VALIDATION REPORT

YEONG YANG 61.5 MW WIND FARM PROJECT

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VALIDATION REPORT

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Client: Yeong Yang Wind Power Corporation		Client ref.: Sang Young JOO

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Summary:

Korean Foundation for Quality (KFQ) has been authorized by Yeong Yang Wind Power Corporation to validate the Yeong Yang 61.5 MW Wind Farm 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.

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

The Yeong Yang Wind Farm Project is located on Maengdong mountain area in Yeongyang-gun and Yeongduk-gun in Gyeongsangbuk-do of the Republic of Korea. The Project consists of 41 wind turbines, has a capacity of 61.5 MW generating 180,749 MWh annually. The expected CO_2 reduction is 112,812 ton per year.

As the result of the validation, it can be confirmed that the Yeong Yang 61.5MW Wind Farm Project, as described in the revised PDD of 25 September, 2008(Ver 9), meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baselines and monitoring methodology ACM 0002(Ver.06). KFQ thus requests the registration of the project as a CDM project activity.

Work carried out by :	Work Verified by :
Yu Shim Jeong (Audit team Leader, GHG auditor) Jin Pyoung An (Audit team member, GHG auditor) Mi jung Lee(Audit team member, Observer)	Jong Moon Park

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
GHG	Greenhouse gas(es)
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 been engaged by Yeong Yang Wind Power Corporation to perform a validation of the 'Yeong Yang 61.5MW Wind Farm Project' in Korea. 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 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 on Maengdong Mountain area in Yeongyang-gun and Yeongduk-gun in Kyungsangbuk-do province of the Republic of Korea. The Project consists of 41 wind turbines and turbine type is AW-77/1500 class II 60 Hz from ACCIONA WIND POWER in Spain which has a capacity of 1.5 MW generating 180,749 MWh annually.

The expected CO_2 reduction is estimated to be 112,812 tCO2e per year and 1,128,120 tCO2e 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:

Yu Shim JEONG (Audit team leader, GHG auditor)
Jin Pyoung AN (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 Yeong Yang 61.5MW Wind Farm Project 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 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 for Clean Development Mechanism Project Activity			
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 2 are linked to checklist questions the project should meet. The checklist is organised in five 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 04 was submitted 6 November 2007 and reviewed with additional background documents related to the project design including baseline and additionality of the project.

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

- Changes related to the CARs and CLs identified in the KFQ's draft validation report

- Changes related to the incorrect translation of Korean Company name

2.2 Follow-up Interviews with Project Stakeholders

In the period of 13 December 2007 to 14 December 2007, KFQ performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. The main topics of the interviews are summarised in Table 1.

Table 1 Interview topics

Interviewed organisation	Interview topics
Yeong Yang Wind Power Corporation - Sang Young Joo - Sung Bin Kim - Chang Suk Lee	➢ Project design ➢ Project technology, operation, maintenance ➢ Sustainable development issues ➢ Monitoring plan ➢ Environmental impacts(incl. EIA approval) ➢ Stakeholder consultation process
Acciona Energia SPAIN and Ecosense - Paz Nachon Lopez - Eva - Nuria Iturriagagoitia - Jong Ik Yoo - Sang Yeon Park	➢ Applicability of selected methodology ➢ Baseline determination ➢ Additionality ➢ Emission reductions calculation ➢ Crediting Period ➢ Approval by the host country
Yeong Yang Country Office - Kwang Chul Shin - Sang Kun Park	➢ Environmental issues ➢ Stakeholder comments ➢ Sustainable development issues
Village chief - Jeong Se Lee - Oh Kyung Kwan	➢ Environmental issues ➢ Stakeholder comments ➢ Sustainable development issues

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, twelve Corrective Action Requests (CAR) and nine requests for Clarification (CL) were identified. These requests were presented to the project participant in a draft validation report in 4 January 2008. The additional information provided by the project participant to address theses requests and revised PDD of 25 September 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 proceeded request for registration, the final validation report and 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.

3.1 Participation Requirements

Korea has ratified the Kyoto Protocol and meets all participation requirements. The DNA of Korea has established clear CDM approval procedures, which include a thorough assessment of the project's capacity to reduce GHG emission and its alignment with Korean law, its environmental legislation and its sustainable development policies.

The DNA of the Republic of Korea has issued a Letter of Approval on 19 April 2008, authorizing Yeong Yang Wind Power Corporation as a project participant and has provided confirmation that the project assists in achieving sustainable development.

3.2 Project Design

The Yeong Yang 61.5MW Wind Farm Project sites are located on Maengdong Mountain area Yeongyang-gun and Yeoungduk-gun in Kyungsangbuk-do province of the Republic of Korea. The Project consists of 41 wind turbines and turbine type is AW-77/1500 class II 60 Hz from ACCIONA WIND POWER which has a capacity of 1.5 MW generating 180,749 MWh annually. The expected CO_2 reduction is estimated to be 112,812 tCO2e per year and 1,128,120 tCO2e over the 10 year crediting period.

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 (GHG) emission reductions by avoiding CO_2 emissions from electricity generation mainly by fossil fuel power plants.

Starting date of the project activity is 28 February 2007 and the expected operational lifetime of the project activity is 20 years. A fixed crediting period of 10 years has been chosen for the project, starting from August 1, 2008.

The project contributes to sustainable development in the following ways:

- By displacing the electricity that would otherwise be generated in other fossil fuel-based power plants, the project activity will reduce GHGs emissions by 112,812 t CO2 annually. Wind energy is a clean energy source, and operation does not produce GHGs neither carbon dioxide, sulphur dioxide, mercury, particulates nor any other type of air pollution, as do conventional fossil fuel power source and will provide to future generations with environmental friendly fuel alternatives.

- The project contributes to the sustainable development of local communities with the creation of direct, indirect employments in the region.

- The local community will receive additional benefits through the advance technology and know how transfer from the trained engineers from Acciona Energia. Company policy includes training for employees. In the case of O&M employees, training takes place in the country of operation and, when necessary, through intensive training course in Spain, where employees can benefit from Acciona's extensive experience.

The funding for the project does not lead to a diversion of official development assistance as according to the information obtained by the validation team. Financing of his project activity is planed through the Capital from project participant and commercial lending.

Nevertheless, CAR 1, CL 1, CL 2 and CL 3 had to be raised in the course of the validation and were successfully closed (ref Annex: Validation Protocol- Table 3).

3.3 Baseline Determination

The project applies the approved baseline and monitoring methodology ACM 0002_version 06: Consolidated baseline methodology for grid-connected electricity generation from renewable sources. The use of this methodology is appropriate as the project activity involves electricity capacity additions through wind sources.

The applied baseline methodology is justified as it has been demonstrated that the 'Yeong Yang 61.5MW Wind Farm 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 and information on the characteristics is available.
  : According to ACM 0002(Version 06), the spatial extent of the project boundary includes the project site and is physically connected to the electricity system of Korea Electricity system of Korea Electric Power Corporation (KEPCO). The defined project boundary is in line with ACM 0002. Data and information on the KEPCO are available by the KEPCO Statistics of Electric Power in Korea.

Thus, electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the Combined Margin (CM) calculated latter.

