

HEBEI GUYUAN COUNTY DONGXINYING 199.5 MW WIND POWER PROJECT



Document Prepared By Hebei Construction Investment New Energy Co., Ltd.

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1 PROJECT DETAILS

1.1 Summary Description of Project

The objective of Hebei Guyuan County 199.5 MW Wind Power Project (hereinafter referred to as the project) is to generate electricity using wind energy and to sell the generated output to North China Power Grid (NCPG). Total installed capacity of the project is 199.5MW, involving 133 sets of wind turbine-generator (hereinafter referred to as WTG), each set with a rated capacity of 1.5MW. Applying grid-connected electricity generation technology by wind energy, the expected annual electricity generation is 405,685MWh. By displacing equal amount electricity generated by NCPG which is dominated by fossil fuel-fired power plants, the project contributes to annual GHG emission reductions (hereinafter referred to as ERs) estimated at 427,936 t CO₂e .

The construction of the Project began on 25-August-2008¹ and was put into operation (i.e. the first WTG of the Project started to deliver electricity to the grid) on 25-May-2010 (i.e. the project start date).

This VCS verification period covered the duration from 25-May-2010 to 14-September-2011, during which GHG ERs amount to 520,242 tCO₂e were achieved, i.e. 187,044 tCO₂e during 25-May-2010~31-Dec.-2010 and 333,198 tCO₂e during 1-Jan.-2011~14-September-2011.

1.2 Sectoral Scope and Project Type

The Project falls in sectoral scope 1, Energy Industries (renewable sources).

Project Category: Renewable electricity in grid connected applications

The project is not a Grouped Project

1.3 Project Proponent

Project proponent: Hebei Construction Investment New Energy Co., Ltd.

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1.4 Other Entities Involved in the Project

Under VCS, there is no other entity involved in the project.

1.5 Project Start Date

25-May-2010, the date on which the first WTG of the Project started to deliver electricity to the grid

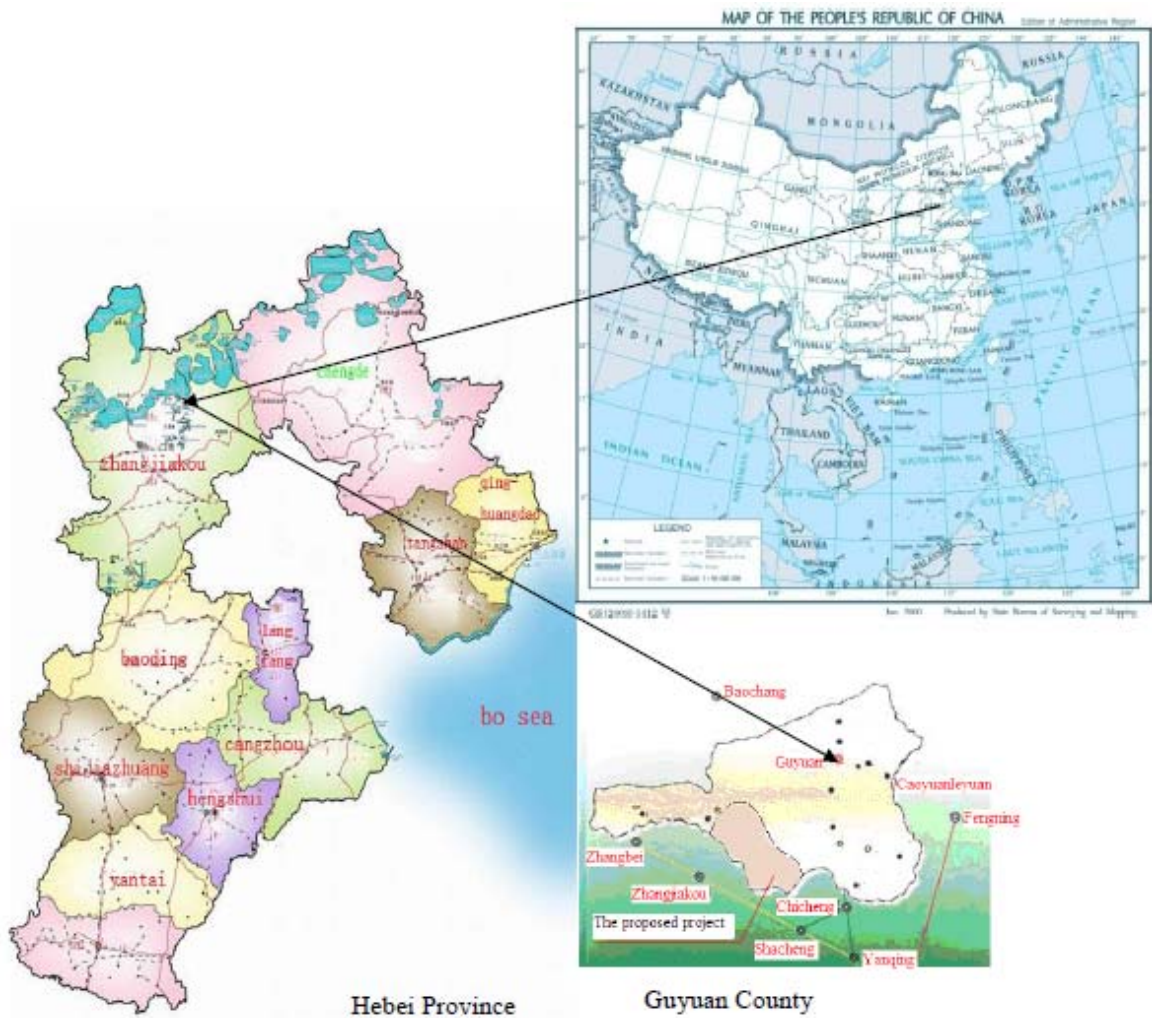
¹ Starting construction permission issued on 25 August 2008 by the supervision company contracted.

