VALIDATION REPORT

TAEBAEK WIND POWER PROJECT

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VALIDATION REPORT

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Summary:

Korean Foundation for Quality (KFQ) has authorized by Taebaek City Hall and Korea Energy Management Corporation (KEMCO) to validate the 'Taebaek Wind Power Project'. This validation report summarizes the findings of the validation of the project, performed on the basis of UNFCCC and host party's criteria for small-scale CDM project, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The validation of this project has been performed in 3 stages, desk review, follow up interviews and resolution of outstanding issues.

The Taebaek Wind Power Project is located in Mt. Mabong, Changjook-dong, Taebaek-si, Gangwon-do, Korea. The Project consists of 8 wind turbines, has a capacity of 6.8MW generating 14,700 MWh annually. The expected CO_2 reduction is 9,198 ton per year.

As the result of the validation, it can be confirmed that the Taebaek wind power project, as described in the revised PDD of 14 July 2008 (Ver.06), meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the simplified baselines and monitoring methodology AMS-I.D (Ver.11). KFQ thus requests the registration of the project as a CDM project activity.

Work carried out by : Sang Yong Lee (Audit team leader, GHG auditor) Jong Moon Park (Audit team member, GHG auditor) Mi Jung Lee (Audit team member, Observer)	Work verified by:: Yu Shim JEONG

Abbreviations

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_{2e}	Carbon dioxide Equivalent
DNA	Designated National Authority
EB	Executive Board
GHG	Greenhouse gas(es)
KEMCO	Korea Energy Management Corporation
KEPCO	Korea Electric Power Company
KFQ	Korean Foundation for Quality
MoV	Means of verification
MP	Monitoring Plan
NGO	Non-governmental Organisation
ODA	Official Development Assistance
OM	Operating Margin
PDD	Project Design Document
UNFCCC	United Nations Framework Convention for Climate Change

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1 INTRODUCTION

Korean Foundation for Quality (KFQ) has engaged by Taebaek City Hall and Korea Energy Management Corporation (KEMCO) to perform a validation of the 'Taebaek Wind Power Project'. This validation report summarizes the findings of the validation of the project, performed on the basis of UNFCCC and host party's criteria for CDM project, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the small-scale CDM modalities and procedures and the subsequent decisions by the CDM Executive Board.

The Project is classified with sectoral scope 1- Energy Industries (Renewable Electricity: Generation for a grid) and the wind farm is located in Mt. Mabong, Changjook-dong, Taebaek-si, Gangwon-do, Korea. The Project consists of 8 wind turbines and turbine types are V52-850kw (2 in phase I and 3 in phase II) from VESTAS and G52-850kw(3 in phase III) from GAMESA. Both wind turbines has a capacity 850kw generating approximately 14,700 MWh annually. The expected CO_2 reduction is estimated to be 9,198 ton CO_2 per year and 91,980 ton CO_2 over the 10 year crediting period.

1.1 Objective

The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, the monitoring plan (MP), and the project's compliance with relevant UNFCCC and host countries 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 (PDD), the project's baseline study, monitoring plan and other relevant documents. The information in these documents is reviewed against the criteria stated in Article 12 of the

Kyoto Protocol, the CDM modalities and procedures as agreed on the Marrakech Accords and the relevant decisions by the CDM Executive Board including the approved baseline and monitoring methodology. KFQ has, based on the recommendations in the Validation and Verification Manual 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.

1.3 Validation Team

The validation team consisted as follows:

Sang Yong LEE (Audit team leader, GHG auditor)
Jong Moon PARK (Audit team member, GHG auditor)
Mi Jung LEE (Audit team member, Observer)

The qualification of each individual validation team member is detailed in Appendix B to this report.

2 METHODOLOGY

The validation consists of the following three phases:

I a desk review of the project design documents
II follow-up interviews with project stakeholders
III The resolution of outstanding issues and the issuance of the final validation report and opinion.

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

- It organizes details and clarifies the requirements a 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 Figure 1. The completed validation protocol for the Taebaek Wind Park Project is enclosed in Appendix A to this report.

Findings established during the validation can either be seen as a non-fulfillment of validation protocol criteria or where a risk to the fulfillment of project objectives is identified. Corrective Action Requests (CAR) is 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 term Clarification (CL) is issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.

The validation team has assessed the proposed CAR with a positive result and after the closure of these CAR and CL the proponent has issued the final version of the PDD. On the basis of this the final validation report and opinion were issued.

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

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

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

Figure 1 Validation Protocol Tables

2.1 Desk review of the Documents

The Project Design Document (PDD) version 01 was submitted 18 July 2007 and reviewed it 23 to 24 July 2007 with additional background documents related to the project design including baseline and additionality of the project.

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

Main changes between the versions published for the 30 days stakeholders commenting period and the final version of PDD submitted for registration:

- Changes related to the CARs and CLs identified in the KFQ's draft validation report
- Starting date of the crediting period to 05 June 2008 or registration date whatever is later from 1 January 2008.

2.2 Follow-up Interviews with Project Stakeholders

In the period of 30 July 2007 to 31 July 2007, KFQ performed on-site interview with the project proponent, project developer, plant operating personnel and representative from local community to confirm selected information and to resolve issues identified in the document review. The key interviewee and main topics of the interviews are summarised in Table 1.

Table 1 Interviewed persons and interview topics

Interviewed Persons/Entities	MoI [1)]	Interview topics
Taebaek City Hall - Mr. Woo Ok SEO - Mr. Yong Sun KIM	V	➢ Project design ➢ Project technology, operation, maintenance ➢ Sustainable development issues ➢ Monitoring plan ➢ Environmental impacts and issues ➢ Stakeholder consultation process ➢ Sustainable Development Issues
Korea Energy Management Corporation (KEMCO) and ECOSIAN - Mr. Ho Chul SHIN - Mr. Dae Kun KIM	V	➢ Applicability of selected methodology ➢ Baseline determination ➢ Emission reductions calculation ➢ Crediting Period ➢ Additionality ➢ Approval by the host country
Village chief - Mr. Myung Soon PARK - Mr. 의 Gil JEONG - Mr. In Gyu YOON	V	➢ Environmental issues ➢ Stakeholder comments ➢ Sustainable development issues

1) Means of interview: **T**elephone, **E**-Mail and/or Letter, **V**isit)

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation is to resolve any outstanding issues which need to be clarified prior to KFQ's positive conclusion on the project design. In order to guarantee the transparency of the validation process, the concerns raised by KFQ and responses provided by project participant are documented in Table 3 of the validation protocol in Appendix A.

For this project, eight Corrective Action Requests (CAR) and eight requests for Clarification (CL) were identified. These requests were presented to the project participant in a first validation report in 5 October 2007. The additional information provided by the project participant to address these requests and revised PDD of 14 July 2008 resolved the all Corrective Action Request and requests for Clarification to KFQ's entire satisfaction.

2.4 Internal Quality Control

According to KFQ's Procedure for deciding whether to proceeding request for registration, the final validation report including validation findings underwent a technical review before being submitted to the project participants for requesting registration of the project activity. The

technical review was performed by a technical reviewer qualified in accordance with KFQ's qualification scheme for CDM validation and verification.

3 VALIDATION FINDINGS

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

The final validation findings relate to the project design as documented and reflected in the revised and final project design documentation.

3.1 Participation Requirements

Republic of Korea as a non-Annex-I party meets all relevant participation requirements. In the Letter of Approval dated 31/12/2007, the Korea DNA confirmed the voluntary participation of Taebaek City Hall and Korea Energy Management Corporation as Project Participants in the CDM project activity. The Korea DNA assessed the project's capacity to reduce GHG emission and its alignment with Korean law, its environmental legislation and its sustainable development policies.