For calculation of Operating Margin, dispatch data analysis should be first choice according to ACM 0002 currently. But 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-const/run resources constitute 42.44% which is less than 50% of the total grid generation in average of the five most recent years.

To calculate the Build Margin emission, there are two different options to choose. Based on forecast for the electricity composition in the source energy, in vase on 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(20.35%) 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.

Nevertheless, CAR 2, CAR 3, CAR 4, CAR 5, CL 4 and CL 5 had to be raised in the course of the validation and were successfully closed (ref Annex: Validation Protocol- Table 3).

3.4 Additionality

Proposed project activities with a start date before 2 August 2008 are required to demonstrate that the CDM was seriously considered in the decision to implement the project activity. For this, validation team has reviewed ACCIONA ENERGIA's internal meeting minutes and records including BOD meeting minutes, and communicating record etc. which showed that ACCIONA ENERGIA were considered this proposed project activity as CDM project since 2006.

ACCIONA ENERGIA, 100% shareholder of 'Yeong Yang Wind Power Corporation' who is the project participant of this proposed project activity, approved this project on 8 January 2007 in their board meeting based on the document titled 'Executive project summary-Acciona Energia Yeong Yang Wind Farm(Corea)' dated 7 January 2007.

These evidences demonstrated that CDM benefits were seriously considered necessary in the decision to undertake the project as a CDM project activity.

In conclusion, KFQ validation team confirmed that the prior consideration of CDM benefits of the project activity was performed by PP before staring date of this proposed project activity, 28 February 2007.

Additionality has been demonstrated and assessed by applying the 'Tool for the demonstration and assessment of additionality' version 03 approved by the CDM Executive Board.

- Step 1. Identification of alternatives to the project activity consistent with current laws and regulations:
  - Sub-step 1a) Define alternatives to the project activity

    Considering the back ground of the investor, the technology and circumstances, the only realistic alternatives are

    ① the proposed project is not undertaken as CDM project activity

    ② Construction of a power plant using other source of renewable energy with equivalent amount of installed capacity or equivalent amount of annual electricity output

    ③ Supply of equivalent annual power output by the Grid where the proposed project is connected

  - Sub-step 1b) Consistency with mandatory laws and regulations

    Identified alternative scenarios to the project activity that are in compliance with mandatory legislation and regulation taking into account the enforcement in the region of country and EB decisions* on national and/or sectoral policies and regulations. Selected alternative is in line with applicable legislation, regulations and EB decisions.

    The second alternative is not considered a realistic alternative due to the lack of exploitable hydro resources in the proposed project site and topographically, wave and tidal source is impossible. Also owing to the project site is mostly surrounded by mountains, the plenty of sunshine for solar energy source is shortage and has not been well developed.

    The first alternative has been demonstrated that it has additionality by following steps, step 2~ step 4.

    Thus, the third alternative is the baseline scenario of proposed project activity.

- Step 2. Investment Analysis

  Yeong Yang wind farm project contains income other than CERs. Therefore Option I (Apply simple cost analysis) can not be selected since the project activity generates

* 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'.

revenues other than CDM related income. Thus the project participant has chosen option III, benchmark analysis.

- Sub step 2b) Option III: Apply benchmark analysis

The Project IRR has been selected as the financial indicator. According to the 'Tool for the demonstration and assessment of additionality', 7% is selected as benchmark rate. This benchmark rate is decided based on lending rates from the 2 commercial banks as more than 75% of total investment cost is loan capital. KFQ examined the 'Term loan agreement' from bank regarding to the proposed project and determined that the selection of benchmark rate is reasonable.

- Sub step 2c) Calculation and comparison of financial indicator

Based on the data in economic analysis report, the project IRR without CER revenues has been assessed to be 4.85% which is well below than the benchmark rate, 7%. This shows that the project is not financially attractive in the absence of CDM benefits.

Considering of the CERs sales revenues, the IRR of total investment of the project will be significantly increased from 4.85% to 5.28% with 5 EURO/t CO_2 and to 6.57% with 20 Euro/t CO_2.

IRR calculation results and all the financial data from the economic analysis report provided by project proponent has been validated by KFQ. The basic inputs figures of the calculation have been evidenced by the 'Executive Project Summary', official news/statistics reported to the public and interview with project stakeholders.

- Sub step 2d) Sensitivity Analysis

A sensitivity analysis has also been conducted on the IRR like below parameters with variation range ±5% and ±10%

: Total investment

: Total electricity generation

: Total cost of operating expense

: Electricity Tariff

According to sensitivity analysis, IRR of the project activity is all tend to lower than benchmark rate even considering those circumstances which could bring various

variations. Thus, the sensitivity analysis result consistently support the conclusion that proposed project activity is unlikely to be financially attractive.

KFQ has assessed the applied parameters and variation ranges are suitable for the proposed project and verified the analysis result.

- Step 4. Common Practice Analysis
  - Sub step 4a) Analysis other activities similar to the proposed project activity
    Despite of national policy, 'Alternative Energy Development Promotion Act' total electricity generation by wind power occupies still below than 0.1% according to the official statistics. Electricity generation by fossil fuel-base power plants is as dominated as over. KFQ validation team has examined the relevant documentary evidence such as statistics.

  - Sub step 4b: Discussion any similar options that are occurring
    On technology being used, scale, regulatory framework and region etc, there are only 2 similar ones would be the Gangwon Wind Park (98MW) and the Youngduk Wind Park (39.6MW), and these projects are registered as CDM project in UNFCCC. KFQ validation team has confirmed that wind project is not the common practice in Korea. .

To summarize the above, it is deemed that proposed project activity is additional as it would not have happened in the absence of CDM.

Nevertheless, CAR 6, CAR 7, CAR 12, CL 6 and CL 7 had to be raised in the course of the validation and were successfully closed (ref Annex: Validation Protocol- Table 3).

3.5 Monitoring Plan

The monitoring methodology is in line with the approved monitoring methodology, ACM 0002_ Ver.06 – Consolidated baseline methodology for grid-connected electricity generation from renewable sources. The selected monitoring methodology is applicable for the project activity as it involves grid-connected renewable power generation using wind energy.

The methodology is appropriate for the project activity because:

- there is suitable capacity for addition of electricity coming from wind sources
- there is sufficient and clear information given to identify the geographic and system boundaries for the relevant electricity grid in which the project activity is to be developed
- Data to calculate project emissions is obtainable

According to B.7.1 of the PDD version 9: 'there are two different energy measurement systems available in Korea following KPX and KEPCO: the first one relates the net generation directly, including consumption for operation. In the second one, two meters are used independently: an export meter (KPX) and an import meter (KEPCO). The first method will be used when the wind farm is in operation, therefore one meter will be monitor generation and internal consumption, giving the net generation. For this reason, the only measurement that is required in this case is the net energy sold to KEPCO.' This métier monitoring plan was verified and confirmed by validation team.

Yeong Yang Wind Power Corporation has the overall authority and responsibility for the project management including monitoring of every parameter for the accounting of reduction amount and reporting.

The monitoring plan for this project includes followings and project participants showed those procedures to KFQ.

- Responsibilities and Authorities for project management
- Operational and maintenance
- Calibration of electricity meter
- Emergency management, etc

Above procedures were developed referring to the 'General Procedure of Wind Power O&M' provided by Spain and also there is a plan to revise considering real situation after completion of construction.

