

Our ref. : KFQGHG-38

Date : 07 December 2008

Contact:

DOE: Yu Shim JEONG (ysjeong@kfq.or.kr, Tel: +82-2-2025-9062, Fax: +82-2-2025-9069)

PP: Magdalena Garcia Mora ([magdalena.garcia.mora@acciona.es](mailto:magdalenagarciamora@acciona.es), Tel : +34 91 657 64 68)

Response to Request for Review

‘Yeong Yang 61.5MW Wind Farm Project (1841)’

Korean Foundation for Quality (KFQ) had performed the validation of ‘Yeong Yang 61.5MW Wind Farm Project’ No. 1841 located in Korea. The request for registration was made on 17/05/2008.

Four requests for review have been issued, which are identical to each other. The communication of this request for review was received on 24/11/2008.

We thank the CDM Executive Board and the Secretariat for giving us the opportunity to clarify about our considerations in validating the project mentioned.

Please find below KFQ response to the issues raised by the request for review.

Request for review :

- 1. The DOE should clarify how it has validated that the input values in the investment analysis were considered appropriate in line with EB 41, Annex 45, paragraph 6.**

Response by DOE:

KFQ reviewed the input values in:

- The Project Design Document (PDD), and
- The Project Executive Summary (PES) that was presented in the board meeting where the investment decision was formally taken.

1) Validation of the consistency and appropriateness of input values:

- I. For general review, first KFQ reviewed different PDD using ACM0002 (version 6) methodology to analyse input used for IRR calculation in wind investment around the world. The conclusion is input used in this project is consistent with the methodology used and among other project activities with similar characteristics.**

2) Validation of listed values applied consistently.

KFQ reviewed one by one all inputs to analyse if they were applicable at the time of investment decision and at the time of PDD writing:

I. Load factor used. KFQ reviewed this input value in both dates and conclude it had no significant variation. KFQ also reviewed 'wind energy report on the project' assessed by Acciona Energy with third party, which designed the wind power plant. Validation team also surveyed more load factor data in other wind power plant designed and/or owned by Acciona Energy around the world for deeper confirmation. KFQ concluded that the estimation load factor is reasonable even though the load factor of the project is higher than other similar wind power projects.

II. Estimated investment cost at the moment of investment decision was 116.152 Mill KRW and in PDD was 137.481 Mill KRW. KFQ reviewed the following documents:

- the quotation received on November 2006 from the potential wind turbine supplier
- the document submitted to request the Electric Business Permit on Nov. 2006
- the bank loan agreement
- the mandate letter for the project financing of Yeong Yang wind power project on 21. Jan. 2008
- the turbine supply agreement quotation
- the turbine supply and installation agreement on 13 Dec. 2007
- the contract for construction of civil works on 6 July 2007
- the draft agreements on upfront cost of land lease

Documents on wind turbine cost justify the 97% of the deviation for this input value. New turbine value is applied based on the draft Turbine supply agreement before starting construction. Thus, KFQ confirmed that the project investor would or not decide to proceed with the project again before starting construction or commitment to big expenditure and got to conclusion the changed turbine value is valid and applicable at the time of investment decision under comprehensive understanding of starting date and additionality.

Additionally, we were taking into account market studies showing the increment of turbine price (Turbine Prices 2002-2007. New Energy Finance. 29 October 2007) and similar wind farm projects around world, in Korea, KFQ also concluded it is quite unlikely that the total investment will decrease.

III. Electricity tariff used at the moment of investment decision was 107.29 KRW and 81 KRW in PDD. KFQ examined that in investment decision feed in tariff was included in this electricity price and not in PDD because EB22 annex 3 clarifies the national/sector policies and circumstances. The price of electricity, without feed in tariff, at the moment of the decision was made, was 79 KRW; and the tariff in the PDD is 81,5. KFQ examined statistics from KPX (<http://epsis.kpx.of.kr>) in order to check if the applied electricity tariff is valid and applicable. KFQ concluded these two values are valid and applicable in the context of the timing of both investment decision and PDD writing.

IV. CER pricing. KFQ reviewed this input value in both dates (nine euros and 10 euros respectively) and cross checked it with market prices for non registered projects on public data base (Source: Point Carbon CDM&JI Monitor: rank 9 -11 euros for December 13th 2006; rank 7-15 euros for December 12th 2007). KFQ concluded both prices used are reliable and conservative.