3.2 Project Design

The Taebaek Wind Power Project sites are located Mt. Mabong, Changjook-dong, Taebaek-si, Gangwon-do, Korea. The project consist 8 wind turbines and turbines types are V52-850kw (2 in phase I and 3 in phase II) from VESTAS and G52-850kw(3 in phase III) from GAMESA. Both wind turbines has a capacity 850kw generating approximately 14,700 MWh annually. Those companies are well known for having know-how and latest technique of wind power facility installation all over the world.

The project is expected to contribute to sustainable development through environmentally safe and sound technology transfer and, know-how of operating and maintaining the wind park to Korea. And Korea government also agrees to these facts:

- By displacing the electricity that would otherwise be generated in other fossil fuel-based power plants, the project activity will reduce GHGs emissions by 9,198 ton CO_2 annually. Beside the GHGs emission reductions, the emissions of other pollutants, such as SO_2, and NO_X, will be reduced.
- One of the main industries in Taebaek city and Gangwon province is tourism. Taebaek Wind Park will be also used as tourist attractions and it will contribute to the development of the local economy.
- The success of this project activity will promote the other potential renewable energy activities in Korea.

Starting date of the project activity is 15 May 2003 and is the earliest date among the implementation or construction or real action of a project activity begins. As the starting date of the project activity is before the date of validation, evidence that the incentive from CDM was seriously considered in the decision to proceed with the project activity was provided by PP. Submitted evidence documentation for starting date of the project activity by PP is the 'Mt. Maebong Wind Park Development-Operational Plan' which was approved based on the '2003 local energy project plan' on 28 February 2003. In '2003 local energy project plan, wind park in Mt. Maebong (850KW × 8 wind turbines), Ssrijae(2W × 1 wind turbine) and Pijae (850KW × 2 wind turbines) were planned to reduce 26,157 ~ 43,595 ton CO_2-yr and to participate CDM program for global warming. With reference to CDM, financial revenue was considered as CERs with 0.52 ton CO_2/MWh and approximately 17 million KRW at the exchange rate of 1,350 KRW to the Euro is annually expected by especially the wind park in Mt. Maebong.

The validation team confirmed the evidence showed the implementation of the project activity was approved 15 May 2003 and incentives from CDM was considered seriously in the course the

approval of starting of the project activity. Thus the requirement was satisfied that the evidence shall be based on documentation that was available at, or prior to, the start of the project activity.

A fixed crediting period of 10 years has been chosen for the project, starting from 05 June 2008 or registration date whatever is later.

The funding for the project does not lead to a diversion of official development assistance. The validation team has reviewed the project financing information in which ODA is not involved.

The considered project can be classified with Sectoral Scope 1- Energy Industries (Renewable Electricity: Generation for a grid). The wind park is connected to the grid owned by Korea Electric Power Company (KEPCO) and the project activity will generate greenhouse gas emission reductions by avoiding CO_2 emissions from electricity generation mainly by fossil fuel power plants.

3.3 Baseline Determination

The PDD responds convincingly to each of the applicability criteria which are outlined in the baseline methodology.

The project activity is grid connected renewable energy generation through wind turbines. The purpose of the project activity is to generate electricity through renewable resources and displace equivalent amount of electricity in the regional grid which is predominantly fossil fuel based.

The project applies the approved simplified baseline methodology for small-scale CDM project activities AMS-I.D (Version 11) titled 'Grid connected renewable energy generation'. The use of this methodology is appropriate as the project activity involves electricity capacity additions through wind sources.

According to AMS I.D (Ver. 11), the baseline is the KWh produced by the renewable generating unit multiplied by an emission coefficient (measured in $kgCO_2e/KWh$) calculated in a transparent and conservative manner as;

(a) A combined margin(CM), consisting of the combination of operating margin(OM) and build margin(BM) according to the procedures prescribed in the approved methodology

ACM0002. Any of the four procedures to calculate the operating margin can be chosen, but the restrictions to use the simple OM and the average OM calculations must be considered, or

(b) The weight average emissions of the current generation mix. The data of the year in which project generation occurs must be used.

Among the options suggested in the AMS.I.D for the calculation of an emission coefficient, option (a) is chosen. Therefore, the baseline of this project was established by ACM 0002/Ver. 06 (19 May 2006).

The applied ACM 0002 is justified as it has been demonstrated that the 'Taebaek Wind Park Project' ensures that:

- It is grid connected zero emission renewable power generation activity from wind energy
- The project does not involves switching from fossil fuel to renewable energy at the project site
- The geographical and system boundaries for the relevant electricity grid are clearly defined
  : The spatial extent of the project boundary includes the project site and is physically connected to the electricity system of Korea Electric Power Corporation (KEPCO). The defined project boundary is in line with ACM 0002.

In the baseline scenario the electricity delivered from the project activity to the grid would have been generated by the operation of grid-connected power plants and by the addition of new generation sources. This is reflected in the combined margin (CM)-the weighted average of the operating margin (OM) emission factor and the build margin (BM) emission factor.

According to ACM 0002, dispatch data analysis should be first choice for calculation of Operating Margin. Currently, dispatch data analysis cannot be used because of an availability data. Therefore simple OM method is chosen. The choice for simple OM is justified since low-cost/must run resources constitute 42.88% which is less than 50% of the total grid generation in average of the five most recent years.

Based on ACM 0002, there are two different options to choose from to calculate the Build Margin emission factor. Based on forecast for the electricity composition in the source energy, in case of fossil fuel, the capacity is expected not to fluctuate during the crediting period. From this consideration, option I, calculate the Build Margin emission factor ex-ante based on the most recent information available on plants for sample group m at the time of PDD submission, is

selected for this project. For sample group m, the power plant capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that is selected since this group has larger annual generation(20.34%) than five plants that have been built recently(0.0062%).

According to ACM 0002, the default of W_{OM} and W_{BM} are applied in CM calculation as follows, W_{OM} : 0.75 and W_{BM} : 0.25. The Combined Margin is fixed ex-ante for the entire crediting period and thus, this emission factor will not need to be monitored.

Validation team has confirmed that the application, discussion and determination of the chosen baseline methodology are transparent and reasonable.

3.4 Additionality

The additionality of the project has been demonstrated according to attachment A to Appendix B of simplified modalities and procedures for small-scale CDM projects activities. The project participants provided explanation to show that the project activity would not have occurred anyway due to investment, technological and prevailing barrier.

- **Investment Barrier**

  The project NPV (Net Present Value) and IRR (Internal Return Rate) of the project activity are selected as the financial indicator. And benchmark rate for IRR, 5.92% is selected which is the government bond rate of 2002.

  The NPV for proposed CDM project is negative, -3.91 billion KRW and in the absence of revenue from CERs and IRR is 2.5% which is lower than the benchmark rate. This shows that the project is not financially attractive in the absence of CDM benefits. Additionally, analysis of NPV and IRR with CER revenue, €5 and €15 each, are performed. As a result, NPV for proposed project activity are still negative. Also, the project IRR moves up to 2.9% with €5/ton CO_2 and 3.9% with €15/ton CO_2 and which are below than the benchmark rate as ever.

  In order to arrive at the conclusions regarding the robustness of the financial attractiveness to reasonable variations in the critical assumptions, sensitivity analysis is opted. Below

parameters are considered in sensitivity analysis.

