GUOHUA RONGCHENG PHASE II WIND FARM PROJECT

Document Prepared By Beijing Cronus Technology Consultancy Centre

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Project Title	Guohua Rongcheng Phase III Wind Farm Project
Version	2.0
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Project ID	PL1301
Monitoring Period	30/06/2010 to 21/06/2011 (first and last days included)
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1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

Guohua Rongcheng Phase II Wind Farm Project (hereinafter referred to as the Project) is located in Chengshan Town, Rongcheng City, Shandong Province, People's Republic of China. The project is invested and implemented by Guohua Resourceful (Rongcheng) Wind Power Generation Co., Ltd.

The Project has a total installed capacity of 49.5 MW, consisting of 33 wind turbines with unit capacity of 1500kW. The expected annual power delivered to the grid is 102,337 MWh. The power output is delivered to the North China Power Grid (NCPG) which is dominated by fossil-fuel fired power via Shandong Power Grid. The expected annual emission reduction of the project is 97,240t CO_2e.

The key technical parameters of the project are summarized in the following table.

Manufacturer	**Goldwind Science and Technology Co., Ltd.**
Model	**82/1500**
1. Rotor	
Diameter	82 m
Amount of vane	3
Height of hub	70m
Cut-in wind speed	3.0 m/s
Cut-out wind speed	22.0 m/s
2. Generator	
Rated Power	1,580kW
Rated voltage	690V
3.Weightr	
Weight of nacelle	11.8t(excluding rotor and generator)
Weight of generator	43.6t
Weight of vane	6.085t

Weight of rotor	32.105(including vane and hub)

The Project started construction on 18/12/2009. The first power unit started operation on 30/06/2010, and the last power unit started operation on 29/09/2010.

The Project has been registered as a CDM project on 22/06/2011 with the CDM registration reference number 4882.

The monitoring period starts from 30/06/2010 and ends to 21/06/2011. In this monitoring period, the total achieved emission reduction is 88,413 tCO_2e.

1.2 Sectoral Scope and Project Type

Sectoral scope: Scope 1

Project type: Type I (Renewable energy projects)

The project is not a grouped project.

1.3 Project Proponent

Organization name	Guohua Resourceful (Rongcheng) Wind Power Generation Co., Ltd.
Contact person	Xuepei Feng
Title	Manager
Address	No.3 South Road of Dongzhimen, Dongcheng District, Beijing People's Republic of China
Telephone	+86 010-58157576
Email	fengxuepei@guohua.com.cn

1.4 Other Entities Involved in the Project

Organization name	DEMETER VENTURE UK LIMITED
Role in the project	VER buyer
Contact person	Tao Xue
Title	CEO
Address	CHASE BUSINESS CENTRE-CHD 39 - 41 CHASE SIDE LONDON N14 5BP
Telephone	+86 10 62258766
Email	taorholland@gmail.com

1.5 Project Start Date

The project start date is 30/06/2010.

1.6 Project Crediting Period

The Project was put into operation on 30/06/2010, and registered as a CDM project on 22/06/2011. Therefore, the Project Crediting Period is from 30/06/2010 to 21/06/2011, covering 357 days.

1.7 Project Location

The proposed project is located in Chengshan Town, Rongcheng City, Shandong Province, People's Republic of China. The coordinates of the proposed project location area are 122º26′-122º31′east longitude and 37º20′-37º23′ north latitude, and the coordinates of the substation centre is 122º30′ 54.48″east longitude and 37º21′31.78″ north latitude.

The geographic location of the Project is shown in Figure-1 below.