V. Operating costs: There is a variation between investment decision input values and PDD's, being the first one higher than the second one. Main differences can be explained out of the following factors:

- Land renting used in investment decision was calculated as a percentage of net revenue. The assumption was taken following the company's experience in other markets. The approach was conservative, due to the fact that Korea was a new market. Land renting value used for PDD calculations was much closer to final contracts signed. Thus, KFQ concluded land renting prices used are both conservative and reliable.
- Inflation was used in the investment decision and it was not used in PDD calculation, neither in the operation expenses, nor in the electricity price, to simplify the calculation, as common practice in the PDD submitted. KFQ analyse other CDM projects to cross check the use of inflation rate.

KFQ reviewed various documents and concluded that the cost is applicable

VI. The period of assessment is 20 yrs which reflect the period of expected operation of the YY project. Thus, The validation concluded it is valid after examining the document (IEC 61400/page20) and expert opinions through various study reports

Conclusion: Based on above assessment, KFQ concluded the input values for investment analysis are valid and appropriate at time of the investment decision and they have been applied consistently.

3) Variation in IRR

IRR, as the outcome of the input values analysed before, has changed from a 6.16% to a 4,85%, comparing the initial moment in which the decision was taken, and the moment in which the PDD was written. In the investment decision moment the feed in tariff is used to calculate the IRR. If the market electricity price existing at the time is considered, instead of the FIT, the value of the IRR goes down to 3.26%.

KFQ confirm that the changes on the IRR are consistent. Although the investment amount has increased, the decrease in operating expenses and the increase of the income, as main factors, justify the deviation on the IRR. The decrease in the Operating Expenses, overestimated in a first moment, following a conservative policy of the company to face business development in a new country, and the increase in the income due to the higher prices of electricity, are the main affecting factors, apart from the increase in the investment price of the wind turbine

4) Sensitivity analysis

The variation of the investment and O&M cost were assessed by considering the fluctuation of past exchange rate from 2003 to 2006 and the EB guidance. For last 4 yrs, the exchange rate was very stable. EB guidance recommended applying 10% variation range unless this is not deemed appropriate in the context of the specific project circumstances.

As for Electricity tariff, KFQ analyzed past variation for 1yr based on from statistics from KPX (<http://epsis.kpx.or.kr>).

The variation of load factor is assessed based on difference (max 3.1%) between estimation and real in wind power plants of Acciona energy.

Conclusion

Based on KFQ's careful assessment, KFQ concluded the input values for investment analysis appear to be valid at the time of final investment decision as well as initial investment decision was made. Suitable variation range for each parameter is applied for Sensitivity analysis. KFQ checked the applied values thoroughly based on its local and sectoral expertise.

KFQ considers that is proved that all the input values used in the investment analysis were applicable at the time of the investment decision. The input values have been cross-checked with publicly available sources, contract documents, quotations, and other official documents, proving their adequacy, reliability and conservativeness.

Relevant evidence documents were included in the revised validation report (version 5).

2. The DOE is requested to clarify how it has validated that the project start date complies with the CDM Glossary of terms.

Response by DOE:

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 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.

<Timeline of the project activity>

Project activity	Date
Construction permission of electric work by MOCIE(MKE)	28/02/2007
Wind turbine supply and installation agreement	13/12/2007
Starting date of construction	01/11/2007
Completion date of construction	15/04/2008

We reflected above explanation in the revised validation report (version 5).

3. The DOE is requested to clarify: (a) how it has validated the conversion of the data used to calculate the OM and BM from GCV to NCV: and (b) the reference to the resolution of this issue in the validation protocol.

Response by DOE:

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 1996 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)

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. However, it was not fully emerged in the validation report.

Detailed description of above matter are included in the revised validation report (version 5), especially in section 6 and the table 3 of the appendix A.

4. The DOE should confirm that net electricity generated by the project activity is to be monitored.

Response by DOE:

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, but it was not completely expressed in the validation report.

Confirmation of this is added to section 3.5 and table 3 in Appendix A of the revised validation report.

Yours sincerely



Oh Chang Kwon
Director of R&D Division