: Utilization rate with ±5 variation range

: Price of purchasing electricity with ±10 variation range

: Total cost of operating expenses with ±10 variation range

According to sensitivity analysis, IRR of the project activity is still all lower than benchmark rate.

Based on the investment analysis above, the project is not proved financially attractive and the project activity is not a likely baseline scenario. Thus the emission reduction from the project activity is additional.

Validation team has been verified all financial data and information for investment analysis and also validated relevant assumptions such as the utilization rate and variation range for sensitivity analysis in a reasonable and conservative manner.

- **Technical Barrier**

  In Korea wind power project constitutes only small portion of overall electricity market despite abundant domestic wind resources. In year 2006, generation of wind power plant reached 233,435 MWh, 0.064% of total generation 365,368,969MWh. Also there is yet a little experience of operating, managing and repairing wind power facilities. Wind power project developers in Korea did not have an opportunity to improve their capacity because of lack of experiences. This made the market share of wind power in Korea had been very low. In such circumstances, Korea lacks technology or experience in wind power project.

- **Prevailing Barrier**

  There is a social dis-satisfication/doubt of government policies relate to the supporting renewable energy project. These policies have been adopted irregular. Irregular policy changed lead to uncertainties in revenue generation and thus more on the project risk. The renewable power plant owners in turn had no prior intimation of any change in the renewable energy policy. That is why there are a few renewable energy facilities in Korea and this is act as prevailing barrier to this project activity.

  Thus, the validation team arrived at the point that the project activity can be assessed to be additional and is not a BAU case.

3.5 Monitoring Plan

The project applies the monitoring methodology AMS I.D: Grid connected renewable electricity generation (Version 11) and the latest version of Appendix B to the simplified M & P for small scale CDM project activities.

The monitoring methodology designed for the real measurements of export of electricity to Korean gird. The electric power generated by this project activity will be measured using energy meters with 0.5% accuracy. Taebaek City Hall has formed an operational and management team, which is responsible for the operating and monitoring of the required data for CERs calculation. The team consists of a team manager and a operator. The team manager is responsible for the supervision of the operating staff and review of the monitored data. Operators are responsible for monitoring assigned parameters, recording and archiving of the monitored data. Electricity supplied to the Korean grid by the project activity, EG_Y, is the only parameter to be monitored for calculation for emission reduction and this will be measured hourly and recorded monthly. Monitored data will be reported to the Manager on a monthly basis. The procedure for calibration and maintenance of monitoring equipment are prepared on the site and this is clearly mentioned in the PDD.

There is no need to monitor the grid CO_2 emission coefficient as it is fixed ex-ante for the selected 10 years crediting period.

Data will be kept for two years after the last issuance of the CERs and all collected information will be stored electronically.

Taebaek City Hall has the overall authority and responsibility for the project management including monitoring of every parameter for the accounting of reduction amount and reporting.

3.6 Calculation of GHG Emissions

According to ACM 0002(Version 06), emission reduction is calculated as following equation:

$$ERy = BEy – PEy – L = BEy$$

- BEy (t CO_2): Baseline Emissions
- PEy : Project Emissions

- No project emissions need to be considered, as the project activity is a renewable energy project

- L : Leakage
  - According to ACM 0002, no leakage has to be considered for the proposed project activity

Baseline emissions is calculating as electricity supplied by the project activity to the grid (EGy in MWh) times baseline emissions factor (EFy in ton CO_2/MWh).

First, electricity supplied to the Korean grid by the project activity (EGy) is expected approximately 14,700 MWh/yr. In estimation of electricity generation, expected capacity factor, 24.74%, is applied. This capacity factor is the average mark of the records of five turbines which were real operated from November 2005 to October 2006. Validation team has been confirmed that this factor is reasonable as this factor is closely connected with wind and full year data is more reasonable and conservative than the data from research, 41.7%.

Second, the baseline emissions factor (EFy in the CO_2/MWh) is calculated through the following steps. OM (Operating Margin) and BM (Build Margin) are calculated by using the data from existing power plants that provide electricity with the current grid-connected electricity generation:

- OM is calculated to be 0.7197 ton CO_2/MWh.
- BM is calculated to be 0.3811 ton CO_2/MWh.
- CM is calculated to be 0.6350 ton CO_2/MWh and is fixed ex-ante for the entire crediting period and this emission factor which is not need to be monitored.

The 91,980 ton CO_2 is estimated as emission reduction over the crediting period of emission reduction. Validation team concluded that the GHG calculation is complete and transparent and estimated reasonably.

3.7 Environmental Impacts

According to the provisions of Enforcement Decree of the Act on Impact Assessment on

Environment, Traffic, and Disasters, etc, any plant facility whose power source is solar power, wind power of fuel cell which is more than 100,000kW shall be carried out EIA. As Taebaek wind project whose facility capacity is 6.8 MW, it is not required to be performed EIA. Also this project activity is not required preliminary environmental assessment under Gangwon local government law since facility capacity is below than 3,000kW.

However, environmental impact during the construction and operation of wind power plant was considered in a point of precautionary approach. In this approach, potential impacts of the project activity such as possible noise, visual pollution and change in land use are reviewed. However the noise impacts by the project activity are considered insignificant as the noise from the wind turbines will not exceed the noise limit under the current regulations. And impacts of the visual pollution and land use are also not a significant concern as the project site is located in unused area of the mountain. And the local government reviewed there is no damage of public interest in land use for this project activity.

3.8 Comments by Local Stakeholders

To receive stakeholder's comments related with the Taebaek Wind Park Project, project developer held project presentations to the stakeholders and announced this project through Kyunghyang internet news.

Summary of comments received are shown below:

- Operating the Wind Park can cause negative effect to the drainage system of farmland and crops nearby the wind park in case heavy rain.
- Uncovered road to the project site needs to be covered. Also at the time of the road maintenance, the opinions from residents need to be reflected.
- A countermeasure should be prepared in case more tourists visit the project site
- Further consideration needs to be sought to develop the project site and nearby area as a tourist spot.

As for the opinion raised by the local stakeholders, Taebaek City Hall gave the following response and the residents were satisfied with them.

- Enough caution will be paid not to cause any effect to the nearby farmland and crops by the Project activity. As a part of this consideration, a plan for improvement of irrigation drainage system decided.
- Based on resident's require, some road maintenance projects were carried out reflecting their opinion and the rest of the projects are on their way.
- Considering the expected increase of visitors, the main road will be broadened and parking lots will be prepared.
- To develop the area as a tourist spot, Taebaek City Hall is making progress such as program for ecology restoration.
- Taebaek City Hall prepared the window for the collection of public opinions and trying to improve the popular complaints continuously.

Validation team has looked through the public hearing minutes and interviewed local stakeholder to verify project proponent used appropriate media to invite comments on proposed project activity and due accounts was taken properly. Also validation team has found all participants in the public hearing were agreed and supported this project activity and, look for development of local economy.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

Korean Foundation for Quality published the draft PDD on http://cdm.unfccc.int/Projects/Validation on 21 July 2007 and invited comments within 30 days, until 19 August 2007 by parties, stakeholders and non-governmental organisations.

No comment was received.

5 VALIDATION OPINION

Korean Foundation for Quality (KFQ) has performed a validation of the 'Taebaek Wind Power Project' of Taebaek City Hall and KEMCO in Korea. The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria includes article 12 of the Kyoto Protocol, the modalities and procedures for CDM, the relevant decisions by COP/MOP and CDM Executive Board.