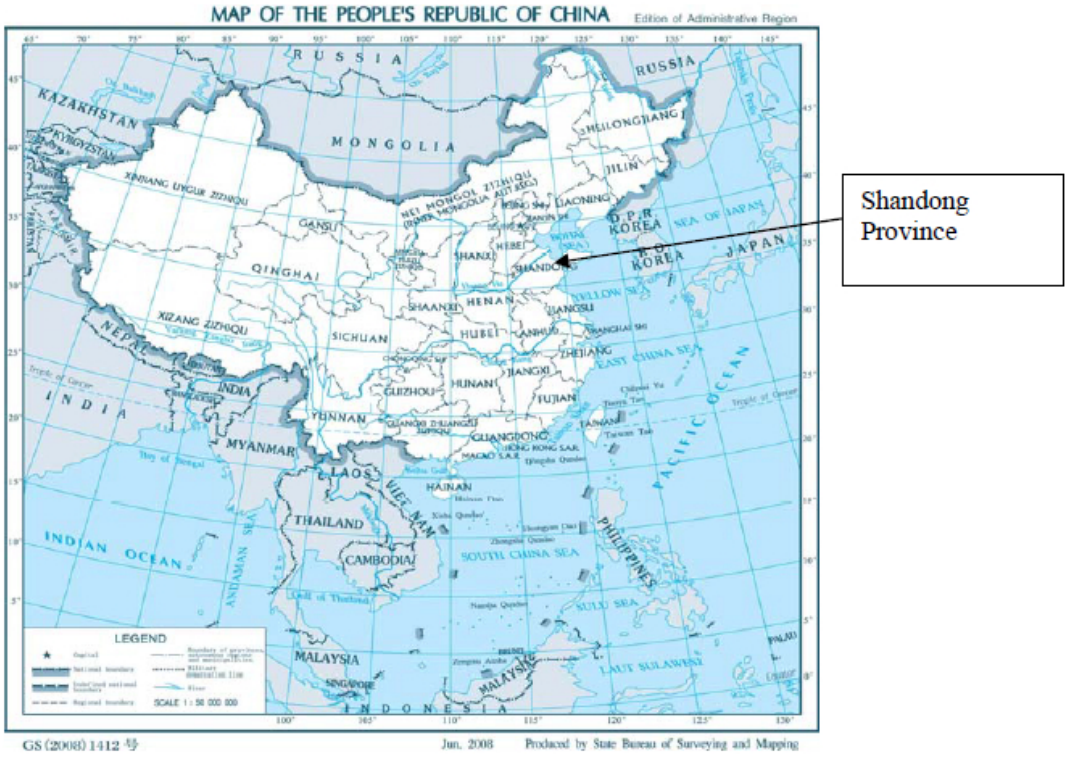

Figure 1 The geographic location of the project

1.8 Title and Reference of Methodology

The CDM consolidated baseline and monitoring methodology:

ACM0002 (Version 12.1.0): "Consolidated baseline methodology for grid-connected electricity generation from renewable sources"

http://cdm.unfccc.int/methodologies/PAmethodologies/approved.html

1.9 Other Programs

The project has been registered as a CDM project on 22/06/2011, for which a renewable crediting period of 3×7 years will be used under the CDM GHG Program. Therefore, CO_2 emission reductions generated by the project during the CDM crediting period will be verified as unique CERs, but not VCUs to avoid double counting. As to the project under VCS (Version.3.4), only emission reductions achieved from 30/06/2010~21/06/2011 will be considered as VCUs.

The project participants choose a clear VCS crediting period from 30/06/2010~21/06/2011, which has not created another form of environmental credits.

The project has been registered as a CDM project on 22/06/2011, and the registration number is 4882.

2 IMPLEMENTATION STATUS

2.1 Implementation Status of the Project Activity

The Project started construction on 18/12/2009. The first power unit started operation on 30/06/2010, and the last power unit started operation on 29/09/2010. The Project has an installed capacity of 49.5MW (33*1.5MW), providing an estimated annual net generation of about 102,337MWh. The voltage is raised to 110kV through the step-up substation, and the power is fed into the Shandong Grid, which is an integral part of the North China Power Grid. During the monitoring period from 30/06/2010~21/06/2011, all equipment worked well and no error or accident ever occurred.