1.6 Project Crediting Period

The VCS crediting period is from 25-May-2010 to 14-September-2011, i.e. the total number of crediting years is 1 year and 113 days

1.7 Project Location

The project is located in south of Guyuan County, Zhangjiakou City, Hebei Province, P.R.China. The geographical coordinates of the project are 115.2997°~115.7508°E, 41.3169°~41.5661°N.



1.8 Title and Reference of Methodology

The project applies the consolidated baseline and monitoring methodology approved by the CDM Executive Board - ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (version 12.1.0).

The methodology also refers to the latest approved versions of the following tools:

- Tool to calculate the emission factor for an electricity system (Version 02);

- Tool for the demonstration and assessment of additionality (Version 05.2);

2 IMPLEMENTATION STATUS

2.1 Implementation Status of the Project Activity

The construction of the project began on 25-August-2008 and a total of 133 WTGs with unit capacity of 1,500 kW (Model type: FD77B) were installed. The Project was put into commercial operation (i.e. the first WTG of the Project started to deliver electricity to the grid) on 25-May-2010. During this verification period, the project was under normal and smooth operation as per the registered CDM PDD (version 6.0), except for procedural major maintenance during September 2010 and April 2011. No events or situations, which occurred during the verification period, may impact the applicability of the methodology.

2.2 Deviations from the Monitoring Plan

N/A

2.3 Grouped Project

N/A

3 DATA AND PARAMETERS

3.1 Data and Parameters Available at Validation

Data Unit / Parameter:	$EF_{grid, CM, y}$
Data unit:	tCO ₂ e /MWh
Description:	Baseline emission factor
Source of data:	Registered CDM PDD
Value applied:	1.05485
Purpose of the data:	This parameter is used for baseline emissions calculation.
Any comment:	This parameter is ex-ante determined in the registered CDM PDD and fixed in the crediting period.

3.2 Data and Parameters Monitored

Data Unit / Parameter:	$EG_{export, y}$
Data unit:	MWh
Description:	Annual electricity exported to the grid by the project

Source of data:	Project activity site		
Description of measurement methods and procedures to be applied:	Measured by meter M1 installed on the high voltage side of the 35kV/220kV transformers. M2 is the backup meter of M1 and is also installed on the high voltage side of the 35kV/220kV transformer in parallel to M1.		
Frequency of monitoring/recording:	Continuously measured and monthly recorded		
Value monitored:	493,641.775		
Monitoring equipment:	Name	M1	M2
	Type	ACE8000	ACE8000
	Accuracy	0.2S	0.2S
	S.N.	37006406	37006391
QA/QC procedures to be applied:	To ensure the normal functions and accuracy, calibration was conducted in accordance with relevant national electric industry standards and regulations. Calibration information is specified below:		
	Name	M1	M2
	Calibration date	17-Dec.-2009* ; 13-Dec.-2010**	
	Calibration frequency	Annually	Annually
	Validity	Yes	Yes
	Calibration institute	*North China Electric Power Research Institute ² ; **Electric Energy Measurement Centre of Zhangjiakou Power Supply Company ³	
Calculation method:	N/A		
Any comment:	Sale receipts are used for crosscheck against the meter reading records.		