The validation is based on the information made available to us and the engagement conditions. And it has provided KFQ with sufficient evidence to determine the fulfillment of stated criteria. The validation consisted of the following 3 phases : i) a desk review of the project design, the baseline and monitoring plan, ii) follow-up interviews with project stakeholders and iii) the Resolution of outstanding issues and the issuance of the final validation report and opinion.

The host party, Republic of Korea, fulfilled the participation criteria and has approved the project and authorized the project participation. The DNA of Korea has confirmed that the project will assist in achieving sustainable development.

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

By displacing fossil fuel-based electricity with electricity generated from a renewable source, the project results in reductions of CO_2 emissions that are real, measurable and give long-term benefits to the mitigation of climate change. An analysis of the additionalilty demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is implemented as designed, the project is likely to achieve the estimated amount of emission reductions.

Additionally the validation team reviewed the estimation of the projected emission reductions. We can confirm that the indicated amount of emission reductions of 9,198 ton CO_2 over a fixed crediting period of 10 years, resulting in a calculated annual average of 91,980 ton CO_2, represents a reasonable estimation using the assumptions given by the project documents.

The monitoring responsibilities are clearly defined and a detailed monitoring plan has been

developed. There is no need to monitor the grid CO_2 emission coefficient as it is fixed ex-ante for the selected 10 years crediting period.

In our opinion, the Taebaek Wind Power Project in Korea, as described in the revised PDD of 14 July 2008, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the simplified baselines and monitoring methodology AMS-I.D_Ver.11 and ACM0002. Thus the project will hence be recommended by KFQ for registration as a CDM project with the UNFCCC.

6 REFERENCES

Category 1 Documents:

List documents provided by the Client that relate directly to the GHG components of the project,

/1/ Ecosian Co.,Ltd. Project Design Document – Taebaek Wind Power Project: 31 May 2007 (Ver 1), 14 July 2008(Ver 6)

/2/ Ecosian Co., Ltd. Baseline Emissions Factor Excel Sheet: 17 July 2007(Ver 1), 28 February 2008(Ver 5)

/3/ Ecosian Co., Ltd. Financial Analysis Excel Sheet: 13 April 2007(Ver 1), 24 March 2008(Ver 6)

Category 2 Documents:

List background documents related to the design and/or methodologies employed in the design or other reference documents.

/4/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund(PCF) : Validation and Verification Manual. http://www.vvmanual.info

/5/ CDM-EB, AMS-I.D_Ver.11 – Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories

/6/ CDM-EB, ACM0002 _Ver. 6– Consolidated baseline methodology for grid-connected electricity generation from renewable source

/7/ Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities

/8/ http://epsis.kpx.or.kr (Electricity Power Statistics Information System)

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Appendix A

Validation protocol for Small scale CDM project activities

Table 1. Mandatory Requirements for Small Scale Clean Development Mechanism(CDM) Project Activity

Requirement	Reference	Conclusion	Cross Reference / 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	OK	The project has been proposed as a unilateral project.
2. The project shall assist non-Annex I Parties in achieving sustainable development and the project has obtained confirmation by the host country that the project assists in achieving sustainable development.	Kyoto Protocol Art. 12. 2/SSC M&P 23a	OK	Table 2, Section A.2
3. The project shall assist non-Annex 1 Parties in contributing to the ultimate objective of UNFCCC.	Kyoto Protocol Art. 12. 2	OK	Table 2, Section A. 2 and B.7.1
4. The project shall have written approval of voluntary participation from the designated national authorities of each party involved.	Kyoto Protocol Art. 12. 5a/SSC M&P 23a	~~NO~~ OK	~~The DNA approval for the host country needs to be provided.~~ . The DNA approval of the host country submitted.
5. The emission reductions shall be real, measurable and give long-term benefits to the mitigation of climate change	Kyoto Protocol Art. 12.5b	OK	Table 2, Section B.4 to B.7
6. Reduction in GHG emissions shall be additional to any that would occur in absence of the project activity.	Kyoto Protocol Art. 12.5c /SSC M&P 26	OK	Table 2, Section B.3
7. Potential public funding for the project form Parties in Annex I is not a diversion of official development assistance.	D 17/CP.7 CDM M&P Appendix B. 2	OK	No public funding is provided for the project activity. National and Local expenditure were invested in this project activity.
8. Parties participating in the CDM shall be designated a national authority for the CDM.	CDM M&P 29	OK	The office for government policy coordination is DNA in Korea for CDM.
9. The host country is a Party to the Kyoto Protocol.	CDM M&P 30	OK	Republic of Korea has ratified the Kyoto Protocol on 8 November 2002.
10. The proposed project activity shall meet the eligibility criteria for small scale CDM project activities set out in 6(c) of the Marrakesh Accords and shall not be a debundled component of a larger project activity.	SSC M&P 12a, c	OK	The facility capactity of this project activity is 6.8MW which is Less than eligibility limit of 15MW for small scale CDM project activity. And refer to Table 2, Section A.1
11. The PDD shall conform with the SSC PDD format.	SSC M&P, Appendix A	OK	The Simplified Project Design Document for Small-Scale Project Activities; Version 03 from 22 December 2006 is used for submitting.

12. The proposed project activity shall confirm to one of the project categories defined for small scale CDM project activities and uses the simplified baseline and monitoring methodology for that project category.	SSC M&P 22e	OK	Table 2, Section A.1, B.1 and B.8. The project activity fall under category I.D "Grid connected renewable electricity generation (Ver. 11)" and uses the simplified baseline and monitoring methodology for that project category.
13. Comments by local stakeholders are invited, a summary of these provided and how due account was taken of any comments received.	SSC M&P 22b	OK	Table 2, Section E.
14. If required by the host party, an analysis of the environmental impacts of the project activity is carried out and documented.	SSC M&P 22c	OK	Analysis of the environmental impacts of the project activity is for required. And refer to Table 2, Section D.
15. Parties, stakeholders and UNFCCC accredited NGOs have been invited to comment on the validation requirements and comments have been made publicly available.	SSC M&P 23b, c	OK	They were invited to provide comments through the CDM website during 30 days from 14 April 2007 to 13 May 2007. No comment was received.

Table 2. Requirements Checklist

MoV =Means of Verification, DR=Document Review, I=Interview

Question	Ref.	MoV	Comments	Draft. Concl.	Final Concl.
A. General Description of Project Activity *The project design is assessed.*					
A.1. Small scale project activity *It is assessed whether the project qualifies as small scale CDM project activity.*					
A.1.1. Does the project qualify as a small scale CDM project activity as defined in paragraph 6(c) of decision 17/CP.7 on the modalities and procedures for the CDM?	PDD A.2	DR	Taebaek wind park project has installed 8 wind turbines of 850kW each (total installed capacity of 6.8MW) which is less than eligibility limit of 15MW for small scale CDM project activity applies only to renewable component. The project activity fall under the ' Type I: Renewable energy projects' and category I.D Version 11: ' Grid connected renewable electricity generation'.	**OK**	**OK**
A.1.2 The small scale project activity is not a de-bundled component of a larger project activity?	PDD A.4.5	DR	The project activity is not a de-bundled component of a larger project activity. Since, there in no CDM project activity in the same category by the same project proponent within 1km of the present project activity in last two years.	**OK**	**OK**
A.2. Participation Requirements *Referring to Part A, Annex 1 and 2 of the PDD as well as the CDM glossary with respect to the terms Party, Letter of Approval, Authorization and Project Participant.*					
A.2.1 Which Parties and project participants are participating in the project?	PDD A.3	DR	The following parties are involved in the project activity: Republic of Korea (Host) and the project participants: Taebaek City Hall and Korea Energy Management Corporation.	**OK**	**OK**