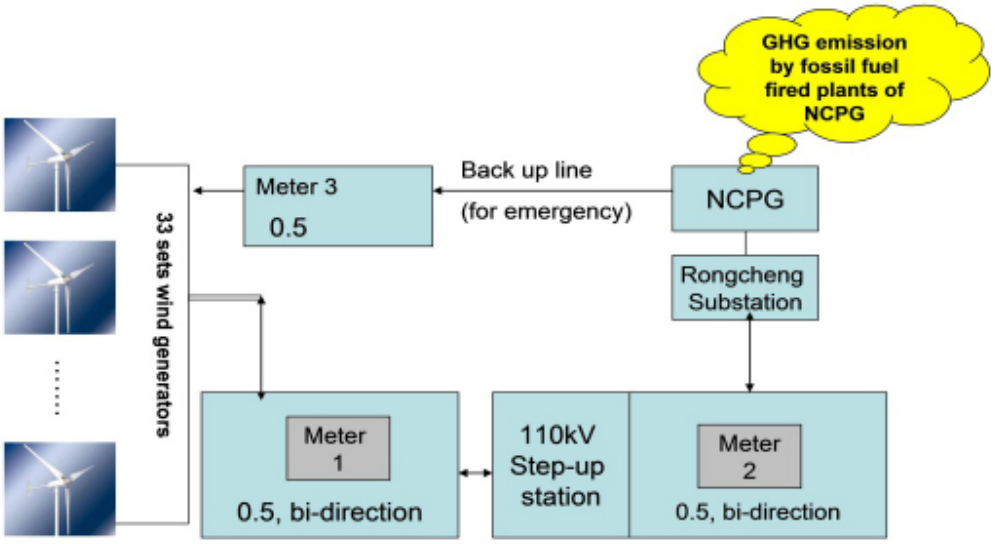

Figure 2 Diagram of the project

2.2 Deviations

2.2.1 Methodology Deviations

N/A

2.2.2 Project Description Deviations

N/A

2.3 Grouped Project

N/A

3 DATA AND PARAMETERS

3.1 Data and Parameters Available at Validation

Data / Parameter	$EF_{grid,CM,y}$
Data unit	tCO_2/MWh
Description	Emission Factor The combined margin emission factor of NCPG
Source of data	The registered PDD of the project
Value applied:	0.9502
Justification of choice of data or description of measurement methods and procedures applied	Official and authoritative statistics
Purpose of the data	Calculation of baseline emission
Comments	Na

3.2 Data and Parameters Monitored

Data / Parameter	$EG_{facility, y}$
Data unit	MWh/yr
Description	The net electricity supplied by the project activity to the grid in year y.
Source of data	Calculated based on the data of $EG_{export, y}$, $EG_{import, y}$ and $EG_{import\ backup, y}$
Description of measurement methods and procedures to be applied	$EG_{export, y}$, $EG_{import, y}$ and $EG_{import\ backup, y}$ are continously measured and recorded monthly. $EG_{facility, y}$ is calculated as $EG_{facility, y}=EG_{export, y}-EG_{import, y}-EG_{import\ backup, y}$
Frequency of monitoring/recording	Monitoring continuously and recording monthly
Value monitored:	93,047.912 MWh
Monitoring equipment	Monitored by bidirectional electricity meter (electronic) Serial number: 10030265270079 (M1) 3011500 (M2) 10030265270067 (M3) Accuracy: 0.5 Calibration frequency: At least once every three years Date of calibration: 03/06/2010, 02/06/2011 Validity: 01/06/2012 Calibration Entity: Wei Hai Power Supply Company
QA/QC procedures to be applied	The data of $EG_{export, y}$, $EG_{import, y}$ and $EG_{import\ backup, y}$ will be double checked by receipt of sales or relevant commercial data.
Purpose of the data	Calculation of baseline emission

Calculation method	$EG_{facility, y} = EG_{export, y} - EG_{import, y} - EG_{import\ backup, y}$
Comments	-