KFQ validated this monitoring plan is in accordance with ACM 0002 and checked the preparedness for implementation of monitoring in practice.

Nevertheless, CAR 9, CAR 10, CAR 11 and CL 8 had to be raised in the course of the validation and were successfully closed (ref Annex: Validation Protocol- Table 3).

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 emission is calculating as net electricity supplied by the project activity to the grid (EGy in MWh) times baseline emissions factor (EFy in ton CO2/MWh).

First, Electricity supplied to the Korean grid by the project activity (EGy) is expected approximately 180,749 MWh/yr. In estimation of electricity generation, expected capacity factor, 33.55%, is applied.

In relation to the capacity factor, validation team has checked the capacity factor which is estimated in transparent and conservative manner with documentary evidence submitted by PP. Validation team has reviewed the study report on capacity factor of the proposed project activity that shows 33.55% capacity factor. As well as, validation team has checked the study data for and the real operation data from each 10 wind farms performed by Acciona across the world. The difference between study and real operational data is approximate ±3%. Validation team thus has reached to the conclusion that the capacity factor for proposed project activity is estimated reasonably and not be considered as overestimated.

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 0.7073 ton CO_2/MWh.
- BM is calculated to be 0.3745 ton CO_2/MWh.

- CM is calculated to be 0.6241 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 1,128,120 ton CO_2 is estimated as emission reduction over the crediting period of emission reduction. Validation team concluded that the GHG calculation is transparent and the amount of estimated emission reduction is reasonable.

Nevertheless, CAR 7 and CAR 8 had to be raised in the course of the validation and were successfully closed (ref Annex: Validation Protocol- Table 3).

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 Yeong Yang Wind farm whose facility capacity is 61.5MW, it is not required to be performed EIA.

Instead, in compliance with government requirements as specified in the Framework Act on Environmental Policy, an environmental assessment was undertaken and approved by Environmental Ministry in May 2007, and documented in the report entitled Yeong Yang Wind Farm Construction Preliminary Environmental Assessment Report (PERS).

The PERS covers the sectors of natural environment, residential environment, and social/economical environment. Every effort has been made to take into account and respond to all recommendations made to the PER in the course of government approval. As an example, the PER report includes a recommendation from the Environmental Ministry regarding the transmission lines: to change the drawing since originally it was on military air route. Accordingly, the transmission lines were redesigned to solve this issue.

The proposed project activity will not have significant impacts on the environment.

3.8 Comments by Local Stakeholders

To receive stockholder's comments related with the Yeong Yang 61.5MW Wind Farm Project, project executor held several project presentations to the stakeholders and newspaper report.

Summary of comments received are shown below:

- Stakeholders inquired as to the benefits of the project to the region
- Inquiry into the environmental effects of the wind farm, specifically regarding its effects on noise and water quality.
- Two stakeholders wanted the entrance road to the wind farm to be built closer to them to have convenient access.

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.

Nevertheless, CL 9 had to be raised in the course of the validation and is successfully closed (ref Annex: Validation Protocol- Table 3).

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

Korean Foundation for Quality published the project documents on http://cdm.unfccc.int/Projects/Validation on 21 November 2007 and invited comments within 20 December 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 'Yeong Yang 61.5 MW Wind Farm Project' in Republic of 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 refer to Article 12 of the Kyoto Protocol, the CDM modalities and subsequent decision by the 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, fulfils the participation criteria and have approved the project and authorized the project the participation. The DNA of KOREA has confirmed that the project will assist in achieving sustainable development.

The validation did not reveal any information that indicated that 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 investment 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 assessment team reviewed the estimation of the projected emission reductions.
We can confirm that the indicated amount of emission reductions of 1,128,120 ton CO_2 over a fixed crediting period of 10 years, resulting in a calculated annual average of 112,812 ton CO_2, represents a reasonable estimation using the assumptions given by the project documents.

The responsibilities and authorities of monitoring and maintenance 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 Yeong Yang 61.5MW Wind Farm Project, as described in the revised PDD of 25 September 2008(version 09), meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodology ACM 0002_Version 06. Thus the 'Yeong Yang 61.5MW Wind Farm Project' will hence be recommended by KFQ for registration as a CDM project to UNFCCC.

6 REFERENCES

Category 1 Documents:

List documents provided by the project proponent that relate directly to the project:

/1/ Yeong Yang Wind Power Corporation, Project Design Document – Yeong Yang 61.5MW Wind Farm Project, 31 August.2007 (Ver 4), 25 September 2008(Ver 9)

/2/ Ecosense, One supporting Excel spreadsheets on financial analysis report for Yeong Yang 61.5MW Wind Park Project, 16 November 2007(Ver 4), 25 April 2008(Ver 5)

/3/ Ecosense, One supporting Excel spreadsheets on OM & BM for Yeong Yang 61.5MW Wind Park Project, 16 November 2007 (Ver 3), 15 January 2008(Ver 4)

/4/ Yeong Yang Wind Power Corporation, Executive Project Summary: Acciona Energia Yeong Yang Wind Farm(Corea)_070107_Acciona

/5/ Yeong Yang Wind Power Corporation, AEI_Acta_CI-_YY_070108

/6/ Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual, Page 1.5

/7/ IEC 61400/page20

/8/ Turbine Prices 2002-2007. New Energy Finance. 29 October 2007

/9/ Quotation received on November 2006 from the potential wind turbine supplier

the bank loan agreement

/10/ The document submitted to request the Electric Business Permit on Nov. 2006

/11/ The mandate letter for the project financing of Yeong Yang wind power project on 21. Jan. 2008

/12/ the turbine supply and installation agreement on 13 Dec. 2007

/13/ the contract for construction of civil works on 6 July 2007

/14/ the draft agreements on upfront cost of land lease

/15/ http://www.energy.or.kr/

/16/ Point Carbon CDM&JI Monitor: rank 9 -11 euros for December 13th 2006; rank 7-15 euros for December 12th 2007

/17/ http://epsis.kpx.of.k

/18/ Construction permission of electric work by MOCIE(MKE)

Category 2 Documents:

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

/19/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF) : Validation and Verification Manual. http://www.vvmanual.info

/20/ CDM-EB,

- Revision to the approved consolidated baseline methodology ACM0002: Consolidated baseline methodology for grid-connected electricity generation from renewable sources (Version 06)
- Revision to the approved consolidated monitoring methodology ACM 0002: Consolidated monitoring methodology for zero-emissions grid-connected electricity generation from renewable source (Version 06)

/21/ CDM-EB

- Tool for the demonstration and assessment of additionality (Version 03)

Appendix A

Validation protocol for CDM project activities

Table 1. Mandatory Requirements for 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 proposed project activity is 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.3
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 B.6
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	~~No approval letter of Korea DNA.~~ Date of host country approval is 19 April 2008 and this is submitted to DOE from project participant.
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.6
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.2
7. In case public funding from Parties included in Annex I is used for the project activity, these Parties shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties.	D 17/CP.7 CDM M&P Appendix B. 2	OK	The project activity is proposed as a unilateral project. No public funding from an Annex I party is involved.
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 party and the participating Annex I party shall be a Party to the Kyoto Protocol.	CDM M&P 30/31a	OK	Republic of Korea has ratified the Kyoto Protocol on 8 November 2002. The project activity is proposed as an unilateral project. Thus, Annex I Party does not exist.