A.2.2 Have all involved Parties provided a valid and complete letter of approval and have all private/public project participants been authorized by and involved Party?	PDD A.3	DR,I	This project is Unilateral CDM since Republic of Korea is the only involved Party for this project activity. Project participants have not received the host country approval from DNA of Republic of Korea to ascertain the project activity meets with the host country's sustainable development criteria.	**CAR 1**	**OK**
A.2.3 Do all participating parties fulfill the participation requirements as follows: - Ratification of the Kyoto Protocol - Voluntary participation - Designated a National Authority	PDD	DR	Yes, Republic of Korea has ratified the Kyoto Protocol on 8 November 2002 and has established a DNA. However voluntary participation is not ascertained by DOE as participants have not received the host country approval from DNA of host country. Refer to A.2.2.	**CAR 1**	**OK**
A.2.4 Potential public funding for the project from parties in Annex I shall not be a diversion of official development assistance.	PDD A.4.4	DR, I	The project does not involve any public funding from Annex-I country. Also this project financing does not involve ODA from Host country. This project is invested by the national and local expenditure.	**OK**	**OK**
A.3. Technology to be employed *Validation of project technology focuses on the project engineering, choice of technology and competence/maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.*					
A.3.1 Does the project design engineering reflect current good practices?	PDD A.4.2	DR,I	The wind turbines are provided from Danish company VESTAS and Spanish company GAMES which are well known for having know-how and latest technique of wind power facility installation all over the world. It implicates the project design engineering reflects current good practices.	**OK**	**OK**
A.3.2 Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	PDD A.4.2	DR	Under section A.4.2 of the PDD, project component should comprise 'how environmentally safe and sound technology and know how is being applied by the project activity interalia technology transfer to the Host Party (ies) for the project activity'. However this is not described in the PDD. Also operation data such as start, normal and stop speed of the turbines and URL of the turbine manufacturing company are not presented correctly in the PDD.	**CL 1**	**OK**
A.3.3 Does the project make provisions for meeting training and maintenance needs?	PDD A.4.2	DR,I	Contract/Provision information on meeting training and maintenance needs is not well described in the PDD whereas the project developer and technology provider contracted that technology provider gives the training program to operators of the project developer.	**CL 2**	**OK**

A.4. Contribution to Sustainable Development *The project's contribution to sustainable development is assessed*					
A.4.1 Will the project create other environmental or social benefits than GHG emission reductions?	PDD A.2	DR,I	Yes, the project has social and environmental benefits such as SO_X and NO_X reductions besides GHG emission reduction. And the project activity will contribute to disseminate renewable energy generation. Also the project activity will provide contribution to the local economy development as Taebaek wind park will be also used as tourist attractions.	**OK**	**OK**
A.4.2 Has the host country confirmed that the project assists it in achieving sustainable development?	PDD A.2	DR,I	No, Host Government Approval has not obtained. This document is a prerequisite for registration as per CDM Modalities & Procedures 40(a).	**CAR 1**	**OK**
A.5. General Topics					
A.5.1 Has the PDD been duly filled?	PDD	DR	Yes, the PDD has been duly filled.	**OK**	**OK**
B. Project Baseline *The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.*					
B.1. Baseline Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					
B.1.1 Does the project apply an approved methodology and the current version thereof?	PDD B.1	DR	The project activity fall under ' Type I: Renewable energy projects' and category I/D Version 11: ' Grid connected renewable electricity generation'.	**OK**	**OK**
B.1.2 Are the applicability criteria in the baseline methodology all fulfilled?	PDD B.2/ B.6.1	DR	Yes, the baseline methodology is in line with the baseline methodology provided with category. The project activity is confirming to ' Type I: Renewable energy projects' and category I.D/Version 11: ' Grid connected renewable electricity generation'. And the applicability criteria of ACM 0002 are fulfilled.	**OK**	**OK**

B.2. Baseline Scenario Determination *The choice of the baseline scenario will be validated with focus on whether the baseline is a likely scenario, and whether the methodology to define the baseline scenario has been followed in a complete and transparent manner.*					
B.2.1. What is the baseline scenario?	PDD B.4	DR	The project applies one of the simplified baseline methodologies proposed for the small-scale project activity category I.D, i.e the baseline is the annual KWh generated by the project times an emission factor calculated in accordance with ACM 0002.	**OK**	**OK**
B.2.2. What other alternative scenarios have been considered and why is the selected scenario the most likely one?	PDD B.4	DR	According to ACM 0002, the baseline scenario is the electricity delivered to the grid by the project would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations.	**OK**	**OK**
B.2.3. Has the baseline scenario been determined according to the methodology?	PDD B.4	DR,I	No, As described in the ACM 0002, the OM is calculated using the full generation-weighted average for the most recent 3 years. However, the OM for this project is calculated year 2003~2005 instead of 2004 ~2006. As well as, some power plant which is installed during 2004~2006 omitted in OM calculation. And according to ACM 0002, plant emission factors used for the calculation of operating and build margin emission factors should be obtained by using net calorific values instead of HCV (High Calorific Value). But HCV is used for calculation of the emission factors.	**CAR 2** **CAR 3**	**OK** **OK**
B.2.4. Has the baseline scenario has been determined using conservative assumptions where possible?	PDD B.4	DR	Refer to B.2.3 And utilization factor is not determined in transparent manner and this should be substantiating with proper documentary evidences.	**CAR 2** **CAR 3** **CAR 4**	**OK**
B.2.5 Does the baseline scenarios sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	PDD B.4	DR	According to EB 16th meeting report, this project activity is applied to Type E-'national and/or sectoral policies or regulations that have been implemented since the adoption by the COP of the CDM M&P may not be taken into account in developing a baseline scenario and this analysis is performed based on this hypothetical situation without regarding the 'Alternative Energy Development Promotion Act amended on March 2002'. According to this decision, purchase price of electricity, which excludes	**OK**	**OK**

			subsidy through compensation for difference between generation costs by MOCIE, was applied to the investment analysis. Additionality, based on 26th meeting report, 'Clarification on the consideration of national and/or sectoral policies and circumstances in baseline scenario' is considered in developing a baseline scenario. Based on electricity law, SMP (System marginal price of the grid promote) price is adopted from wind power unit cost prior to the notice of official price. Government subsidy for generation of electricity power difference ruled by 'Renewable energy development and supply promotion law' is excluded. It is also excluded from the unit cost of purchase in the investment analysis.		
B.2.6 Is the baseline scenario determination compatible with the available data and is all literature and sources clearly referenced?	PDD B.4	DR, I	The data source for baseline scenario determination in the PDD is not corresponding with data source in the supporting documents such as excel sheet of financial analysis and emission factor for the project activity. The source of NCV_i, EF_{CO2i}, for calculating $COEF_i$ are not clearly defined in the PDD.	**CAR 5** **CL 3**	**OK** **OK**
B.2.7 Have the major risks to the baseline been identified?	PDD B.4	DR	Refer to B.2.3	**CAR 2** **CAR 3**	**OK**
B.3. Additionality Determination *The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.*					
B.3.1 Is the project additionality assessed according to the methodology?	PDD B.5	DR, I	Project additionality has been assessed by analyzing the investment barrier. However calculation process for financial indicator, NPV and IRR, which are selected by PP are no clear and transparent with respect to below: - NPV of total project investment is calculated not considering the project activity has been proceeded through three phases over 3 yrs. - And financial information for NPV calculation in the PDD are not consistent with values in excel sheet. - It is not explained to the DOE why the bench mark rate for IRR comparison, 7%, is selected. - There is included O&M cost not incurred for first 3 years due to free of change from the manufacturing company. Also there is no calculation for revenues including CERs from this project activity in investment analysis in excel sheet.	**CAR 6**	**OK**

