
- /9/ Report on Feed-in Tariff for New and Renewable Energy and RPS, Ministry of Knowledge Economy, 31 March 2006
- /10/ Loan agreement between Shinan Wind Power Co., Ltd and Woori Bank, 14 October 2008
- /11/ Letter of Intention on the project to Korean DNA, 19 Nov 2008
- /12/ CDM project registration consulting contract between Shinan Wind Power Co., Ltd and Ecoeye Co., Ltd on 14 July 2008
- /13/ Written consent on the project by local residents, 29 April 2008
- /14/ Land lease contract between Shinan Wind Power Co., Ltd and representatives of local residents on 3 June 2008
- /15/ Contract with KEPCO for use of power distribution equipment, 1 October 2008
- /16/ Shinan Wind Power Co., Ltd's declaration of no public funding on 24 February 2009
- /17/ Power Generation Business License, Jeollnam-do provincial government, 11 Sep 2008
- /18/ Ministry of Knowledge Economy, Approval of CDM Project(No. 2009-10), 14 July 2009



 VALIDATION REPORT

Category 2: Documents and websites referred to by KEMCO

List background documents related to the design and/or methodologies employed in the design or other reference documents. Where applicable, Category 2 documents should have been used to check project assumptions and confirm the validity of information given in the Category 1 documents and in validation interviews.

- /19/ Clean Development Mechanism Validation and Verification Manual (Version01)
- /20/ AMS I.D. "Grid connected renewable electricity generation" version 13
- /21/ Tool to calculate the emission factor for an electricity system (version 01.1)
- /22/ Glossary of CDM terms (version 04)
- /23/ Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities
- /24/ <http://cdm.unfccc.int/DNA/index.html>
- /25/ http://unfccc.int/files/essential_background/kyoto_protocol/application/pdf/kpstats.pdf
- /26/ Statistic of Electric Power in Korea (2005, 2006, 2007) accessed at KEPCO website (http://cyber.kepco.co.kr/kepco_new/elec_info/info/statistical_data.jsp)
- /27/ Status of Generation Facilities accessed at KPX website (<http://www.kpx.or.kr/epsis>)
- /28/ Unit price of electricity sales during Jan~Jul 2008 accessed at Electric Power Statistics Information System(<http://www.kpx.or.kr/epsis>)
- /29/ Secondary CER price during Jan~Jul 2008 accessed at Point Carbon website (<http://www.pointcarbon.com>)
- /30/ Won/Euro exchange rate during Jan~Jul 2008 accessed at Bank of Korea Economic Statistics System (<http://ecos.bok.or.kr>)
- /31/ 2006 IPCC Guidelines for National Greenhouse Gas Inventories

Persons interviewed:

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

Shinan Wind Power Co., Ltd

Mr. Lee, Twe Eun, Mr. Kim, Chang-Min, Mr. Sin Sung-Sang

Ecoeye Co, Ltd

Ms. Ryu, Jeongyoung, Ms. Lee, Jungeun

Jeollanamdo Provincial Government Official

Mr. Jang, Dong Hwan

Representative of local residents

Mr. Yoo, Nam Ho

Appendix A

Validation Protocol


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


REQUIREMENT	REFERENCE	CONCLUSION	Comment
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3	Kyoto Protocol Art.12.2	Checked	
2. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof	Kyoto Protocol Art. 12.2, Marrakesh Accords, CDM Modalities §40a	Checked	LoA has been issued by Korean DNA
3. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC	Kyoto Protocol Art.12.2.	Checked	
4. The project shall have the written approval of voluntary participation from the designated national authorities of each party involved	Kyoto Protocol Art. 12.5a, Marrakesh Accords, CDM Modalities §40a	Checked	The written approval of voluntary participation from Korean DNA has been submitted
5. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change	Kyoto Protocol Art. 12.5b	Checked	
6. Reduction in GHG emissions shall be additional to any that would occur in absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity	Kyoto Protocol Art. 12.5c, Marrakesh Accords, CDM Modalities §43	Checked	
7. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance	Marrakech Accords	Checked	The project participant's announcement letter of no investment from


REQUIREMENT	REFERENCE	CONCLUSION	Comment
			public funding has been submitted.
8. Parties participating in the CDM shall designate a national authority for the CDM	Marrakech Accords, CDM Modalities §29	Checked	The DNA has been designated in Korea.
9. The host country shall be a Party to the Kyoto Protocol	Marrakech Accords, CDM Modalities §30	Checked	Korea ratified the Kyoto Protocol in 2002.
10. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received	Marrakech Accords, CDM Modalities §37b	Checked	
11. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	Marrakech Accords, CDM Modalities §37c	Checked	
12. Baseline and monitoring methodology shall be previously approved by the CDM Methodology Panel	Marrakech Accords, CDM Modalities §37e	Checked	
13. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP	Marrakech Accords, CDM Modalities §37f	Checked	
14. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available	Marrakech Accords, CDM Modalities, §40	Checked	The PDD of the project had been posted on the UNFCCC CDM website for public comments and Parties, stakeholders and NGOs were through


REQUIREMENT	REFERENCE	CONCLUSION	Comment
			CDM website invited to provide comments during 30 days period from 14 Jan to 12 Feb, 2009.
15. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances	Marrakech Accords, CDM Modalities, §45c,d	Checked	
16. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure	Marrakech Accords, CDM Modalities, §47	Checked	
17. The project design document shall be in conformance with the UNFCCC CDM-PDD format	Marrakech Accords, CDM Modalities, Appendix B, EB Decisions	Checked	The PDD is in line with UNFCCC CDM- PDD format.