Data Unit / Parameter:	EG _{import,y}
Data unit:	MWh

² Certificate of metrological authorization to North China Electric Power Research Institute (code: CNAS L0394 with the valid period from 12/05/2003 to 28/06/2014, latest renewal on 29/06/2011)

³ Certificate of metrological authorization to Electric Energy Measurement Centre of Zhangjiakou Power Supply Company (code: (Ji) Fa Ji [2008] No.D011 with the valid period from 18/02/2008 to 17/02/2011 and approved extension of validity till 31/12/2011)

Description:	Annual electricity imported from the grid to the project.
Source of data:	Project activity site
Description of measurement methods and procedures to be applied:	Measured by meter M1 installed on the high voltage side of the 35kV/220kV transformers. M2 is the backup meter of M1 and is installed on the high voltage side of the 35kV/220kV transformer in parallel to M1.
Frequency of monitoring/recording:	Continuously measured and monthly recorded
Value monitored:	442.750
Monitoring equipment:	Refer to corresponding section of parameter $EG_{\text{export},y}$.
QA/QC procedures to be applied:	Refer to corresponding section of $EG_{\text{export},y}$
Calculation method:	N/A
Any comment:	Sale receipts are used for crosscheck against meter reading records.

Data Unit / Parameter:	$EG_{\text{backuptime},y}$			
Data unit:	MWh			
Description:	Electricity delivered to the project through the backup line			
Source of data:	Project activity site			
Description of measurement methods and procedures to be applied:	Measured by the monitoring meter M3 installed on the backup line.			
Frequency of monitoring/recording:	Continuously measured and monthly recorded			
Value monitored:	7.520			
Monitoring equipment:	Name	Type	Accuracy	S.N.
	M3	DSSD22	0.5S	B24T0P81240 3001807
QA/QC procedures to be applied:	To ensure the normal functions and accuracy, calibration was conducted in accordance with relevant national electric industry standards and regulations. Calibration information is specified below:			
	Name		M3	
	Calibration date		11/04/2010; 13/12/2010;	
	Calibration frequency		Annually	
	Validity		Yes	
	Calibration institute		Electric Energy Measurement Centre of	

	Zhangjiakou Power Supply Company
Calculation method:	N/A
Any comment:	Sale receipts are used for crosscheck against the meter reading records.

Data Unit / Parameter:	$EG_{\text{facility},y}$
Data unit:	MWh
Description:	Net electricity supplied to the grid by the proposed project in year y
Source of data:	Calculated with parameter $EG_{\text{export},y}$, $EG_{\text{import},y}$ and $EG_{\text{backupline},y}$
Description of measurement methods and procedures to be applied:	N/A. This value of this parameter is obtained by calculation with hereinbefore described three parameters.
Frequency of monitoring/recording:	Monthly calculated and recorded
Value monitored:	493,191.505
Monitoring equipment:	N/A
QA/QC procedures to be applied:	N/A
Calculation method:	$EG_{\text{facility},y} = EG_{\text{export},y} - EG_{\text{import},y} - EG_{\text{backupline},y}$
Any comment:	Net electricity supplied to the grid by the project activity will be crosschecked with electricity sales receipts.

3.3 Description of the Monitoring Plan

The monitoring system is specified as below:

Metering system

As is shown in the figure 2, the electricity generated by the project will be transmitted to on-site 35kV/220kV transformers which boost the voltage to 220 kV, and then delivered to Xiaochang Substation by 220kV transmission line. The electricity generated by the project is finally delivered to the NCPG.

