

Gangwon Wind Park Project

(CDM Registration Reference Number 0222)



CDM Monitoring Report 2008

Monitoring Period: 1 January, 2008 to 31 December, 2008

Project: Gangwon Wind Park Project

Client: **Gangwon Wind Power Co., Ltd.**

Contact: Mr. Seong-Su Ju, General Manager

Hoenggye-2ri 475-2, Daegwallyeong-myun,
Pyungchang-gun, Gangwon-do, Korea (ZIP 232-954)

Contractor: Lahmeyer International GmbH
Friedberger Straße 173
61118 Bad Vilbel

Prepared by: **Lahmeyer International**
Roland Ries, Project Manager, Energy Division

Checked internally by: **Lahmeyer International**
Philipp Eckert, Energy Economist /
Climate Change Advisory Services, Energy Division

Checked externally by: **Gangwon Wind Power Co.**
Seong-Su Ju, General Manager

Approved by: **Gangwon Wind Power Co.**
Jong-Woo Park, Representative Director

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1. Introduction

This document reports the emission reduction caused by the Gangwon Wind Park Project in Korea (hereafter the Project), which was registered on 20 March, 2006 and of which the CDM registration reference number is 0222. The starting date of the fixed crediting period for the Gangwon Wind Park project activity is 31 December, 2006 and lasts until 30 November 2016. This monitoring report covers the period:

- 1 January, 2008 to 31 December, 2008 (both days included)

With the commercial operation of the complete wind farm starting on 18 September, 2006 already, the plant was fully implemented and ready for production from the beginning of this monitoring period. The project operation has been monitored in accordance with the requirements of the applicable monitoring method as described in its Project Design Document (PDD) and in the approved monitoring methodology ACM0002 (Ver. 04), which is the consolidated monitoring methodology for zero-emissions grid-connected electricity generation from renewable energy sources. The monitoring is based on continuous metering of electricity production as defined in the PDD. There were no problems in monitoring during this monitoring period. There are no GHG emissions and no leakage from the Project. Therefore the project activity emissions amount to zero.

2. Calculation of Emission Reduction

Calculation of the emission reduction is based on methodologies and parameters fixed in the monitoring methodology of the PDD which was justified during validation. The emission reduction ER_y by the project activity during a given year y is the difference between baseline emissions (BE_y), project emissions (PE_y) and emissions due to leakage (L_y), as follows:

$$ER_y = BE_y - PE_y - L_y$$

where the baseline emissions (BE_y in $tCO_2eq.$) are the product of the baseline emissions factor (EF_y in $tCO_2eq./MWh$) times the electricity supplied by the project activity to the grid (EG_y in MWh), as follows:

$$\underline{BE_y = EG_y * EF_y}$$

As stated above, there are no GHG emissions and no leakage from the Project, i.e. $\underline{PE_y = 0}$ and $\underline{L_y = 0}$.

The baseline emissions factor EF_y was calculated in accordance with the ACM0002 and is based on the methodology and parameters fixed in the PDD and justified during the validation. One produced MWh of electricity replaces 0.6119 ton of CO₂eq., i.e. $\underline{EF_y = 0.6119 \text{ tonCO}_2\text{eq./MWh}}$.

Electricity consumed in the project site is used from the own wind power generation and is obtained from the grid at times when the own wind power generation is not sufficient. Correspondingly all electricity consumed in the project site is considered in the calculation of EG_y by subtracting electricity obtained from the grid from electricity delivered to the grid.

3. Measuring Results

According to the monitoring methodology fixed in the PDD, electricity supplied to the grid by the Project EG_{2008} is directly measured in hourly intervals and aggregated in monthly reports. The following Table 1 shows the results of the measuring process during the monitoring period (1 January 2008 to 31 December 2008). Electricity delivered to the grid (KPX meter) and electricity obtained from the grid and consumed on site (KEPCO meter) is specified separately to determine the net electricity supplied to the grid by the Gangwon Wind Park Project in 2008.

Following the monitoring methodology described in the PDD, measuring results were double-checked against receipt of sales and consistency has been approved. Data has been stored electronically and will be kept during the crediting period and two years after.

<Table 1> EG₂₀₀₈

	(a) Electricity delivered to the grid (MWh)	(b) Electricity obtained from the grid (MWh)	EG ₂₀₀₈ Net electricity supplied to the grid (a)-(b) (MWh)
January 2008	18,238.059	114.771	18,123.288
February 2008	22,523.532	43.444	22,480.088
March 2008	17,586.814	120.606	17,466.208
April 2008	23,998.241	55.116	23,943.125
May 2008	20,376.464	81.052	20,295.412
June 2008	8,700.725	120.606	8,580.119
July 2008	21,098.389	111.528	20,986.861
August 2008	9,365.569	187.393	9,178.176
September 2008	5,580.439	240.564	5,339.875
October 2008	17,104.067	161.457	16,942.610
November 2008	25,244.326	92.076	25,152.250
December 2008	34,119.878	47,334	34,072,544
Total	223,936.502	1,375.947	222,560.555

4. Transmission Losses

The measuring results given in Table 1 do not include the transmission losses completely since metering devices are located within the wind park. The wind park is located on a mountain ridge and supplies electricity to the public grid using an internal 9.764km (6.746km overhead and 3.018km underground) 154kV power line to the local substation of the Korea Electrical Power Corporation (KEPCO) in Hoenggye. The same power line is used for electricity obtained from the grid.

The detailed transmission losses have been calculated and submitted separately from this report and the final results are as follows:

- Transmission losses for electricity amount delivered to the grid: 368.800 MWh
- Transmission losses for electricity amount obtained from the grid: 0.009 MWh

These additional losses will be considered in the following calculation of the achieved emission reduction.

5. Achieved Emission Reduction

The project activity reduces carbon dioxide (CO₂) through substitution of grid electricity generation with fossil fuel fired power plants by renewable electricity. The amount of the emission reduction caused by the Project during the first monitoring period is calculated using measured data which are (a) electricity delivered to the grid, (b) electricity obtained from the grid at the site as well as the baseline emission factor calculated in the PDD.

$$\begin{aligned}
 ER_{2008} &= EG_{2008} * EF_{2008} \\
 &= (222,560.555 \text{ MWh} - 368.800 \text{ MWh} - 0.009 \text{ MWh}) * 0.6119 \text{ tonCO}_2\text{eq./MWh} \\
 &= 222,191.746 \text{ MWh} * 0.6119 \text{ tonCO}_2\text{eq./MWh} \\
 &= 135,959.129 \text{ tonCO}_2\text{eq.}
 \end{aligned}$$

The result is summarized in the following Table 2:

<Table 2> Emission reduction

Monitoring period	EG ₂₀₀₈ (MWh)	EF ₂₀₀₈ (ton CO ₂ eq./MWh)	ER₂₀₀₈ Emission Reduction (tonCO₂eq.)
1 January, 2008 to 31 December, 2008	222,191.746	0.6119	135,959

From 1 January, 2008 to 31 December, 2008, the project reduced 135,959 tonCO₂eq. of GHG emission by generating electricity using wind power categorized under renewable energy.

6. Roles and Responsibilities

The responsible entity for the correct application of the monitoring plan is Gangwon Wind Power Co., Ltd. Monthly records of measured electricity sales to the Korea Power Exchange (KPX) and electricity purchased from Korea Electric Power Corporation (KEPCO) for self-consumption by the Gangwon Wind Park have been provided by Mr. Seong-Su Ju of Gangwon Wind Power Co., Ltd.

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