Data / Parameter	$EG_{export, y}$
Data unit	*MWh/yr*
Description	*Electricity delivered to NCPG by the proposed project in the year y.*
Source of data	Electricity meter
Description of measurement methods and procedures to be applied	The electricity delivered to NCPG by the proposed project in the year y will be monitored and measured by meter installed in the project site. The readings of electricity meter will be continuously measured and monthly recorded.
Frequency of monitoring/recording	Monitoring continuously and recording monthly
Value monitored:	93,302.537 MWh
Monitoring equipment	Monitored by bidirectional electricity meter (electronic) Serial number: 10030265270079 (M1) 30111500 (M2) Accuracy: 0.5 Calibration frequency: At least once every three years Date of calibration: 03/06/2010, 02/06/2011 Validity: 01/06/2012 Calibration Entity: Wei Hai Power Supply Company
QA/QC procedures to be applied	The meters are calibrated by qualified third party according to the relevant regulations. The accuracy of electricity meter is 0.5.
Purpose of the data	Calculation of baseline emission
Calculation method	-
Comments	-

Data / Parameter	$EG_{import, y}$
Data unit	MWh/yr
Description	*Electricity consumed by the proposed project which is imported from the NCPG at the main line in the year y.*
Source of data	Electricity meter
Description of measurement methods and procedures to be applied	The electricity consumed by the proposed project which is imported from the NCPG at the main line in the year y will be monitored and measured by meter installed in the

	project site. The readings of electricity meter will be continuously measured and monthly recorded.
Frequency of monitoring/recording	Monitoring continuously and recording monthly
Value monitored:	254.625 MWh
Monitoring equipment	Monitored by bidirectional electricity meter (electronic) Serial number: 10030265270079 (M1) 3011500 (M2) Accuracy: 0.5 Calibration frequency: At least once every three years Date of calibration: 03/06/2010, 02/06/2011 Validity: 01/06/2012 Calibration Entity: Wei Hai Power Supply Company
QA/QC procedures to be applied	The meters are calibrated by qualified third party according to the relevant regulations. The accuracy of electricity meter is 0.5.
Purpose of the data	Calculation of baseline emission
Calculation method	-
Comments	Uncertainty level of data is low.

Data / Parameter	$EG_{import\ backup\ ,y}$
Data unit	MWh/yr
Description	*Electricity consumed by the proposed project which is imported from the NCPG at the backup line in the year y.*
Source of data	Electricity meter
Description of measurement methods and procedures to be applied	*The electricity consumed by the proposed project which is imported from the NCPG at the backup line in the year y will be monitored and measured by meter installed in the project site. The readings of electricity meter will be continuously measured and monthly recorded.*
Frequency of monitoring/recording	Monitoring continuously and recording monthly
Value monitored:	0 MWh
Monitoring equipment	Monitored by bidirectional electricity meter (electronic) Serial number: 10030265270067(M3) Accuracy: 0.5 Calibration frequency: At least once every three years Date of calibration: 03/06/2010, 02/06/2011 Validity: 01/06/2012 Calibration Entity: Wei Hai Power Supply Company
QA/QC procedures to be applied	The meters are calibrated by qualified third party

	according to the relevant regulations. The accuracy of electricity meter is 0.5.
Purpose of the data	Calculation of baseline emission
Calculation method	-
Comments	Uncertainty level of data is low.

3.3 Monitoring Plan

3.3.1 Monitoring parameter

Baseline emission factor of the project is determined ex ante. Therefore the net electricity delivered by the Project to the North China Power Grid ($EG_{facility, y}$) is defined as the key data to be monitored. $EG_{facility, y}$ is calculated as follow:

$$EG_{facility, y} = EG_{export, y} - EG_{import, y} - EG_{import\ backup, y}$$

Two bidirectional meters are installed at the main line to measure electricity delivered to NCPG by the project in the year y($EG_{export, y}$) and electricity consumed by the project which is imported from the NCPG at the main line($EG_{import, y}$) in the year y. The accuracy of the meters is 0.5 and uncertainty level of the meters is not exceed 0.5%.

At the same time, a 10 KV back-up line is connected for the emergency, one meter with the accuracy of 0.5 is installed to measure the electricity imported by the back-up line.