			Project proponent should demonstrate the financial attractiveness due to reasonable variations in the critical assumptions of the project through sensitivity analysis.		
B.3.2 Are all assumptions stated in a transparent and conservative manner?	PDD B.5	DR	Refer to B.2.4 and B.3.1	**CAR 2 CAR 3 CAR 4 CAR 6**	**OK**
B.3.3 Is sufficient evidence provided to support the relevance of the arguments made?	PDD B.5	DR,I	Refer to B.3.1	**CAR 6**	**OK**
B.3.4 If the starting date of the project activity is before the date of validation, has sufficient evidence been provided that the incentive from the CDM was seriously considered in the decision to proceed with the project activity?	PDD B.5	DR,I	Starting date of the project activity is 23 November 2003 but description of it is not provided in the PDD regarding whether the data is : - the earliest date among the implementation or construction or real action of a project activity begins. - incentive from CDM was seriously considered in the decision to proceed with the project activity	**CAR 7**	**OK**
B.4 Calculation of GHG Emission Reductions – Project emissions *It is assessed whether the project emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values-where applicable- is justified.*					
B.4.1 Are all aspects related to direct and indirect GHG emissions captures in the project design?	PDD B.6	DR	The project emissions are considered zero in accordance with the approved methodology.	**OK**	**OK**
B.5 Calculation of GHG Emission Reductions – Baseline emissions *The validation of ex-ante estimated baseline GHG emissions focuses on transparency and completeness of calculations.*					
B.5.1 Have the most relevant and likely operational characteristics and baseline indicators been chosen as reference for baseline emissions?	PDD B.6	DR, I	Refer to B.2.	**CAR 2 CAR 3 CAR 4 CAR 5 CL 3**	**OK**
B.5.2 Are the baseline boundaries clearly defined and do they sufficiently cover sources and sinks for baseline emissions?	PDD B.6	DR	Baseline boundaries are defined clearly according to rules of the approved methodology ACM 0002.	**OK**	**OK**

B.5.3 Are the GHG calculations documented in a complete and transparent manner?	PDD B.6	DR	Calculation for baseline emissions is provided in section B.6.3 in the PDD in a complete and transparent manner.	**OK**	**OK**
B.5.4 Have conservative assumptions been used when calculating baseline emissions?	PDD B.6	DR	No. Refer to B.2.	**CAR 2 CAR 3 CAR 4 CAR 5 CL 3**	**OK**
B.6 Calculation of GHG Emission Reductions – Leakage *It is assessed whether there leakage effects, i.e. change of emissions which occurs outside the project boundary and which are measurable to the project, have been properly assessed and estimated ex-ante.*					
B.6.1 Are potential leakage effects beyond the chosen project boundaries properly identified?	PDD B.6	DR	N/A	**OK**	**OK**
B.7 Emission Reductions *Validation of ex-ante estimated emission reductions.*					
B.7.1 Will the project result in fewer GHG emissions than the baseline scenario?	PDD B.6	DR,I	Yes, By displacing fossil-fuel based generated electricity, the project is expected to reduce 9,198 t CO2e per year for the crediting period.	**OK**	**OK**
B.8 Monitoring Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					
B.8.1 Is the monitoring methodology previously approved by the CDM Executive Board?	PDD B.7	DR	The project is applied approved methodology AMS-I.D version 11, indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories.	**OK**	**OK**
B.8.2 Is the monitoring methodology applicable for this project and is the appropriateness justified?	PDD B.7	DR	The appropriateness of the monitoring methodology is justified in the PDD.	**OK**	**OK**
B.8.3 Does the monitoring methodology reflect good monitoring and reporting practices?	PDD B.7	DR	Yes, The monitoring methodology reflects good monitoring and reporting practice.	**OK**	**OK**
B.8.4 Is the discussion and selection of the monitoring methodology transparent?	PDD B.7	DR	Yes. The discussion and selection of monitoring methodology is transparent.	**OK**	**OK**

B.9 Monitoring of Project Emissions *It is established whether the monitoring plan provides for reliable and complete project emission data over time.*					
B.9.1 Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	PDD B.7	DR	N/A	**OK**	**OK**
B.10 Monitoring of Baseline Emissions *It is established whether the monitoring plan provides for reliable and complete baseline emission data over time.*					
B.10.1 Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	PDD B.7.1	DR, I	The monitoring plan contains only one parameter for monitoring which is the 'net electricity exported (EGy)' to the Korean grid. The collection and archiving of EGy is properly accounted in the monitoring plan. However there is no definite definition which metering reading is chosen for emission reduction calculation. Through the section B.7.1 in the PDD gives the description of monitoring. . However the monitoring plan in the PDD does not cover as follows: - Requirements for record keeping. i.e the retention time of EGy data. - Also QA/QC procedure for monitoring equipments such as calibration period of meter and measurement method of monitoring parameter are not fully described in the PDD. - And role and responsibility for monitoring emission reductions and authority or responsibility for registration, monitoring, reporting are not defined in the PDD.	**CAR 8** **CL 4** **CL5** **CL6**	**OK** **OK** **OK** **OK**
B.10.2 Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	PDD B.7.1	DR	According to the monitoring methodology, only electricity supplied by the project activity to the grid as EFy, OM and BM are not to be monitored by these factors are chosen using ex-ante method based on most recent information available on the plant already built at the time of PDD submissions.	**OK**	**OK**
B.11 Monitoring of Leakage *It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.*					

B.11.1 Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	PDD B.6.3	DR	Leakage is not applicable according to AMS- I.D.	**OK**	**OK**
B.12 Monitoring of Sustainable Development Indicators/ Environmental Impacts *It is assessed whether choices of indicators are reasonable and complete to monitor sustainable performance over time.*					
B.12.1 Does the monitoring plan provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?	PDD D.1	DR	N/A	**OK**	**OK**
B.13 Project Management Planning *It is checked that project implementation is properly prepared for and that critical arrangements are addressed.*					
B.13.1 Is the authority and responsibility of overall project management clearly described?	PDD B.7.2	DR,I	Taebaek City has the authorities and responsibility of overall project activity management.	**OK**	**OK**
B.13.2 Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	PDD B.7.2	DR, I	The authorities and responsibilities for registration, monitoring, measurement and reporting of CDM project is not clearly described in the PDD. Please refer B.10.1.	**CL 6**	**OK**
B.13.3 Are procedures identified for training of monitoring personnel?	PDD B.7.2	DR,I	The monitoring personnel are well qualified and they are having their periodic training monitoring personnel.	**OK**	**OK**
B.13.4 Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	PDD B.7.2	DR,I	Generating electricity through the wind turbines leads to zero emissions. So such emergencies are not expected.	**OK**	**OK**
B.13.5 Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	PDD B.7.2	DR,I	Procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting is placed on- site and validation team has been reviewed it during on-site assessment.	**OK**	**OK**