10. The participating Annex I Party's assigned amount shall have been calculated and recorded.	CDM M&P 31b	OK	The proposed project activity is proposed as a unilateral project.
11. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7.	CDM M&P 31b	OK	The proposed project activity is proposed as a unilateral project.
12. Comments by local stakeholders are invited, a summary of these provided and how due account was taken of any comments received.	CDM M&P 37b	OK	Table 2, Section E
13. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts and considered significant by the project participants of the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	CDM M&P 37c	OK	Table 2, Section D
14. Baseline and monitoring methodology shall be previously approved by the CDM Executive Board.	CDM M&P 37e	OK	Table 2, Section B.1.1 and B.7.1
15. 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.	CDM M&P 37f	OK	Table 2, Section B.7 to B.12
16. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 day, and the project design documents and comments have been made publicly available.	CDM M&P 40	OK	They were invited to provide comments through the CDM website during 30 days from 21 Nov. to 20 Dec. 2007. No comment was received.
17. A baseline shall be established in a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances.	CDM M&P 44c,d	OK	Table 2, Section B.2

18. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity of due to force majeure.	CDM M&P 47	OK	Table 2, Section B.2
19. The project design document shall be in conformance with the UNFCCC CDM-PDD format.	CDM M&P Appendix B, EB Decision	~~NO~~ OK	~~The CDM-PDD templates shall not be modified or deleted. A.4.4 and B.6.4 are altered in line with the CDM - PDD as these section was not along with template in PDD version 04.~~ CDM-PDD is in conformance with the UNFCCC CDM-PDD format version 3.

Table 2. Requirements Checklist

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

Question	Ref.	MoV	Comments	Draft. Concl.	Final Concl.
A. Project Description *The project design is assessed.*					
A.1. Project Boundaries *Project Boundaries are the limits and borders defining the GHG emission reduction project,*					
A.1.1. Are the project's spatial (geographical) boundaries clearly defined?	PDD A.4.1	DR,I	Full detail of the location of the project activity to identify geographical boundaries is not clearly described in the PDD.	**CL 1**	**OK**
A.1.2 Are the project's system (components and facilities used to mitigate GHGs) boundaries clearly defined?	PDD A.B.3	DR,I	The project has a capacity of 61.5MW, comprising 41 wind turbine generators to be put in operation. This will be physically connected to the electricity system of Korea Electric Power Corporation (KEPCO). Thus the power plant and the KEPCO are defined as the project's system boundary.	**OK**	**OK**
A.2. Technology to be used *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.2.1 Does the project design engineering reflect current good practices?	PDD A.4.3	DR,I	The project design engineering reflects current good practices. The project is located in mountain thus the wind turbine is designed to withstand the most demanding requirements found in wind farms located in mountainous sites. The turbine uses an automatic system that allows for a perfect alignment of the rotor with the wind direction and a stable interlocking in the optimal production position, guaranteed by its powerful braking system.	**OK**	**OK**

A.2.2 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.4.3	DR,I	Unlike wind farm project in Korea, Yeong Yang 61.5MW wind farm project developer, ACCIONA is developing the project activity as well as planning, constructing, operating and maintenance of the project activity. Therefore, better performance in generation from this project activity is expected.	**OK**	**OK**
A.2.3 Is the project technology likely to be substituted by other or more efficient technologies within the project period?	PDD A.4.3	DR,I	The project technology will not be likely substituted by other technology.	**OK**	**OK**
A.2.4 Does the project requires extensive initial training and maintenance efforts in order to work as presumed during the project period?	PDD A.2/ B.7.2	DR,I	The PDD does not include plan for initial training and maintenance.	**CL 2**	**OK**
A.2.5 Does the project make provisions for meeting training and maintenance needs?	PDD B.7.2	I	There are 2 programs for training and maintenance, Five weeks training program and six months training program.	**OK**	**OK**
A.3. Contribution to Sustainable Development *The project's contribution to sustainable development is assessed*					
A.3.1 Is the project in line with relevant legislation and plans in the host country?	PDD A.2	DR,I	Preliminary Environmental Assessment was undertaken and approved by government authority. Comments from the authority in the course of approval process need to be documented in the PDD.	**CL 3**	**OK**
A.3.2 Is the project in line with host-country specific CDM requirements?	PDD A.2	DR,I	No approval letter of Korea DNA.	**CAR 1**	**OK**
A.3.3 Is the project in line with sustainable development policies of the host country?	PDD A.2	DR,I	Refer to A.3.2.	**CAR 1**	**OK**
A.3.4 Will the project create other environmental or social benefits than GHG emission reductions?	PDD A.2	DR,I	According to PDD, the project improve energy security, air quality and local livelihoods as well as assist development of domestic sustainable renewable energy industry. During the on site assessment those benefits were assessed and audit team also found that Yeong Yang Country Office has plan for developing tourist spot through this project activity.	**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 correct version thereof?	PDD B.1	DR	The project applies the approved methodology ACM0002 version 06: consolidated baseline methodology for grid-connected electricity generation from renewable sources.	**OK**	**OK**
B.1.2. Is the baseline methodology the one deemed most applicable for this project and is the appropriateness justified?	PDD B.2/ B.3	DR	Approved baseline methodology ACM0002 is applicable to grid-connected renewable power generation project activities under several applicability conditions. Wind project should be satisfied 3 conditions among 4 applicability conditions. The geographical and system boundaries for the relevant electricity grid can be clearly identified and information on the characteristics of the grid is available. However, the PDD is not demonstrated one of the applicability conditions, 'The geographic and system boundaries for the relevant electricity grid can be clearly identified and information on the characteristics of the grid is available'. Baseline and project emission sources included in the project activity and justice of it are not described correctly in the PDD.	**CL 4** **CL 5**	**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. Is the application of the methodology and the discussion and determination of the chosen baseline transparent?	PDD B.2	DR, I	The project activity does not involve modification or retrofitting an existing power generation facility. The baseline scenario is power generated by the project activity and fed to KEPCO grid would have been generated by the operation of plants connected to the grid as represented by the baseline emission factor of the grid. The discussion and determination of the chosen baseline is transparent.	**OK**	**OK**

