

Gangwon Wind Park Project

(CDM Registration Reference Number 0222)



CDM Monitoring Report

Monitoring Period: 31 December, 2006 to 31 December, 2007

Lahmeyer International GmbH

Project: Gangwon Wind Park Project

Client: Gangwon Wind Power Co., Ltd.

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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:

- 31 December, 2006 to 31 December, 2007 (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:

$$\underline{BE}_y = \underline{EG}_y * \underline{EF}_y$$

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 \underline{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 \underline{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 \underline{EG}_{2007} 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 (31 December 2006 to 31 December 2007). 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 2007.

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> EG₂₀₀₇

	(a) Electricity delivered to the grid (MWh)	(b) Electricity obtained from the grid (MWh)	EG ₂₀₀₇ Net electricity supplied to the grid (a)-(b) (MWh)
31 December 2006	106.424	11.088	95.336
January 2007	18,399.636	115.043	18,284.593
February 2007	15,566.427	118.285	15,448.142
March 2007	24,818.133	114.732	24,703.401
April 2007	21,972.627	71.521	21,901.106
May 2007	22,573.795	75.943	22,497.852
June 2007	11,095.701	150.889	10,944.812
July 2007	9,877.936	167.436	9,710.500
August 2007	26,282.819	58.838	26,223.981
September 2007	16,773.664	86.862	16,686.802
October 2007	13,167.324	129.164	13,038.160
November 2007	21,946.930	64.362	21,882.568
December 2007	29,902.091	64,842	29,837,249
Total	232,483.509	1,229.005	231,254.504

4. 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.

$$\begin{aligned}
 ER_{2007} &= EG_{2007} * EF_{2007} \\
 &= 231,254.504 \text{ MWh} * 0.6119 \text{ tonCO}_2\text{eq./MWh} \\
 &= 141,504.631 \text{ tonCO}_2\text{eq.}
 \end{aligned}$$

The result is summarized in the following Table 2:

<Table 2> Emission reduction

Monitoring period	EG ₂₀₀₇ (MWh)	EF ₂₀₀₇ (ton CO ₂ eq./MWh)	ER ₂₀₀₇ Emission Reduction (tonCO ₂ eq.)
31 December, 2006 to 31 December, 2007	231,254.504	0.6119	141,505

From 31 December, 2006 to 31 December, 2007, the project reduced 141,505 tonCO₂eq. of GHG emission by generating electricity using wind power categorized under renewable energy.

A detailed calculation sheet with meter readings and the emission reduction achieved for each month can be found in the Annex.

5. 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. Hyung-Soon Choi of Gangwon Wind Power Co., Ltd.

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- End of report -

ANNEX: Calculation Sheet Emission Reduction for CO₂

Date : 31 Dec_2006 ~ 31 Dec_2007

EF ₂₀₀₇ [tonCO ₂ eq./MWh]	0.611900
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EF ₂₀₀₇ [tonCO ₂ eq./kWh]	0.000611900
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Units:kWh

Month	(a) Electricity delivered (KPX meter) [kWh]	(b) Electricity obtained (KEPCO meter) [kWh]	EG ₂₀₀₇ Electricity supplied to the grid (a) - (b) [kWh]	ER ₂₀₀₇ Emission reduction [tonCO ₂ eq.]	Remark
31-Dec-06	106,424	11,088	95,336	58.336	1 day
January	18,399,636	115,043	18,284,593	11,188.342	
February	15,566,427	118,285	15,448,142	9,452.718	
March	24,818,133	114,732	24,703,401	15,116.011	
April	21,972,627	71,521	21,901,106	13,401.287	
May	22,573,795	75,943	22,497,852	13,766.436	
June	11,095,701	150,889	10,944,812	6,697.130	
July	9,877,936	167,436	9,710,500	5,941.855	
August	26,282,819	58,838	26,223,981	16,046.454	
September	16,773,664	86,862	16,686,802	10,210.654	
October	13,167,324	129,164	13,038,160	7,978.050	
November	21,946,930	64,362	21,882,568	13,389.943	
December	29,902,091	64,842	29,837,249	18,257.413	
Total	232,483,509	1,229,005	231,254,504	141,504.631	