Table 2 Requirements Checklist


 KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
A. General Description of Project Activity <i>In this section, the project design is assessed including the project purpose, how technology will be transferred and whether public funding from Annex I Parties results in a diversion of official development assistance.</i>						
A.1. Project Design Document <i>Note:</i>						
A.1.1. Is the Project Design Document (PDD) in accordance with the latest template and guidance from the CDM Executive Board available on the UNFCCC CDM website?		/1/	Document Review	1. Checked: The PDD is in accordance with the latest template (version 03) and guidance published by the CDM EB.	OK	
A.2. Description of the project activity <i>Note:</i>						
A.2.1. Does the description of the proposed CDM project activity provide a clear understanding of the nature of the proposed CDM project activity?		/1/ /4/	Document Review	1. Checked: The proposed project aims to generate electricity with wind turbines utilizing wind energy and feed it into the grid.	OK	
A.2.2. Does the project contribute to		/1/	Document	1. Checked: The proposed project is expected to	OK	


 KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	sustainable development of the host country from environmental, social and economic perspectives?		Review	bring social and environmental benefits including diversification of energy sources and reduction of GHG emissions to the host country and local areas.		
A.3. Project Participants <i>Note:</i>						
	A.3.1. Are participating Parties including the host country a Party to the Kyoto Protocol?	/1/	Document Review	1. Checked: Korea has designated a national authority for the CDM and ratified the Kyoto Protocol on 8/11/2002.	OK	
	A.3.2. Have the project received the written approval of voluntary participation from the designated national authorities (DNA) of each Party involved, including confirmation by the host Party that the project activity assists it in achieving sustainable development?	/1/	Document Review	1. To be checked: The project participants have not submitted the written approvals of voluntary participation.	To be checked	OK
	A.3.3. Does each DNA's letter refer to the precise proposed CDM project activity title in the PDD being submitted for registration?	/1/	Document Review	Ditto	To be checked	OK
	A.3.4. Have a private and/or public entity participating in the project been authorized by the designated national authorities (DNA) of the	/1/	Document Review	Ditto	To be checked	OK


 KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	Parties?					
	A.3.5. Are the project participants listed in tabular form in section A.3 of the PDD consistent with the contact details provided in annex 1 of the PDD?	/1/	Document Review	1. Checked: The project participant is Shinan wind power Co., Ltd.	OK	
A.4. Technical description of the project activity <i>Note:</i>						
	A.4.1. Is the location of the project activity clearly described?	/1/	Document Review	1. CL 1: Physical location needs to be further detailed to clearly indicate that the project site is in an island.	CL	
	A.4.2. Are the type and category and technology/measure of the small-scale project activity clearly identified and described?	/1/	Document Review	1. Checked: This project generates electricity utilizing renewable resources and feed it to grid, thus belongs to the category of AMS I.D.	OK	
	A.4.3. Does the description of the proposed CDM project activity sufficiently cover all relevant elements and provide the technical aspects of its implementation?	/1/	Document Review Site Visit	1. Checked: the equipment specification including blades and generators is provided in the Table 1 of the PDD. The Validation Team particularly noted the maximum power outputs and wind resource distribution at the project site. Grid connection as described in the PDD is confirmed by reviewing the Power Generation Business	OK	


 KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
				License issued by the Provincial Government. It is thus confirmed that the description of the proposed project activity sufficiently covers all relevant elements and provide the technical aspects of its implementation.		
	A.4.4. Does the project design clearly and consistently indicate the chosen crediting period, the total estimation of emission reductions as well as annual estimate for the chosen crediting period?	/1/	Document Review	1. Checked: the annual emission reductions are estimated at 3,901 tonnes of CO ₂ eq over the first crediting period.	OK	
	A.4.5. In case public funding from Annex I Parties is involved, does the project provide an affirmation that such funding does not result in a diversion of official development assistance?	/1/	Document Review	1. CAR 1: Documented evidences representing that ODA from Annex I parties are not included in financing the project has not been provided.	OK	
	A.4.6. 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?			Not Applicable	-	
	A.4.7. Has the confirmation been provided that the small-scale project activity is not a debundled	/1/	Document Review Site Visit	1. Checked: During the site visit, it was confirmed that there were no other CDM projects with the	OK	


 KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	component of a larger project activity?			same project participant within 1 km of the project boundary.		
B. Baseline and monitoring methodology <i>In this section it is assessed whether the baseline methodology is appropriately applied in terms of project additionality in a transparent and conservative manner and whether the monitoring plan is properly established in accordance with the baseline methodology ensuring reliable emission reductions</i>						
B.1. Title and reference of the approved baseline methodology applied to the project activity <i>Note:</i>						
B.1.1. Are the title and the details (number and version) of the approved baseline and monitoring methodologies in the CDM web site properly referred to?		/1/ /20/	Document Review	1. Checked: The proposed project applies the approved methodologies for small scale projects AMS I.D (version 13)	OK	
B.2. Justification of the choice of the project category <i>Note:</i>						
B.2.1. Has the choice of project type and category for the proposed small-scale project activity been transparently justified?		/1/ /20/	Document Review	1. Checked: The project applies the approved methodologies for small scale projects AMS I.D (version 13) since its capacity is less than 15	OK	


 KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
				MW and it provides renewable-based electricity to grid.		
	B.2.2. Does the small-scale project activity qualify as a small-scale project activity and will it remain under the limits of small-scale project activity types during every year of the crediting period?	/1/ /20/	Document Review	1. Checked: The capacity of the proposed project is 3 MW and will not be changed during the crediting period.	OK	
	B.2.3. If not addressed by the applied methodology, do the project proponents appropriately provide such information as greenhouse gas emissions occurring within the proposed CDM project activity boundary as a result of the implementation of the proposed CDM project activity which are expected to contribute more than 1% of the overall expected average annual emissions reductions?			Not Applicable		
	B.3. Description of the project boundary <i>Note:</i>					


 KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	B.3.1. Is the project boundary correctly described and meet the requirements of the selected baseline methodology?	/1/ /20/	Document Review	1. Checked: The project boundary established encompasses the physical, geographical site of the proposed project and the connected electricity system in Korea.	OK	
	B.3.2. Have all sources and GHGs required by the methodology been included within the project boundary?	/1/ /20/	Document Review	1. Checked: Only CO ₂ emissions are included within the project boundary in line with the baseline methodology.	OK	
	B.3.3. If the methodology allows project participants to choose whether a source or gas is to be included within the project boundary, have the project participants justified that choice?			Not Applicable	-	


 KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
B.4. Details of the baseline and its development <i>Note:</i>						
B.4.1. Are all scenarios that are considered by the project participants and are supplementary to those required by the methodology, reasonable in the context of the proposed CDM project activity?	/1/ /20/	Document Review	1. Checked: The project applies the approved methodology for small scale projects AMS I.D (version 13) since its capacity is less than 15 MW and it provides renewable-based electricity to grid. In line with the methodology, the baseline scenario is set up reasonably, i.e. continued electricity generation by power plants in the existing electricity system.		OK	
B.4.2. Is the baseline scenario identified reasonable in terms of the assumptions, calculations and rationales used, as described in the PDD?	/1/ /20/	Document Review	1. Checked: The baseline scenario of this project is based on the reasonable assumptions that the proposed project will displace the electricity generated by power plants in the existing electricity system, and the baseline emissions are calculated correctly in line with “Tool to calculate the emission factor for an electricity system (version 01.1).”		OK	


 KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	B.4.3. Does the PDD provide 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?	/1/ /20/	Document Review	1. Checked: verifiable information is provided with respect to the list of power plants that would be in operation in the absence of the proposed project.	OK	
	B.4.4. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies and circumstances, such as sectoral reform initiatives, local fuel availability, power sector expansion plans and the economic situation in the project sector?	/1/	Document Review	1. CL 2: Exclusion of the government subsidy should be justified in the PDD as per the Clarifications on the treatment of national and/or sectoral policies and regulations (EB 16). But, these national policies favoring the proposed project are not described in the PDD.	CL	
	B.4.5. Are all documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the PDD?	/1/ /21/	Document Review	1. Checked: the project proponent chose Simple OM method to determine the CO ₂ emission factor for the baseline emissions. The baseline emissions are therefore calculated using three-year grid data including net electricity generation, fuel consumption, and net calorific value, which were published by the electricity distribution company, KEPCO. It was also noted the 2005-2007 grid data is most recently available at the point of validation.	OK	


 KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	B.4.6. Has the approved baseline methodology been correctly applied to identify the most reasonable baseline scenario and does the identified baseline scenario reasonably represent what would occur in the absence of the proposed CDM project activity?	/1/ /21/	Document Review	1. Checked: in line with the Tool to calculate the emission factor for an electricity system (version 01.1), the project proponent chose Simple OM and BM option (b) method to determine the CO ₂ emission factor for the baseline emissions and properly calculated the Combined Margin (CM).	CAR	OK
	B.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered CDM project activity <i>Note:</i>					
	B.5.1. 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	/1/ /6/ /12/	Document Review	1. Checked: since the start date of the proposed project, 20 Aug 2008, is after 2 August 2008 and PDD had not been published for global stakeholder consultation before the start date of the project activity, the Project Participants submitted to the Korean DNA the Letter of Intention on the project on 19 Nov 2008. A copy of the Letter was submitted to the Validation Team.	OK	


 KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	the project activity and of their intention to seek CDM status?					
	B.5.2. 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?			Not Applicable	-	
	B.5.3. Does the list of alternatives include as one of the options that the project activity is undertaken without being registered as a proposed CDM project activity?	/1/	Document Review	1. Checked: the baseline scenario assumes as alternatives, continuation of power plants in the existing electricity system, and in addition, the investment barriers to proposed project are analyzed assuming that the proposed project is undertaken without being registered as a proposed CDM project activity	OK	
	B.5.4. Does the list of alternatives contain all plausible alternatives considered to be viable means of supplying the outputs or services that are to be supplied by the proposed CDM project activity?	/1/	Document Review	1. Checked: the baseline scenario assumes as alternatives, continuation of power plants in the existing electricity system under the scenario, the CO ₂ emission factor is accounted for using the Simple OM method and BM option (b). It is therefore concluded that all plausible alternatives supplying the outputs that are to be supplied by the proposed project activity are considered properly.	OK	


 KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	B.5.5. Do the alternatives comply with all applicable and enforced legislation?	/1/	Document Review	1. Checked: all the power plants connected to the grid as well as the proposed project are in compliance with the relevant laws and regulations.	OK	
	B.5.6. (Investment Analysis) Are all parameters and assumptions used in calculating the relevant financial indicator accurate and suitable in light of relevant accounting practices?	/1/ /3/ /4/ /5/ /6/ /7/ /8/ /9/ /10/ /28/	Document Review	1. Checked: It was validated that key parameters and assumptions of the proposed project are accurate and suitable in light of relevant accounting practices as follows: 2. O&M costs: it is confirmed the percentage of O&M costs is within the reasonable range reported by the government-published report. 3. Electricity tariff: the electricity price used in NPV calculation, i.e. recent seven-month average electricity price for wind power plants was validated by cross-check with data down-loaded at the KPX (Korea Power Exchange) statistics webpage. This period is accepted by the Validation Team since the electricity tariff for wind power projects has been increasing so far. It was further confirmed that those value are most recently available at the point of the project start. 4. Electricity generation: the annual power generation for the proposed project was confirmed by cross-check with the Desk-top Review of the Energy Production of the proposed	CAR	


 KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
				Shinan Wind Farm in Korea prepared by an engineering company, Garrad Hassan (21 October 2008). 5. CAR 2: The investment analysis data are not sufficiently evidenced. The source of total investment cost has not been provided.		
	B.5.7. (Investment Analysis) Are computations in the investment analysis correctly carried out and sufficiently documented?	/1/ /3/	Document Review	1. Checked: the Validation Team checked the IRR calculation spreadsheet submitted by the project proponent and confirmed the computations in determining Project IRR for the proposed project are correctly carried out and sufficiently documented.	OK	
	B.5.8. (Investment Analysis) Are the sensitivity analysis properly carried considering under what conditions variations in the result of investment analysis would occur, and the likelihood of these conditions?	/1/ /3/	Document Review	1. Checked: It was validated that 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 cost, and electricity tariff. Results of the sensitivity analysis were confirmed by assessing the appropriateness of the assumed variations in the cash flow and noting that the Project IRR remains below the benchmark value under the favorable conditions assumed.	OK	
	B.5.9. (Investment Analysis) Is the type of benchmark applied suitable for	/1/ /10/	Document Review	1. Checked: the project proponent performed project IRR calculations using as a benchmark	OK	


 KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	the type of financial indicator presented?			value its actual loan rate to be paid to the bank. The loan rate was validated by the Validation Team by reviewing the Loan agreement between Shinan Wind Power Co., Ltd and Woori Bank.		
	B.5.10.(Investment Analysis) Has the Feasibility Study Report (FSR) been the basis of the decision to proceed with the investment in the project? i.e. is the period of time between the finalization of the FSR and the investment decision is sufficiently short and is it unlikely in the context of the underlying project activity that the input values would have materially changed?	/1/ /4/ /5/	Document Review	1. Checked: to validate the investment analysis, the Validation Team reviewed mainly two documents: Desk-top Review of the Energy Production of the proposed Shinan Wind Farm in Korea prepared by an engineering company, Garrad Hassan (21 October 2008), and Shinan Wind Park Development Plan approved by CEO of Shinan Wind Power Co., Ltd. (23 Jun 2008). It is validated that the key parameters used in the investment analysis are based on the above documents which are used at the time of investment decision, i.e. Construction Contract date, 20 Aug 2008.	OK	
	B.5.11. (Barrier Analysis) Is existence of barriers substantiated by independent sources of data such as relevant national legislation, surveys of local conditions and national or international statistics?			Not Applicable	-	
	B.5.12. (Barrier Analysis) Is a barrier or set of barriers likely to prevent the implementation of the proposed			Not Applicable	-	


 KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	CDM project activity and unlikely to equally prevent implementation of at least one of the possible alternatives, in particular the identified baseline scenario?					
	B.5.13. (Common Practice Analysis) Is the geographical scope of the common practice analysis appropriate for the assessment of common practice related to the project activity's technology or industry type?			Not Applicable	-	
	B.5.14. (Common Practice Analysis) Is existence of similar projects substantiated by official sources and local and industry expertise?			Not Applicable	-	
	B.5.15. (Common Practice Analysis) Are essential distinctions sufficiently provided between the proposed CDM project activity and any similar projects that are widely observed and commonly carried out?			Not Applicable	-	
B.6. Emissions reductions <i>Note:</i>						
	B.6.1. Are all assumptions and data used	/1/	Document	1. Checked: all assumptions and data used by the	OK	


 KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	by the project participants listed in the PDD, including their references and sources?	/2/ /21/ /26/	Review	project participants are appropriately presented in the PDD.		
	B.6.2. Is all documentation used by project participants as the basis for assumptions and source of data correctly quoted and interpreted in the PDD?	/1/ /2/ /21/ /26/	Document Review	1. CAR 3: The PDD described relevant data source, e.g, KEPCO grid data, IPCC default emission factor, KPX electricity tariff, etc. But, sources of data/parameter (FCi,m,y, NCVi,v) are incorrectly cited and description of data/parameter (NCVi,v) in B.6.2 are incorrect.	CAR	
	B.6.3. Are all values used in the PDD considered reasonable in the context of the proposed CDM project activity?	/1/ /2/ /21/ /26/	Document Review	1. Checked: The national grid data used are most recently available at the point of the commencement of validation.	OK	
	B.6.4. Has been the baseline methodology been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions?	/1/ /2/ /21/ /26/	Document Review	1. Checked: Combined Margin for the proposed project, weighted average of Simple OM and BM option (b), is correctly calculated with KEPCO grid data between 2005 and 2007.	OK	
	B.6.5. Can all estimates of the baseline emissions be replicated using the data and parameter values provided in the PDD?	/1/ /2/ /21/ /26/	Document Review	1. Checked: the Validation Team checked the excel spreadsheets to calculate the baseline emissions and concluded that the process to calculate the baseline emissions are replicable.	OK	


 KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
B.7. Application of the monitoring methodology and description of the monitoring plan <i>Note:</i>						
B.7.1.	Does the monitoring plan contain all necessary parameters and the means of monitoring described in the plan comply with the requirements of the methodology?	/1/	Document Review	1. Checked: net electricity generation by the proposed project will be monitoring plan in line with the requirements of AMS I.D. (version 13)	OK	
B.7.2.	Are monitoring arrangements described in the monitoring plan feasible within the project design?	/1/	Document Review Site Visit	1. Checked: the monitoring plan to measure net electricity generation is deemed feasible in the context of the project activity.	OK	
B.7.3.	Are procedures for monitoring, taking measurements and reporting sufficient to ensure the accuracy and completeness of emission reductions achieved by the proposed CDM project activity?	/1/	Document Review Site Visit	1. Checked: Electricity generation will be measured automatically by established meters. The measured data are simultaneously transferred to the wind power plant and Korea Power Exchange.	OK	
B.7.4.	Are procedures for emergency preparedness appropriately established?	/1/	Document Review	1. Checked: The amount of net electricity generation will be collected daily, weekly, and monthly, archived in electronic way, and double-checked with the receipt of sales.	OK	
B.7.5.	Are procedures for calibration of	/1/	Document	1. Checked: The calibration of the metering	OK	

 KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	equipment appropriately established?		Review	equipment will be done pursuant to the relevant regulations.		
	B.7.6. Are procedures for review or checks of reported results/data appropriately established?	/1/	Document Review	1. Checked: The amount of net electricity generation will be collected daily, weekly, and monthly, archived in electronic way, and double-checked with the receipt of sales.	OK	
	B.7.7. Is the authority and responsibility for monitoring, measurement and reporting project emission, baseline emission and leakage data over time clearly described?	/1/	Document Review	1. Checked: The operational and management structure for monitoring is described in Section B.7.2 of PDD.	OK	
	B.8. Details of baseline information, including the date of completion of the baseline study and the name of person(s)/entity(ies) determining the baseline <i>Note:</i>					
	B.8.1. Is the detailed baseline information sufficiently provided in Annex 3 to the PDD?	/1/	Document Review	1. Checked: the detailed baseline information is provided in Annex 3 to the PDD.	OK	
	B.8.2. Are the date of completion of the baseline study and the name of person(s)/entity(ies) determining the baseline clearly stated?	/1/	Document Review	1. Checked: the date of completion of the baseline study and the name of persons and entity determining the baseline are clearly stated in Section B.8 of the PDD	OK	

 KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	B.8.3. Is the contact information clearly provided and is it indicated that the person/entity is a project participant listed in Annex I?	/1/	Document Review	1. Checked: The contact information on the entity determining the baseline is clearly provided in Annex 1 to the PDD.	OK	
	C. Duration of the Project/ Crediting Period <i>It is assessed whether the temporal boundaries of the project are clearly defined.</i>					
	C.1. Duration of the project activity <i>Note:</i>					
	C.1.1. Is the start date of the project activity, reported in the PDD, in accordance with the “Glossary of CDM terms” and sufficiently evidenced?	/1/ /6/	Document Review	1. CAR 4: The starting date of the project activity is not sufficiently demonstrated and evidenced. The project participant suggested 7 Oct 2008 on which the construction work started as the starting date of the project. According to Glossary of CDM terms, 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.	CAR	
	C.1.2. Is the operational lifetime of the project activity clearly defined and reasonable?	/1/	Document Review	1. Checked: The operational lifetime of the project is assumed to be 20 years.	OK	

 KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
C.2. Choice of the crediting period and related information <i>Note:</i>						
C.2.1.	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 will be renewed every 7 years.	OK	
C.2.2.	Is the assumed crediting time chosen as below the operational lifetime of the project activity?	/1/	Document Review	1. Checked: The crediting period chosen is below the operational lifetime of the proposed project activity.	OK	
C.2.3.	Are the starting date and length of the crediting period clearly and properly stated?	/1/	Document Review	1. CL 3: The starting date of the first crediting period is not properly stated. It needs to be before the date of registration.	CL	

 KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
D. Environmental Impacts <i>In this section, it is assessed the analysis of the environmental impacts is properly undertaken.</i>						
D.1. If required by the host Party, documentation on the analysis of the environmental impacts of the project activity <i>Note:</i>						
D.1.1. Does the project comply with environmental legislation in the host country?	/1/	Document Review	1. Checked: The project complies with environmental legislation of Korea. Environmental Impact Assessment Act requires the power plant with design capacity over 100MW. The project is exempt from EIA since its design capacity is 3MW.		OK	
D.1.2. Is the project activity likely to create any adverse environmental effects?	/1/	Document Review	1. CL 4: the possibility of noise from wind turbines was identified, but the evidence of how to address such noise is not provided.		CL	
D.1.3. Have the environmental impacts identified been properly addressed in the PDD?	/1/	Document Review	1. CL 4: See Question D.1.2 above.		CL	

 KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
E. Stakeholder Comments <i>In this section, it is assessed whether comments from local stakeholders have been invited and due account has been taken of any comments received.</i>						
E.1. Brief description how comments by local stakeholders have been invited and compiled <i>Note:</i>						
E.1.1. Is the process clearly described by which comments by local stakeholders have been invited and compiled?		/1/	Document Review Interview	1. CAR 5: The process of inviting local stakeholders' comments has not been sufficiently described.	CAR	
E.1.2. Has an invitation for comments by local stakeholders made in an open transparent manner, in a way that facilitates comments to be received from local stakeholders and allow for a reasonable time for comments to be submitted?		/1/	Document Review Interview	1. Checked: The local stakeholder comments process was verified during interviews with a representative of local stakeholders.	OK	
E.1.3. Has detailed description of the project activity been provided in a manner which allows the local stakeholders to understand project activity?		/1/	Document Review Interview	1. Checked: The project participants explained their project to local residents in detail and provided site visits to a similar wind power project on seaside.	OK	


 KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
E.2. Summary of the comments received <i>Note:</i>						
E.2.1. Have relevant stakeholders been consulted?	/1/	Document Review Interview	1. Checked: local residents near the project site were consulted in the stakeholder's meeting to inform them of details of construction of the wind farm.		OK	
E.2.2. Is a summary of the comments received provided?	/1/	Document Review Interview	1. Checked: There are no special comments received during the local stakeholder consultation process		OK	
E.3. Report on how due account was taken of any comments received <i>Note:</i>						
E.3.1. Has due account been taken of any comments received?	/1/	Document Review Interview	1. Checked: As there are no negative comments, no actions are taken.		OK	