B.2.2. Has the baseline has been determined using conservative assumptions where possible?	PDD B.6	DR	Load factor for this project activity is 33.55% and this is calculated by Acciona Energia. This load factor is higher than other load factor for the wind projects in Korea. The reason of this is that rate of mechanical trouble for the project activity is low as the project developer, Acciona, is managing for integrating from developing, planning, constructing, operating to maintaining of the project activity. Also, prompt respond to mechanical trouble will be taken during crediting period. Audit team checked that this load factor is not overestimated during desk review, site visiting. However evidence of that this load factor is reasonable and suitable for the project is not sufficient to support conservativeness of assumption. Every data and parameters such as Fi,j,y, GENi,y, NCVi, OXIDi, Operational time, EF_{OM}, y and EF_{BM}, y to get EFy are missed out in the PDD.	**CAR 2**	**OK**
B.2.3. Has the baseline been established on a project-specific basis?	PDD B.4	DR	The project is applied the approved methodology ACM0002 version 06: consolidated baseline methodology for grid-connected electricity generation from renewable sources	**OK**	**OK**
B.2.4. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	PDD B.4/ B.5	DR	According to EB 16th meeting report, this project activity was 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 subsidy through compensation for difference between generation costs by MOCIE, was applied to the investment analysis. Additionally in the calculation of investment analysis, the unit cost of purchase for Yeong Yang wind farm is 81.5 won/KWh which is applied SMP (Jan.2007~Aug.2007). Based on electricity law, SMP price is adopted from wind power unit cost prior to the notice of official price. According to the EB 22 meeting report, "Clarifications on the treatment of national and/or sectorial policies and regulations in determining baseline scenarios", 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.	**OK**	**OK**

B.2.5 Is the baseline determination compatible with the available data?	PDD B.4/ B.6.1	DR,I	Instead of Net calorific value for fuel gross calorific value is used in OM calculation procedures. There is data error in the process of EF_{OM} calculation as the total generation of electricity based on the source of energy in 2002 is not correct compare to the reference data. According to ACM 0002 plants already built for sample m at the time of PDD submissions, the sample group m should be the power plant capacity additions in the electricity system that comprise 20% of the system generation and that have been built most recently. However this is not correctly reflected in BM calculation procedures as several power plant capacity additions registered as CDM project activities in 2007 are excluded.	**CAR 3** **CAR 4** **CAR 5**	**OK** **OK** **OK**
B.2.6 Does the selected baseline represents the most likely scenario among other possible and/or discussed scenarios?	PDD B.4	DR	The practical and feasible baseline scenario for project activity is 'supply of equivalent annual power output by the Grid where the proposed project is connected' and this is well described in the PDD.	**OK**	**OK**
B.2.7 Is it demonstrated/justified that the project activity itself is not a likely baseline scenario?	PDD B.4/ B.5	DR,I	It is not explained that other sources of renewable energy as one of alternatives is not a likely baseline scenario. As required by ACM0002, additionality has been assessed by applying the 'Tool for the demonstration and assessment of additionality'. • Step 1. Identification of alternatives to the project activity consistent with current laws and regulations Sub-step 1a)Define alternatives to the project activity: Considering the back ground of the investor, the technology and circumstances, the only realistic alternatives are ① The proposed project not taken as CDM project activity. ② Construction of a power plant using other source of renewable energy with equivalent amount of installed capacity or equivalent amount of annual electricity output ③ Supply of equivalent annual power output by the Grid where the proposed project is connected Sub-step 1b) Consistency with mandatory laws and regulations: Identified realistic and credible alternatives scenario to the project activity that are in compliance with mandatory legislation and regulation	**CL 6**	

			taking into account the enforcement in the region of country and EB decisions on national and/or sectoral policies and regulations. Selected alternative is in line with applicable legislation, regulations and EB decisions. The second alternative is not considered a realistic alternative due to the lack of exploitable hydro resources in the proposed project site and topographically, wave and tidal source is impossible. Also owing to the project site is mostly surrounded by mountains, the plenty of sunshine for solar energy source is shortage and has not been well developed. The first alternative has been demonstrated that it has additionality by following steps, step 2~ step 4. Thus, the third alternative is the baseline scenario of proposed project activity. • Step 2. Investment Analysis Yeong Yang wind farm project contains income other than CERs. Therefore Option I(Apply simple cost analysis) can not be selected since the project activity generates revenues other than CDM related income. Thus the project participants have chosen option III, benchmark analysis. Sub step 2b) Option III: Apply Benchmark analysis 10 year government bond rate which is selected as benchmark rate is inconsistent with reference (KSDA: Korea Securities Dealers Association). And project participant do not justify that used benchmark rate is appropriate for the proposed project activity. Sub step 2c) Calculation and comparison of financial indicator The IRR of the proposed project activity is not calculated correctly due to misuse of excel function. Based on the data in economic analysis report, the IRR without CER revenues has been assessed to be 4.85% which is well below than the benchmark rate, 7%. This shows that the project is not financially attractive compare to the benchmark in the absence of CDM benefits.	**CAR 6**	**OK**

			Considering of the CERs sales revenues, the IRR of total investment of the project will be significantly improved from 4.85% to 5.28% with 5 EURO/t CO2 and to 6.57% with 20 Euro/t CO2. All the financial data from the economic analysis report provided by project proponent has been validated by KFQ. The basic input figures of the calculation have been evidenced by the 'Executive Project Summary', official news/statistics reported to the public and interview with project stakeholders Sub step 2d) Sensitivity Analysis In sensitivity analysis, the electricity generation and total investment are core factor of wind project but these have not been practiced. And reason/appropriateness of the selected variation range is not explained to DOE. IRR of the project with CER income is performed and well described in the PDD. However evidence of IRR of the project with CER income is omitted in Excel Sheet. • Step 3. Barrier analysis Step 3 is not necessary if after the sensitivity analysis it is concluded that the proposed project activity is unlikely to be the most financially attractive. PP described this part for providing additional information. Thus, KFQ had not assessed this step based on the additionality tool. We confirmed tat there is no material distorted information in this part. • Step 4. Common Practice Analysis Sub step 4a) Analysis other activities similar to the proposed project activity According to sub-step 4a of the additionalilty tool, project participant shall provide an analysis of any other activities similar to the proposed project activity whether and to which extent similar activities have already diffused in the relevant region. Sub step 4b) Discussion any similar options that are occurring		

			On technology being used, scale, regulatory framework and region, etc, there are only 2 similar ones would be the Gangwon Wind Park (98MW) and the Youngduk Wind Park (39.6MW). And these projects are registered as CDM project in UNFCCC. We have been confirmed that wind park project in not common practice in Korea.		
B.2.8 Have the major risks to the baseline been identified?	PDD B.4	DR	No major risks are foreseen as the mix of the grid components are unlikely to change in the near future.	**OK**	**OK**
B.2.9 Is all literature and sources clearly referenced?	PDD B.5/ B.6.2	DR,I	Source of data used for the annual estimated operational rate/time is Acciona Energia not Korea Energy Economics Institute. However this information is not correctly described in the PDD. IRR of the proposed project is inconsistent between PDD and excel sheet.	**CL 7**	**OK**
B.3 Calculation of GHG Emission Reductions – Project emissions *It is assessed whether all material GHG emission sources are addressed and how sensitivities and data uncertainties have been addressed to arrive at conservative estimates of projected emission reductions.*					
B.3.1 Are all aspects related to direct and indirect GHG emissions captured in the project design?	PDD B.3/ B.6.4	DR	The project emissions are considered zero in accordance with the approved methodology.	**OK**	**OK**
B.4 Calculation of GHG Emission Reductions – Baseline emissions *The validation of ex-ante estimated baseline GHG emissions focuses on transparency and completeness of calculations*					
B.4.1 Have the most relevant and likely operational characteristics and baseline indicators been chosen as reference for baseline emissions?	PDD B.3	DR,I	Refer to B.2.	**CL 5/7 CAR 2/3/4/5/ 6**	**OK**
B.4.2 Are the baseline boundaries clearly defined and do they sufficiently cover sources and sinks for baseline emissions?	PDD B.3	DR	Baseline boundaries are established according to rules of the approved methodology ACM 0002.	**OK**	**OK**