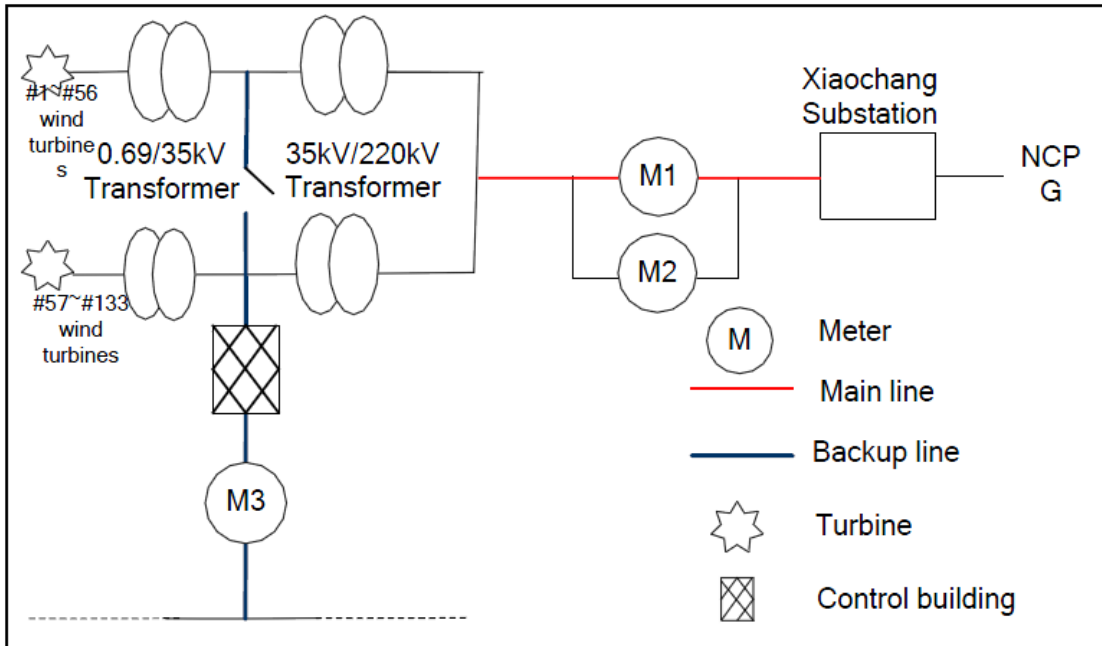


Figure 2 The simplified metering system

As is shown in the figure above, the amount of electricity exported to the grid by the project ($EG_{\text{export},y}$) and the amount of electricity imported from the grid to the project ($EG_{\text{import},y}$) are continuously measured by the main bidirectional meter M1 installed on the high voltage side of the 35V/220V transformers. The meter M2 is also installed on the high voltage side of the 35V/220V transformers in parallel to M1, which is of the same type, accuracy and function and serves as the backup meter of M1, and can also record electricity quantities bidirectionally and works with M1 simultaneously.

In case of emergencies, electricity would be delivered to the project via the 10kV backup line and its amount ($EG_{\text{backupline},y}$) is recorded by the meter M3 installed on the backup line, and read by the grid and the project owner.

According to the Power Purchase Agreement, the grid company and the project owner routinely reads and records the readings at 24:00 o'clock on the last day of each month. Sale receipts issued by the grid will be used for crosscheck against the meter readings records of the project owner.

Project Integrate Management

This monitoring plan will be implemented by Hebei Construction Investment New Energy Co., Ltd., the project owner. The project manager is responsible for the implementation and monitoring of the monitoring activity. There are two departments organized for data report, quality control. There is a manager responsible for data report and quality control department. The manager will take charge of the employment administration, as well as the operation implementation and monitoring; staffs will carry on the concrete assignment based on the guide of their manager.

Quality Assurance and Quality Control

The metering equipments will be properly calibrated and checked annually by an independent third party according to relevant national standard to ensure its accuracy.

The relevant training, including how to operate the project and in accordance with the registered CDM PDD and the monitoring plan were implemented by the project owner and the equipment manufacturer before operation of the project. During the operation process, such training will be provided to ensure the project is operated as per the registered CDM PDD, as appropriate.

Procedure in case of damaged metering equipment

In this monitoring period, there were no emergencies happened. But in case metering equipment is damaged and no reliable readings can be recorded the project owner will estimate net supply by the proposed project activity according to the following procedure:

a. In case the main meter is damaged only:

By reading the backup meter.

b. In case both the main meter and the backup one are damaged:

The project owner and the grid company will jointly calculate a conservative estimate of power supplied to the grid. A statement will be prepared indicating

- The background to the damage to metering equipment;
- The assumptions used to estimate net supply to the grid for the days for which no record could be recorded the estimation of power supplied to the grid.