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
CAR.1 Documented evidences representing that ODA from Annex I parties is not included in financing the project has not been provided.	A.4.5	The project participant declared that no public funding has been invested for the project in its letter dated 24 Feb, 2009.	The project participant's declaration of no public funding has been submitted to DOE.
CAR.2 The investment analysis data are not sufficiently evidenced. The source of total investment cost has not been provided.	B.5.6	To substantiate the investment costs, Construction Contract and Agreement on Adjusted Construction Costs have been submitted. Another Contract on Foundation Work has been submitted to evidence the adjusted construction costs. In addition, A report by Ministry of Knowledge Economy was provided as a source of 2.2 % O&M cost.	The Construction Contract and related documents, and the report published by Ministry of Knowledge Economy have been provided as sources of total investment cost and O&M cost. The total investment cost in the document is consistent with the figure in Table 5 of PDD and IRR calculation spreadsheets. Chapter 2 (Wind power) of the Ministry's report suggests 2.2% O&M cost for domestic wind power. The validation team concluded that investment analysis data are evidenced sufficiently.
CAR.3 Sources of data/parameter ($FC_{i,m,y}$, $NCV_{i,v}$) are incorrectly cited and description of data/parameter ($NCV_{i,v}$) in B.6.2 are incorrect.	B.6.2	The source of $FC_{i,m,y}$ and $NCV_{i,v}$ has been corrected into KEPSCO. The description of $NCV_{i,v}$ has been corrected from "amount of fossil fuel" to "calorific value."	Sources and description of data/parameter ($FC_{i,m,y}$, $NCV_{i,v}$) are corrected in a proper way.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>CAR.4</p> <p>The starting date of the project activity is not sufficiently demonstrated and evidenced. The project participant suggested 7 Oct 2008 on which the construction work started as the starting date of the project. According to Glossary of CDM terms, 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.</p>	C.1.1	<p>The validation team requested the project participant to provide documents related to the starting date such as contracts for equipment or construction service. The project participant provided a contract (20 Aug 2008) with Dongkuk S&C Co., Ltd for power construction work including equipment supply and a contract with KEPCO for use of power distribution equipment and a consulting contract with Ecoeye (14 July 2008). And the project participant selected 20 Aug 2008 instead of 7 Oct 2008 as the starting date since the contract for power construction work including equipment supply can be considered to be the date on which the project participant committed to expenditures related to the implementation of the project.</p>	<p>The documents related to the starting date of the project justifies the starting date of 20 Aug 2008 sufficiently.</p>
<p>CAR.5</p> <p>The process of inviting local stakeholders' comments has not been sufficiently described.</p>	E.1.1	<p>There was little description on the invitation of local stakeholders' comments. Just captured images of local press reports and written consent by local residents were shown in original PDD. The project participant supplemented Section E.1.1 with the brief description of a series of the invitation process (presentation on the</p>	<p>The project participant description of the process of inviting local stakeholders' comments is sufficient.</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		project to the residents, site visit to similar wind park, general meeting of local residents) including the dates and pictures of each event.	
CL.1 Physical location needs to be further detailed to clearly indicate that the project site is in an island.	A.4.1	The project participant revised the PDD to add the details of physical location in A.4.1.4 that the project site is in Bigeum island.	The revised PDD clearly describes the site is located in Bigeum Island.
CL.2 National policies favoring the proposed project are not described.	B.4.4	In Korea, government gives subsidy (feed-in tariff) to the new and renewable sources of energy project developers under “Act on the Promotion of the Development and Use of New and Renewable Sources of Energy” after 26 Sep 2002. According to decision of EB 22 meeting (Annex 3 – Clarifications on the consideration of national and/or sectoral policies and circumstances in baseline scenarios), the E- policies or regulations that decrease GHG emissions implemented since 11 November 2001 needs not be taken into consideration in developing a baseline scenario. The project participant revised the PDD to include the feed-in tariff policy in Korea.	The revised PDD describes feed-in tariff policy which took effect on 26 Sep 2002 as E` policy.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
CL.3 The starting date of the first crediting period is not properly stated. It needs to be before the date of registration.	C.2.3	The project participant corrected the starting date of the first crediting period from "01/01/2009" to "01/06/2009 or registration date whatever is later"	The starting date of the first crediting period is properly stated.
CL.4 The source and evidence of "no noise harshness" claim is not provided.	D.1.2	The project participant explained that Section D.2 is applicable only in case that environmental impacts of the project are significant and environmental impacts of the project are not significant according to FSR and thus revised the Section D.2 of PDD to "N/A"	The environmental impacts of the project are not significant according to FSR and thus revision of the Section D.2 to "N/A" is proper.

Appendix B

CVs of Validation Team



KEMCO

Personal History

Family name	WOO	Date of Birth	-
Given name	Jae-Hak	Sex	Male
* Please write your name in English			
Organization	KEMCO	Phone No.	+82-31-260-4831
Position	Manager	Fax No.	+82-31-260-4559
Address	1157, Pungdukchun 2, Suji, Yongin	E-mail	jhwoo@kemco.or.kr
* Please describe your present contact information			
Proposed Title	Title		Qualification
	<input type="checkbox"/> Full-time Validator/verifier		<input type="checkbox"/>
	<input type="checkbox"/> Part-time Validator/verifier		<input type="checkbox"/>
	<input checked="" type="checkbox"/> Full-time Lead Validator/verifier		<input checked="" type="checkbox"/>
	<input type="checkbox"/> Part-time Lead Validator/verifier		<input type="checkbox"/>
	<input type="checkbox"/> Committee Member()		<input type="checkbox"/>
	<input type="checkbox"/> Technical Expert		<input type="checkbox"/>
<input type="checkbox"/> Others ()		<input type="checkbox"/>	
* Please tick off (<input checked="" type="checkbox"/>) the title which you wish to apply for			*Qualification shall be determined by the authorized person
Proposed Sectoral Scope	Sectoral Scope		Qualification
	<input checked="" type="checkbox"/> 1. Energy industries (renewable - / non-renewable sources)		<input checked="" type="checkbox"/>
	<input type="checkbox"/> 2. Energy distribution		<input type="checkbox"/>
	<input type="checkbox"/> 3. Energy demand		<input type="checkbox"/>
	<input type="checkbox"/> 4. Manufacturing industries		<input type="checkbox"/>
	<input type="checkbox"/> 5. Chemical industries		<input type="checkbox"/>
	<input type="checkbox"/> 6. Construction		<input type="checkbox"/>
	<input type="checkbox"/> 7. Transport		<input type="checkbox"/>
	<input checked="" type="checkbox"/> 8. Mining/mineral production		<input checked="" type="checkbox"/>
	<input type="checkbox"/> 9. Metal production		<input type="checkbox"/>
	<input type="checkbox"/> 10. Fugitive emissions from fuels (solid, oil and gas)		<input type="checkbox"/>
	<input type="checkbox"/> 11. Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride		<input type="checkbox"/>
	<input type="checkbox"/> 12. Solvent use		<input type="checkbox"/>
	<input type="checkbox"/> 13. Waste handling and disposal		<input type="checkbox"/>
	<input type="checkbox"/> 14. Afforestation and reforestation		<input type="checkbox"/>
<input type="checkbox"/> 15. Agriculture		<input type="checkbox"/>	