C. Duration of the Project/ Crediting Period *It is assessed whether the temporary boundaries of the project are clearly defined.*					
C.1 Are the project's starting date and operational life time clearly defined and evidenced?	PDD C.1	DR	According to the 'Glossary of CDM terms (Ver. 03), 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. The project's starting date and operational lifetime clearly defined as 15 May 2003 and 20 years under section C of PDD. However, proof of the starting date need to submit to validation team. Refer B.3.4.	**CAR 7**	**OK**
C.2 Is the start of the crediting period clearly defined and reasonable?	PDD C.2	DR	Yes, the start of the crediting period, 5 June 2008, is clearly and reasonably defined.	**OK**	**OK**
D. Environmental Impacts *Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.*					
D.1 Has an analysis of the environmental impacts of the project activity been sufficiently described?	PDD D.1	DR,I	Expected environmental impact during the construction and operation of wind power plant was considered in a point of precautionary approach, 'the research for availability of wind power resource in Taebaek city'. However environmental analysis result included this study is not sufficiently described in section D of PDD.	**CL 7**	**OK**
D.2 Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	PDD D.1	DR	According to 'Enforcement Decree of the Act on Assessment of Impacts of Works on Environment, Traffic, Disasters, etc.', a wind power generation project whose capacity is greater than 100 MW is required to conduct an Environment Impact Assessment (EIA). However, the installed capacity of the Project activity is 6.8 MW, which is less than the 100MW. Therefore under the current regulation, EIA is not required for this project activity.	**OK**	**OK**
D.3 Will the project create any adverse environmental effects?	PDD D.1	DR,I	No, the project activity is not expected to create any adverse environmental effect.	**OK**	**OK**
D.4 Are trans boundary environmental impacts considered in the analysis?	PDD D.1	DR,I	N/A	**OK**	**OK**

D.5 Have identified environmental impacts been addressed in the project design?	PDD D.1	DR,I	Refer to D.1.	**CL 7**	**OK**
D.6 Does the project comply with environmental legislation in the host country?	PDD D.1	DR,I	Refer to D.1.	**CL 7**	**OK**
E. Stakeholder Comments *The validator should ensure that stakeholder comments have been invited with appropriate media and that due account has been taken of any comments received.*					
E.1 Have relevant stakeholders been consulted?	PDD E.1	DR,I	To incorporate local stakeholder's opinion, a local stakeholder's meeting was held by Taebaek City Hall at the project site in 2003. Public solicitation of comments from other Parties, stakeholder and non-governmental organizations by opening draft PDD on UNFCCC website: http://cdm.unfccc.int/Projects/Validation on 21 July 2007 and invited comments within 30 days, until 19 August 2007.	**OK**	**OK**
E.2 Have appropriate media been used to invite comments by local stakeholders	PDD E.1	DR,I	Yes, Taebaek city has been used local stakeholer's meeting Kyunghyang Press and as media to invite comments by local stakeholders on 25 May and 13 November 2003.	**OK**	**OK**
E.3 If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	PDD E.1	DR,I	No stakeholder consultation process is required by the regulations/laws in Korea.	**OK**	**OK**
E.4 Is a summary of the stakeholder comments received provided?	PDD E.2	DR,I	All comments received from local stakeholders in the public hearing and due account of the all stakeholder comments received has been taken are not well provided in PDD whereas these are all identified during on-site assessment.. Also summary of the public solicitation of comments from other Parties, stakeholder and non-governmental organizations is not mentioned in section E, Stakeholder's comments, of the PDD while on the other hand PP has plan to take any of stakeholder comment received through UNFCCC website: http://cdm.unfccc.int/Projects/Validation during on 21 July 2007 until 19 August 2007.	**CL 8**	**OK**
E.5 Has due account been taken of any stakeholder comments received?	PDD E.3	DR,I	Refer E.4	**CL 8**	**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 : Project participants have not received the host country approval from DNA of Republic of Korea as ascertain the project activity meets with the host country's sustainable development criteria. Also voluntary participation is not ascertained by DOE as participants have not received the host country.	A.2.2/A.2.3/A.4.2	The DNA of the Republic of Korea has issued a Letter of Approval on 31 December 2007, authorizing that this project assists in achieving sustainable development. Also the approval from DNA shows that participating parties fulfill the participation requirement such as voluntary participation.	*CAR 1 is closed.*
CAR 2 : As described in the ACM 0002, the OM is calculated using the full generation-weighted average for the most recent 3 years. However, the OM for this project is calculated year 2003~2005 instead of 2004~2006. A well as, some power plant which is installed during 2004~2006 omitted in OM calculation.	B.2.3	According to ACM 0002, OM has been re-calculated with most recent 3 years data, 2004~2006 and omitted power plant are included in OM calculation.	CAR 2 is closed.
CAR 3 : Plant emission factors used for the calculation of operating and build margin emission factors should be obtained by using net calorific values instead of HCV. But HCV is used for calculation of the plant emission factors.	B.2.3	Plant emission factor is re-calculated with net calorific values. Gross calorific value has been converted to net calorific value by assuming that net calorific values were 5% lower than gross calorific values for coal and oil, and 10% lower for natural gas(Source 2006 IPCC guidelines for national greenhouse gas inventories).	CAR 3 is closed.
CAR 4 : Utilization factor is not determined in transparent manner.	B.2.4	The assumption process is explained and evidence was provided for justifying utilization factor determined as 24.74%. And validation team has been confirmed that this factor is closely connected with wind and full year data is more reasonable and conservative than the data from research, 45.4%.	CAR 4 is closed.

CAR 5 : The data source for baseline scenario determination in the PDD is not corresponding with data source in the supporting documents such as excel sheet of financial analysis and emission factor for the project activity.	B.2.6	The correct information is provided in the final PDD and supporting documentation.	CAR 5 is closed.
CAR 6 : Project additionality has been assessed by analyzing the investment barrier. However calculation process for financial indicator, NPV and IRR, which are selected by PP are no clear and transparent with respect to below: - NPV of total project investment is calculated not considering the project activity has been proceeded through three phases over 3 yrs. - And financial information for NPV calculation in the PDD are not consistent with values in excel sheet. - It is not explained to the DOE why the bench mark rate for IRR comparison, 7%, is selected. - There is included O&M cost not incurred for first 3 years due to free of change from the manufacturing company. Also there is no calculation for revenues including CERs from this project activity in investment analysis in excel sheet.	B.3.1	NPV and IRR for this project activity are re-calculated regarding CAR 6. Validation team has verified all financial data and information for investment analysis and also validated relevant assumptions such as the utilization rate and variation range for sensitivity analysis in a reasonable and conservative manner. The project NPV (Net Present Value) and IRR (Internal Return Rate) of the project activity are selected as the financial indicator. And benchmark rate for IRR, 5.92% is selected which is the government bond rate of 2002. The NPV for proposed CDM project is negative, -3.91 billion KRW and in the absence of revenue from CERs and IRR is 2.5% which is lower than the benchmark rate. This shows that the project is not financially attractive in the absence of CDM benefits. Additionally, analysis of NPV and IRR with CER revenue, €5 and €15 each, are performed. As a result, NPV for proposed project activity are still negative. Also, the project IRR moves up to 2.9% with €5/t CO_2 and 3.9% with €15/t CO_2 and which are below than the benchmark rate as ever. In order to arrive at the conclusions regarding the robustness of the financial attractiveness to reasonable variations in the critical assumptions, sensitivity analysis is opted. Below parameters are considered in sensitivity analysis.	CAR 6 is closed.