4 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

4.1 Baseline Emissions

According to ACM0002, the baseline emissions during this verification period can be calculated as:

$$BE_y = EG_{facility,y} \times EF_{grid, CM, y}$$

$$EG_{facility,y} = EG_{export,y} - EG_{import,y} - EG_{backupline,y}$$

The monitoring data of $EG_{export,y}$, $EG_{import,y}$ and $EG_{backupline,y}$ are listed in table 1~3.

The calculation of $EG_{facility,y}$ and BE_y are listed in table 4 and table 5 respectively.

Table 1 Electricity exported to the grid by the project ($EG_{export,y}$, MWh)

Vintage	From	To	Meter readings	Values on the sales receipts	Values used for VCU calculation
			A	B	C=min(A,B)
25-May-2010~31-Dec.-2010	25-May-2010	31-May-2010	1617.550	1617.550	1617.550
	01-Jun.-2010	30-Jun.-2011	4422.000	4422.000	4422.000
	01-Jul.-2010	31-Jul.-2010	4585.900	4585.900	4585.900
	01-Aug.-2010	31-Aug.-2010	3676.200	3676.200	3676.200
	01-Sep.-2010	30-Sep.-2010	14281.025	14281.025	14281.025

	01-Oct.-2010	31-Oct.-2010	26952.750	26952.750	26952.750
	01-Nov.-2010	30-Nov.-2010	52418.025	52418.025	52418.025
	01-Dec.-2010	31-Dec.-2010	69529.075	69529.075	69529.075
	Subtotal 2010		177482.525	177482.525	177482.525
01-Jan.-2011~ 14-Sep.-2011	01-Jan.-2011	31-Jan.-2011	54115.050	54115.050	54115.050
	01-Feb.-2011	28-Feb.-2011	27378.725	27378.725	27378.725
	01-Mar.-2011	31-Mar.-2011	60688.375	60688.375	60688.375
	01-Apr.-2011	30-Apr.-2011	47164.425	47164.425	47164.425
	01-May-2011	31-May-2011	57783.825	57783.825	57783.825
	01-Jun.-2011	30-Jun.-2011	23032.625	23032.625	23032.625
	01-Jul.-2011	31-Jul.-2011	16106.750	16106.750	16106.750
	01-Aug.-2011	31-Aug.-2011	21584.200	21584.200	21584.200
	01-Sep.-2011	14-Sep.-2011	8305.275	8305.275	8305.275
	Subtotal 2011		316159.250	316159.250	316159.250
Total			493641.775	493641.775	493641.775

 Table 2 Electricity imported from the grid to the project ($EG_{import,y}$, MWh)

Vintage	From	To	Meter readings	Values on the sales receipts	Values used for VCU calculation
			D	E	F=max(D,E)
25-May-2010~ 31-Dec.-2010	25-May-2010	31-May-2010	3.025	3.025	3.025
	01-Jun.-2010	30-Jun.-2011	4.400	4.400	4.400
	01-Jul.-2010	31-Jul.-2010	2.200	2.200	2.200
	01-Aug.-2010	31-Aug.-2010	30.525	30.525	30.525
	01-Sep.-2010	30-Sep.-2010	53.900	53.900	53.900
	01-Oct.-2010	31-Oct.-2010	61.050	61.050	61.050
	01-Nov.-2010	30-Nov.-2010	5.500	5.500	5.500
	01-Dec.-2010	31-Dec.-2010	0.000	0.000	0.000
	Subtotal 2010		160.600	160.600	160.600
01-Jan.-2011~ 14-Sep.-2011	01-Jan.-2011	31-Jan.-2011	10.725	10.725	10.725
	01-Feb.-2011	28-Feb.-2011	29.150	29.150	29.150
	01-Mar.-2011	31-Mar.-2011	7.150	7.150	7.150
	01-Apr.-2011	30-Apr.-2011	37.125	37.125	37.125
	01-May-2011	31-May-2011	12.650	12.650	12.650
	01-Jun.-2011	30-Jun.-2011	51.975	51.975	51.975
	01-Jul.-2011	31-Jul.-2011	50.325	50.325	50.325
	01-Aug.-2011	31-Aug.-2011	65.175	65.175	65.175
	01-Sep.-2011	14-Sep.-2011	17.875	17.875	17.875
	Subtotal 2011		282.150	282.150	282.150
Total			442.750	442.750	442.750