B.4.3 Are the GHG calculations documented in a complete and transparent manner?	PDD B.6.3	DR	Calculation with the actual data for baseline emissions is not provided in section B.6.3 in the PDD.	**CAR 7**	**OK**
B.4.4 Have conservative assumptions been used when calculating baseline emissions?	PDD B.6.3	DR	Refer to B.2.	**CL 5/7 CAR 2/3/4/5/ 6**	**OK**
B.5 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.5.1 Are potential leakage effects beyond the chosen project boundaries properly identified?	PDD B.6.3	DR	N/A	**OK**	**OK**
B.6 Emission Reductions *Validation of ex-ante estimated emission reductions.*					
B.6.1 Will the project result in fewer GHG emissions than the baseline scenario?	PDD B.6.3/ B.6.4	DR,I	Yes, The wind resource calculation performed (equivalent annual operating hours) has to be provided as the estimated production is a key figure for CERs calculation and additionality assessment. However, the equation for EF_{OM} is not correct. Average of generation-weighted and the numerical mean are different. Therefore calculation relate to EF_{OM} should re-calculated after alteration of the EF_{OM}.	**CAR 8**	**OK**
B.7 Monitoring Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					
B.7.1 Is the monitoring methodology previously approved by the CDM Executive Board?	PDD B.7.2	DR	Yes, The project is applied approved methodology ACM0002 version 06: consolidated baseline methodology for grid-connected electricity generation from renewable sources	**OK**	**OK**
B.7.2 Is the monitoring methodology applicable for this project and is the appropriateness justified?	PDD B.7.2	DR	Yes, The appropriateness of the monitoring methodology is justified in the PDD.	**OK**	**OK**
B.7.3 Does the monitoring methodology reflect good monitoring and reporting practices?	PDD B.7.2	DR	Yes. The monitoring methodology reflects good monitoring and reporting practice.	**OK**	**OK**

B.7.4 Is the discussion and selection of the monitoring methodology transparent?	PDD B.7.2	DR	Yes. The discussion and selection of the monitoring methodology transparent.	**OK**	**OK**
B.8 Monitoring of Project Emissions *It is established whether the monitoring plan provides for reliable and complete project emission data over time.*					
B.8.1 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.7.1	DR	N/A	**OK**	**OK**
B.9 Monitoring of Baseline Emissions *It is established whether the monitoring plan provides for reliable and complete baseline emission data over time.*					
B.9.1 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	The electricity generation shall be measured hourly and recorded monthly according to the methodology. And allowable range for the transmission electricity is not -0.2%.	**CAR 9**	**OK**
B.9.2 Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	PDD B.7.1	DR	According to B.7.1 of the PDD version 9: 'there are two different energy measurement systems available in Korea following KPX and KEPCO: the first one relates the net generation directly, including consumption for operation. In the second one, two meters are used independently: an export meter (KPX) and an import meter (KEPCO). The first method will be used when the wind farm is in operation, therefore one meter will be monitor generation and internal consumption, giving the net generation. For this reason, the only measurement that is required in this case is the net energy sold to KEPCO.' This monitoring plan was verified and confirmed by validation team. However, The EF_{OM}, EF_{BM} are not need not be monitored if these factors has been calculate using the ex-ante method.	**CL 8**	**OK**

B.9.3 Will it be possible to monitor/measure the specified baseline indicators?	PDD B.7.1	DR	Refer to B.9.2.	**CL 8**	**OK**
B.10 Monitoring of Leakage *It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.*					
B.10.1 Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?			N/A	**OK**	**OK**
B.11 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.11.1 Does the monitoring plan provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?			N/A	**OK**	**OK**
B.12 Project Management Planning *It is checked that project implementation is properly prepared for and that critical arrangements are addressed.*					
B.12.1 Is the authority and responsibility of overall project management clearly described?	PDD B.7.2	DR,I	Yeong Yang Wind Power Corporation has the authorities and responsibility of project activity management.	**OK**	**OK**
B.12.2 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.	**CAR10**	**OK**
B.12.3 Are procedures identified for training of monitoring personnel?	PDD B.7.2	DR,I	The procedures for training of monitoring personnel is identified during the on site assessment.	**OK**	**OK**
B.12.4 Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	PDD B.7.2	DR,I	The procedures for emergency preparedness for cases where emergencies can cause unintended emissions is identified during the on site assessment.	**OK**	**OK**

B.12.5 Are procedures identified for calibration of monitoring equipment?	PDD B.7.2	DR,I	Frequency for electricity generation meter calibration is not determined in the PDD.	**CAR11**	**OK**
B.12.6 Are procedures identified for maintenance of monitoring equipment and installations?	PDD B.7.2	DR,I	Refer to 12.5.	**CAR11**	**OK**
B.12.7 Are procedures identified for monitoring, measurements and reporting?	PDD B.7.2	DR,I	Yes, However authorities and responsibilities for monitoring measurements and reporting are not clear. Refer to B. 12. 2.	**CAR10**	**OK**
B.12.8 Are procedures identified for day-to-day records handling(including what records to keep, storage area of records and how to process performance documentation)	PDD B.7.2	DR,I	Yes, procedures for day-to day records handling is identified during the on site assessment.	**OK**	**OK**
B.12.9 Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	PDD B.7.2	DR,I	Refer to B.12.5.	**CAR11**	**OK**
B.12.10 Are procedures identified for review of reported results/data?	PDD B.7.2	DR,I	Refer to B.12.7	**CAR10**	**OK**
B.12.11 Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	PDD B.7.2	DR,I	Refer to B.12.7	**CAR10**	**OK**
B.12.12 Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	PDD B.7.2	DR,I	Refer to B.12.7	**CAR10**	**OK**
B.12.13 Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	PDD B.7.2	DR,I	Refer to B.12.7	**CAR10**	**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, I	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 construction date is 1 November 2007. However the starting date of the project activity is determined as June 2008 in the PDD. Thus starting date of the project activity should be at least prior to or at the construction date.	**CAR12**	**OK**
C.2 Is the start of the crediting period clearly defined and reasonable?	PDD C.2.2. 1	DR,I	Crediting period should be reviewed the result of corrective action related to starting date of project activity and expected registration date.	**CAR12**	**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	The PDD presents a summary of the PER. According to the PDD, this project is environmentally feasible.	**OK**	**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, I	Yes, Korea requires a PER for such projects which has been completed and approved in may, 2007 Every effort has been made to take into account and respond to all comments made to the PER.	**OK**	**OK**
D.3 Will the project create any adverse environmental effects?	PDD D.1	DR, I	The PDD gives a summary of adverse environmental impacts that are likely to be created as a result of the project activity.	**OK**	**OK**
D.4 Are transboundary environmental impacts considered in the analysis?			N/A	**OK**	**OK**
D.5 Have identified environmental impacts been addressed in the project design?	PDD D.1	DR, I	Refer to D.2.	**OK**	**OK**
D.6 Does the project comply with environmental legislation in the host country?	PDD D.1	DR, I	Refer to D.2.	**OK**	**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	Public hearings from the local stakeholders were held twice, on 21 Nov 2005 and 1 Oct 2007 and the local stakeholders signed their support for the development of the project.	**OK**	**OK**
E.2 Have appropriate media been used to invite comments by local stakeholders	PDD. E.1	DR, I	The project activity is reported by Maeil newspaper to invite comments by local stakeholders.	**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	Yes it has been conducted in accordance with the stipulations.	**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 public hearing and due account of the all stakeholder comments received has been taken are not well described in the PDD whereas these are all identified during validation.	**CL 9**	**OK**
E.5 Has due account been taken of any stakeholder comments received?	PDD E.3	DR, I	Refer to E.4.	**CL 9**	**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 : Host Government Approval has not obtained. This document is a prerequisite for registration as per CDM Modalities & Procedures 40(a).	A.3.2, 3.3	The DNA of the Republic of Korea has issued a Letter of Approval on 19 April 2008 and it confirms that the project assists in achieving sustainable development.	CAR 1 is closed.
CAR 2 : Every data and parameters such as Fi,j,y, GENi,y, NCVi, OXIDi, Operational time, EF_{OM}, y and EF_{BM}, y to get EFy are missed out in the PDD. During validation, Audit team found that the load factor is not overestimated. However evidence of that this load factor is reasonable and suitable for the project is not sufficient to support conservativeness of assumption.	B.2.2	All data and parameters to get EFy have been included in the revised PDD. Sufficient description of the selected load factor has been submitted to DOE.	CAR 2 is closed.
CAR 3 : Instead of Net calorific value for fuel, gross calorific value is used in OM calculation procedures.	B.2.5	According to ACM 0002(Ver 06), NCV data is used in OM and BM calculation. As there are no NCV data of the fuel in Korea, PP converted GCV to NCV based on the Revised 1966 IPCC Guidelines for National Greenhouse Gas Inventories. And the GCV data used to calculate the OM and BM is based on the 'Power Generation Statistics on Electricity Generation of year 2004 ~ 2006' from Korea Electric Power Corporation. In IPCC 1996 and 2006 guideline, the IEA assumes that net calorific values are 5 per cent lower than gross calorific values for oil and coal, and 10 per cent for natural gas. (See Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual, Page 1.5)	CAR 3 is closed.