		: Utilization rate with ±5 variation range : Price of purchasing electricity with ±10 variation range : Total cost of operating expenses with ±10 variation range According to sensitivity analysis, IRR of the project activity is still all lower than benchmark rate. Based on the investment analysis above the project is not proved financially attractive and the project activity is not a likely baseline scenario. Thus the emission reduction from the project activity is additional.	
CAR 7 : Starting date of the project activity is 23 November 2003 but description of this is not provided in the PDD regarding whether the data is : - the earliest date among the implementation or construction or real action of a project activity begins. - the incentive from CDM was seriously considered in the decision to proceed with the project activity	B.3.4., C.1	Relevant description is provided in the PDD and evidence of starting date is submitted to DOE. DOE has ascertained those date by reviewing it that it is reasonable. Starting date of the project activity is 15 May 2003 and is the earliest date among the implementation or construction or real action of a project activity begins. As the starting date of the project activity is before the date of validation, evidence that the incentive from CDM was seriously considered in the decision to proceed with the project activity was provided by PP. Submitted evidence documentation for starting date of the project activity by PP is the 'Mt. Maebong Wind Park Development-Operational Plan' which was approved based on the '2003 local energy project plan' on 28 February 2003. In '2003 local energy project plan, wind park in Mt. Maebong (850KW × 8 wind turbines), Ssrijae(2W × 1 wind turbine) and Pijae (850KW × 2 wind turbines) were planned to reduce 26,157 ~ 43,595 ton CO2-yr and to participate CDM program for global warming. With reference to CDM, financial revenue was	CAR 7 is closed.

		considered as CERs with 0.52 ton CO2/MWh and approximately 17 million KRW at the exchange rate of 1,350 KRW to the Euro is annually expected by especially the wind park in Mt. Maebong. The validation team confirmed the evidence showed the implementation of the project activity was approved 15 May 2003 and incentives from CDM was considered seriously in the course the approval of starting of the project activity. Thus the requirement was satisfied that the evidence shall be based on documentation that was available at, or prior to, the start of the project activity. Approval for implementation of Phase I, II and III is on 15 May 2003: - Phase I) : Date of contracting: 23 Nov 2003 : Date of construction: 26 Nov 2003 : Date of completion: 3 Dec 2004 : Date of commissioning: 18 Dec 2004 - Phase II) : Date of contracting: 23 Aug 2004 : Date of construction: 30 Aug 2004 : Date of completion: 16 Aug 2005 : Date of commissioning: 25 Jun 2005 - Phase III) : Date of contracting: 21 Jul 2005 : Date of construction: 27 Jul 2005 : Date of completion: 6 Nov 2006 : Date of commissioning: 6 Nov 2006	
CAR 8 : There is no definite definition which metering reading is chose for baseline indicator to be monitored.	B.10. 1	Definition of the metering reading is defined in the revised PDD and location of the metering also is described in the PDD.	CAR 8 is closed.

CL 1 : Under section A.4.2 of the PDD, project component should comprise 'how environmentally safe and sound technology and know-how is being applied by the project activity interalia technology transfer to the Host Party (ies) for the project activity'. However this is not described in the PDD. Also operation data such as start, normal and stop speed of the turbines and URL of the turbine manufacturing company are not presented correctly in the PDD.	A.3.2	Under section A.4.2 of PDD, the project proponent has properly included the proper explanation of how the project activity is environmentally safe and sound and know-how is being applied for the project activity. Also operating data such as start, normal and stop speed are provided in the PDD and correct URL (www.vestas.com, www.gamesa.es) of the turbine manufacturing company is descried in the section A.4.2 in the PDD.	CL 1 is closed.
CL 2 : Contract/Provision information on meeting training and maintenance needs is not well described in the PDD whereas the project developer and technology provider contracted that technology provider give the training program to operators of the project developer.	A.3.3	Evidence of the contract/provisions for the meeting training and maintenance need are submitted to DOE and DOE has ascertained it by reviewing contract/provisions. Also DOE has identified that one of training course for operation & maintenance already took placed from 29 July 2006 to 14 August 2006.	CL 2 is closed.
CL 3 : The source of NCVi, EF_{CO2i}, for calculating $COEF_i$ are not clearly defined in the PDD.	B.2.6	The source of NCVi, EF_{CO2i}, for calculating $COEF_i$ are clearly defined in the section B.6 in the final PDD.	CL 3 is closed.
CL 4 : Through the section B.7.1 in the PDD gives the description of monitoring. . However the monitoring plan in the PDD does not cover the requirements for record keeping. i.e the retention time of EGy data.	B.10.1	Retention time of EGy data, 2 years after the last issuance of CERs, have been determined and put in practice and, reflected in the revised PDD.	CL 4 is closed.
CL 5 : QA/QC procedure for monitoring equipments such as calibration period of meter and measurement method of monitoring parameter is not fully described in the PDD.	B.10.1	The transmission electricity meters will be calibrated periodically in compliance with the relevant regulations/standards. This meter reflects electricity consumed in project site and it is deducted for electricity generation by this project activity. And the electricity supplied to the Korean grid will be double-checked by receipt of sales.	CL 5 is closed.

CL 6 : Role and responsibility for monitoring emission reductions and authority or responsibility for registration, monitoring, reporting are not defined in the PDD.	B.10.1/B.13.2	Role and responsibility for monitoring emission reductions and authority or responsibility for registration, monitoring, reporting are described in the section B.7 of the revised PDD.	CL 6 is closed.
CL 7 : Expected environmental impact during the construction and operation of wind power plant was considered in a point of precautionary approach, 'the research for availability of wind power resource in Taebaek city'. However environmental analysis result included this study is not sufficiently described in section D of PDD.	E.4	PDD is revised regarding to CL 7 and validation team has confirmed that there were no significant environmental impacts by reviewing evidence submitted by PP and interviewing with stakeholder.	CL 7 is closed.
CL 8 : All comments received from local stakeholders in the public hearing and due account of the all stakeholder comments received has been taken are not well provided in PDD whereas these are all identified during on-site assessment.. Also summary of the public solicitation of comments from other Parties, stakeholder and non-governmental organizations is not mentioned in section E, Stakeholder's comments, of the PDD while on the other hand PP has plan to take any of stakeholder comment received through UNFCCC website: http://cdm.unfccc.int/Projects/Validation during on 21 July 2007 until 19 August 2007	E.4, E.5	All comments from local stakeholder and due account taken by PP are provided in the section E.3 of the revised PDD. And there was no comment from the public comments about this project activity.	CL 8 is closed.

Appendix B
Qualification of Validation Team

Appendix B. Qualification of Validation Team

IQNet

GHG Validator/Verifier Certificate

Sang-Yong Lee

Certificate number: GHG 04003

Sectoral Scope: 01,02,03,04,05,08,09,10,11,12,13

Expert Scope: 01,02,03,04,05,09,10,11,12,13

Date: 9 MAY 2007

This validator/verifier is qualified by KFQ's Qualification requirements to conduct validation and verification for Carbon offset project and organization's Greenhouse Gas Emissions Report.

Valid until: 8 May 2010

Authorized by Korean Foundation for Quality

kfq 한국품질재단 한국품질인증센터 Korean Foundation for Quality

재단법인 한국품질재단 한국품질인증센터

이 사 장 김 우 현

IQNet

GHG Validator/Verifier Certificate

Jong-Mun Park

Certificate number: GHG 04005

Sectoral Scope: 04,05,08,10,11,12,13

Expert Scope: 04,05,08,10,11,12,13

Date: 9 MAY 2007

This validator/verifier is qualified by KFQ's Qualification requirements to conduct validation and verification for Carbon offset project and organization's Greenhouse Gas Emissions Report.

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kfq 한국품질재단 한국품질인증센터 Korean Foundation for Quality

재단법인 한국품질재단 한국품질인증센터

이 사 장 김 우

Appendix B. Qualification of Validation Team