 Table 3 Electricity delivered to the project through the backup line ($EG_{backupline,y}$, kWh)

Vintage	From	To	Meter readings	Values on the sales receipts	Values used for VCU calculation
			G	H	I=max(G,H)
25-May-2010~ 31-Dec.-2010	25-May-2010	31-May-2010	0.000	0.000	0.000
	01-Jun.-2010	30-Jun.-2011	0.000	0.000	0.000

	01-Jul.-2010	31-Jul.-2010	0.000	0.000	0.000
	01-Aug.-2010	31-Aug.-2010	0.000	0.000	0.000
	01-Sep.-2010	30-Sep.-2010	3.500	3.500	3.500
	01-Oct.-2010	31-Oct.-2010	0.000	0.000	0.000
	01-Nov.-2010	30-Nov.-2010	0.000	0.000	0.000
	01-Dec.-2010	31-Dec.-2010	0.000	0.000	0.000
	Subtotal 2010		3.500	3.500	3.500
01-Jan.-2011~ 14-Sep.-2011	01-Jan.-2011	31-Jan.-2011	0.000	0.000	0.000
	01-Feb.-2011	28-Feb.-2011	0.000	0.000	0.000
	01-Mar.-2011	31-Mar.-2011	0.000	0.000	0.000
	01-Apr.-2011	30-Apr.-2011	4.020	4.020	4.020
	01-May-2011	31-May-2011	0.000	0.000	0.000
	01-Jun.-2011	30-Jun.-2011	0.000	0.000	0.000
	01-Jul.-2011	31-Jul.-2011	0.000	0.000	0.000
	01-Aug.-2011	31-Aug.-2011	0.000	0.000	0.000
	01-Sep.-2011	14-Sep.-2011	0.000	0.000	0.000
	Subtotal 2011		4.020	4.020	4.020
Total			7.520	7.520	7.520

 Table 4 Net electricity supplied to the grid by the project ($EG_{\text{facility},y}$, MWh)

Verification Period	Vintage	$EG_{\text{export},y}$	$EG_{\text{import},y}$	$EG_{\text{backupline},y}$	$EG_{\text{facility},y}$
25-May-2010~14-Sep.-2011	25-May-2010~31-Dec.-2010	177,482.525	160.600	3.500	177,318.425
	01-Jan.-2011~14-Sep.-2011	316,159.250	282.150	4.020	315,873.080
Total		493,641.775	442.750	7.520	493,191.505

Table 5 Baseline emissions achieved in this verification period

Verification Period	Vintage	$EG_{\text{facility},y}$ (MWh)	$EF_{\text{grid},\text{CM},y}$ (tCO ₂ e/MWh)	Baseline emissions (tCO ₂ e)
25-May-2010~14-Sep.-2011	25-May-2010~31-Dec.-2010	177,318.425	1.05485	187,044
	01-Jan.-2011~14-Sep.-2011	315,873.080		333,198
Total baseline emission in this verification period		493,191.505		520,242

4.2 Project Emissions

In line with ACM0002, the project emission of wind power plant is 0, i.e. $PE_y=0$.

4.3 Leakage

In line with ACM0002, leakage of this project does not need to be considered, i.e. $L_y=0$

4.4 Summary of GHG Emission Reductions and Removals

In line with the registered CDM PDD, the ERs are calculated as:

$$ER_y = BE_y - PE_y$$

The calculated results are listed in Table 6.

Table 6 Emission reductions achieved in the verification period. (Unit: tCO₂e)

Verification Period	Vintage	BE _y	PE _y	Emission reductions
25-May-2010~ 14-Sep.-2011	25-May-2010~31-Dec.-2010	187,044	0	187,044
	01-Jan.-2011~14-Sep.-2011	333,198	0	333,198
Total		520,242	0	520,242

In line with the registered CDM-PDD, the estimated annual average emission reductions of the project are 427,936 tCO₂e. This verification period covers 478 days and the estimated emission reductions as per ex-ante calculation output in the CDM-PDD are 560,420tCO₂e. Comparing with the estimated emission reductions, the actual emission reductions decreased by 7.17%.

5 ADDITIONAL INFORMATION

N/A