Personal History

Family name	Park	Date of Birth	-
Given name	Kyung-Soon	Sex	Male
* Please write your name in English			
Organization	KEMCO	Phone No.	+82-31-260-4885
Position	Assistant Manager	Fax No.	+82-31-260-4886
Address	1157, Pungdukchun 2, Suji, Yongin	E-mail	kspark@kemco.or.kr
* Please describe your present contact information			
Proposed Title	Title		Qualification
	<input type="checkbox"/> Full-time Validator/verifier		<input type="checkbox"/>
	<input type="checkbox"/> Part-time Validator/verifier		<input type="checkbox"/>
	<input checked="" type="checkbox"/> Full-time Lead Validator/verifier		<input checked="" type="checkbox"/>
	<input type="checkbox"/> Part-time Lead Validator/verifier		<input type="checkbox"/>
	<input type="checkbox"/> Committee Member()		<input type="checkbox"/>
	<input type="checkbox"/> Technical Expert		<input type="checkbox"/>
	<input type="checkbox"/> Others ()		<input type="checkbox"/>
* Please tick off (☑) the title which you wish to apply for			*Qualification shall be determined by the authorized person
Proposed Sectoral Scope	Sectoral Scope		Qualification
	<input checked="" type="checkbox"/> 1. Energy industries (renewable - / non-renewable sources)		<input checked="" type="checkbox"/>
	<input checked="" type="checkbox"/> 2. Energy distribution		<input type="checkbox"/>
	<input checked="" type="checkbox"/> 3. Energy demand		<input checked="" type="checkbox"/>
	<input checked="" type="checkbox"/> 4. Manufacturing industries		<input checked="" type="checkbox"/>
	<input checked="" type="checkbox"/> 5. Chemical industries		<input checked="" type="checkbox"/>
	<input type="checkbox"/> 6. Construction		<input type="checkbox"/>
	<input type="checkbox"/> 7. Transport		<input type="checkbox"/>
	<input type="checkbox"/> 8. Mining/mineral production		<input type="checkbox"/>
	<input type="checkbox"/> 9. Metal production		<input type="checkbox"/>
	<input type="checkbox"/> 10. Fugitive emissions from fuels (solid, oil and gas)		<input type="checkbox"/>
	<input type="checkbox"/> 11. Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride		<input type="checkbox"/>
	<input type="checkbox"/> 12. Solvent use		<input type="checkbox"/>
	<input type="checkbox"/> 13. Waste handling and disposal		<input type="checkbox"/>
	<input type="checkbox"/> 14. Afforestation and reforestation		<input type="checkbox"/>
	<input type="checkbox"/> 15. Agriculture		<input type="checkbox"/>



KEMCO

Personal History

Family name	HWANG	Date of Birth	-
Given name	In-Chul	Sex	Male
* Please write your name in English			
Organization	KEMCO	Phone No.	+82-31-260-4882
Position	Associate Manager	Fax No.	+82-31-260-4886
Address	1157, Pungdukchun-2-dong, Yongin, Gyeonggi, 448-994, Republic of Korea	E-mail	manmandi@kemco.or.kr
* Please describe your present contact information			
Proposed Title	Title		Qualification
	<input checked="" type="checkbox"/> Full-time Validator/verifier		<input checked="" type="checkbox"/>
	<input type="checkbox"/> Part-time Validator/verifier		<input type="checkbox"/>
	<input type="checkbox"/> Full-time Lead Validator/verifier		<input type="checkbox"/>
	<input type="checkbox"/> Part-time Lead Validator/verifier		<input type="checkbox"/>
	<input type="checkbox"/> Committee Member()		<input type="checkbox"/>
	<input type="checkbox"/> Technical Expert		<input type="checkbox"/>
	<input type="checkbox"/> Others ()		<input type="checkbox"/>
* Please tick off (<input checked="" type="checkbox"/>) the title which you wish to apply for			*Qualification shall be determined by the authorized person
Proposed Sectoral Scope	Sectoral Scope		Qualification
	<input checked="" type="checkbox"/> 1. Energy industries (renewable - / non-renewable sources)		<input checked="" type="checkbox"/>
	<input type="checkbox"/> 2. Energy distribution		<input type="checkbox"/>
	<input type="checkbox"/> 3. Energy demand		<input type="checkbox"/>
	<input type="checkbox"/> 4. Manufacturing industries		<input type="checkbox"/>
	<input type="checkbox"/> 5. Chemical industries		<input type="checkbox"/>
	<input type="checkbox"/> 6. Construction		<input type="checkbox"/>
	<input type="checkbox"/> 7. Transport		<input type="checkbox"/>
	<input type="checkbox"/> 8. Mining/mineral production		<input type="checkbox"/>
	<input type="checkbox"/> 9. Metal production		<input type="checkbox"/>
	<input type="checkbox"/> 10. Fugitive emissions from fuels (solid, oil and gas)		<input type="checkbox"/>
	<input type="checkbox"/> 11. Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride		<input type="checkbox"/>
	<input type="checkbox"/> 12. Solvent use		<input type="checkbox"/>
	<input type="checkbox"/> 13. Waste handling and disposal		<input type="checkbox"/>
	<input type="checkbox"/> 14. Afforestation and reforestation		<input type="checkbox"/>
	<input type="checkbox"/> 15. Agriculture		<input type="checkbox"/>