		Thus, PP considered this in OM and BM calculation. And validation team confirmed that conversion approach of this is reasonable under Korea situation as it derives more conservative value	
CAR 4 : There is data error in the process of EF_{OM} calculation as the total generation of electricity based on the source of energy in 2002 is not correct compare to the reference data	B.2.5	The total generation of electricity based on the source of energy in 2002 has been updated in the revised PDD.	CAR 4 is closed.
CAR 5 : According to ACM 0002 plants already built for sample m at the time of PDD submissions, the sample group m should be the power plant capacity additions in the electricity system that comprise 20% of the system generation and that have been built most recently. However this is not correctly reflected in BM calculation procedures as several power plant capacity additions registered as CDM project activities in 2007 are excluded.	B.2.5	According to ACM0002, BM has been re-calculated to 0.3745 from 0.3979.	CAR 5 is closed.
CAR 6 : 10 year government bond rate which is selected as benchmark rate is inconsistent with reference (KSDA: Korea Securities Dealers Association). The IRR of the proposed project activity is not calculated correctly due to misuse of excel function. And project participant do not justify hat used benchmark rate is appropriate for the proposed project activity. In sensitivity analysis, electricity generation and total investment are core factors of wind project but these have not been practiced. And the reason/appropriateness of the selected variation range is not explained to DOE. IRR of the project with CER income is performed and well described in the PDD. However evidence of IRR of the project with CER income is omitted in Excel Sheet.	B.2.7	Project IRR has been selected as the financial indicator and recalculated IRR is 4.85% Benchmark rate is changed from 10 yr government bond to lending rate, 7%. It is verified by 'Term loan agreement' documents and it is confirmed that the selection of benchmark rate is reasonable. Sensitivity analysis including electricity generation and total investment are practiced. And ±5~10% variation ranges are applied to all parameters reflecting reasonable assumptions. Calculation evidence of IRR of the project with CER income has been added to the Excel sheet and it has been submitted to DOE.	CAR 6 is closed.

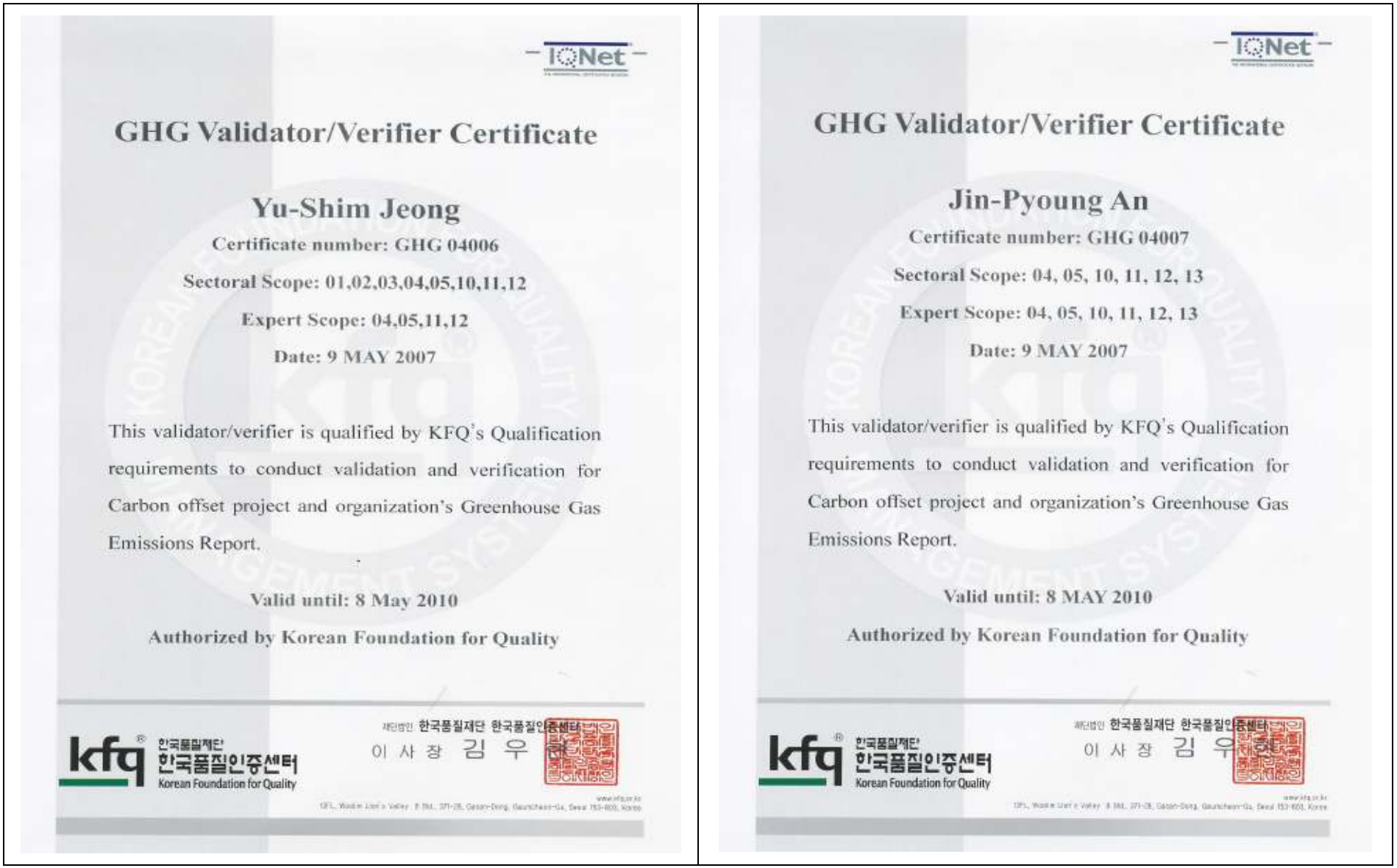
According to sub-step 4a of the additionality tool, project participant shall provide an analysis of any other activities similar to the proposed project activity whether and to which extent similar activities have already diffused in the relevant region.		Sub-step 4a of the additionality tool is implemented and described in the PDD. Despite of national policy, alternative energy which included wind power and solar energy occupies only 0.1%.	
CAR 7 : Calculation with actual data for baseline emissions is not provided in section B.6.3 in the PDD.	B.4. 3	Baseline emissions have been calculated with actual data and it has been fully described in section B.6.3.	CAR 7 is closed.
CAR 8 : The equation for EF_{OM} in ACM0002 is not applied correctly as numerical mean is used.	B.6.1	According to ACM 0002, EF_{OM} has been re-calculated and it has been reflected in GHG emissions calculation.	CAR 8 is closed.
CAR 9 : The electricity generation shall be measured hourly and recorded monthly according to the methodology. And allowable range for the transmission electricity meter is not -0.2%.	B.9.1	Frequency of measurement of the electricity generation has been updated corresponding to the methodology and also according to 'the operational rule in power generation market (January 2007)' allowable range for the transmission electricity has been corrected to $\pm$0.2%.	CAR 9 is closed.
CAR 10 : The authorities and responsibilities for registration, monitoring, measurement and reporting of CDM project is not clearly described in monitoring plan.	B.12.2	Monitoring plan has been included the authorities and responsibilities of CDM project.	CAR 10 is closed.
CAR 11 : Frequency for electricity generation meter calibration is not determined in the PDD. .	B.12.5	According to 'the operational rule in power generation market (January 2007)', calibration frequency of electricity generation has been fixed.	CAR 11 is closed.
CAR 12 : 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.	C.1/C.2	The starting date of a CDM project activity is the earliest date at which either the implementation of construction or real action of a project activity begins. Starting date of the Project activity is decided as February 28th 2007 which is	CAR 12 is closed.

<table>
<tr>
<td>The project's construction date is 1 November 2007 However the starting date of the project activity is determined as June 2008 in the PDD.
Thus starting date of the project activity should be at least prior to or at the construction date.

And also crediting period should be reviewed the result of corrective action related to starting date of project activity and expected registration date.</td>
<td></td>
<td>construction permission of electric work by MOCIE (MKE). There are other dates which could be used, as construction civil works and construction electric work (July 6th, 2007) or wind turbine supply and installation agreement (December 13th 2007). However validation team confirmed that February 28th 2007 is more appropriate for starting date, taking into account that no real action could be done in the project without this permit, and it therefore marks the beginning of real action of the project activity.
<table>
<tr><th>Project activity</th><th>Date</th></tr>
<tr><td>Construction permission of electric work by MOCIE (MKE)</td><td>28/02/2007</td></tr>
<tr><td>Wind turbine supply and installation agreement</td><td>13/12/2007</td></tr>
<tr><td>Starting date of construction</td><td>01/11/2007</td></tr>
<tr><td>Completion date of construction</td><td>15/04/2008</td></tr>
</table>
</td>
<td></td>
</tr>
<tr>
<td>CL 1 :
Full detail of the location of the project activity to identify geographical boundaries is not clearly described</td>
<td>A.1.1</td>
<td>Full detail of the location of the project activity is clearly described in section A.4.1 of the revised PDD.</td>
<td>CL 1 is closed.</td>
</tr>
<tr>
<td>CL 2 :
Initial training and maintenance efforts for the project are not fully described in the PDD.</td>
<td>A.2.4</td>
<td>There are 2 training programs for training and maintenance which is identified during on site assessment and this has been well reflected in the revised PDD.</td>
<td>CL 2 is closed.</td>
</tr>
<tr>
<td>CL 3 :
Preliminary Environmental Assessment was undertaken and approved by government authority. Comments from the authority in the course of approval process need to be documented in the PDD.</td>
<td>A.3.1</td>
<td>In the course of approval, recommendation from the Environmental Ministry regarding the transmission lines and taken action to this are described in the PDD.</td>
<td>CL 3 is closed.</td>
</tr>
<tr>
<td>CL 4 :
One of the applicability condition for the wind project, the geographic and system boundaries for the relevant electricity grid can be clearly identified and information on the characteristics of the grid is available, is not demonstrated in the PDD for applicability of ACM 0002</td>
<td>B.1.2</td>
<td>The revised PDD has been updated to state that this project is suitable for using ACM0002 by demonstrating all applicability conditions for wind project.</td>
<td>CL 4 is closed.</td>
</tr>
</table>

to the project.			
CL 5 : Baseline and project emission sources included in the project activity and justice of it are not described correctly in the PDD.	B.1.2	Baseline and project emission sources included in the project activity and justice of it have been corrected in section of B.3 of the revised PDD.	CL 5 is closed.
CL 6 : It is not explained that other sources of renewable energy as one of alternatives is not a likely baseline scenario.	B.2.7	It has been well described in the revised PDD.	CL 6 is closed.
CL 7 : Source of data used for the annual estimated operational rate/time is Acciona Energia not Korea Energy Economics Institute. However this information is not correctly described in the PDD. IRR of the proposed project is inconsistent between PDD and excel sheet.	B.2.9	Source of data used for the annual estimated operational rate/time is described correctly in the revised PDD. IRR of electricity generation in PDD is correct data and thus IRR in excel sheet has been altered in the PDD.	CL 7 is closed.
CL 8 : EF_{OM} and EF_{BM} are not needed to be monitored if these factors has been calculated using the ex-ante method.	B.9.2	It is well described section B.6.2 that the ex-ante method is used for EF_{OM} and $EF_{BM.}$ and not needed to be monitored .	CL 8 is closed.
CL 9 : All comments received from local stakeholders in public hearing and due account of the all stakeholder comments received has been taken are not sufficiently described in the PDD.	E.4	Full description how comments by local stakeholders have been invited and complied and how due account was taken of received comments have been reported in section E in the PDD.	CL 9 is closed.

Appendix B
Qualification of Validation Team



GHG Validator/Verifier Certificate

Yu-Shim Jeong

Certificate number: GHG 04006

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

Expert Scope: 04,05,11,12

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

GHG Validator/Verifier Certificate

Jin-Pyoung An

Certificate number: GHG 04007

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

Expert Scope: 04, 05, 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