According to the Technical Administrative Code of Electric Energy Metering (DL/T448－2000), M1 and M2 have been properly configured and checked by both grid company and project owner. M1 and M2 are operated and maintained by the grid company and project owner. Data measured by M1 and M2 were monthly recorded by the project owner. On monthly basis, the grid company issues sales receipts/records to the project company, Sale receipts are used for double check the measured data from $EG_{export, y}$ and $EG_{import,y}$. All meters mentioned above were continuously measured and monthly recorded used to calculate the Project's net electricity delivered to the grid.

3.3.2 .Monitoring system installation

The flow chart and monitoring locations of the project is as followed:

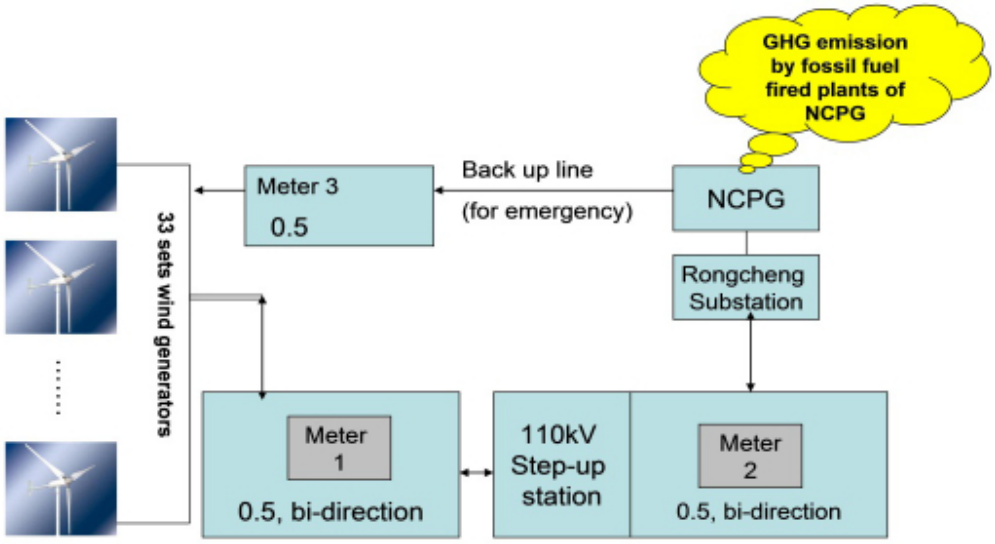

Figure 3 The flow chart and monitoring location of the project

3.3.3 Monitoring structure

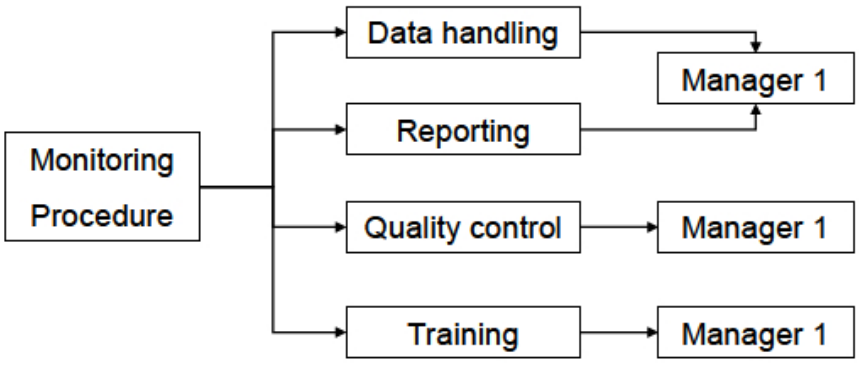

Figure 4 Organization chart

Roles and responsibilities of personnel

Plant manager of wind farm is responsible for recording and collecting the information and data required by the Monitoring Plan. The required information and data is documented and sent to the CDM officer monthly. The CDM officer works out the monitoring manual, charges of its implementation and reports to the General Manager of the company. The General Manager of the company makes the confirmations on monitoring calculation data and reports.

The project owner trained relevant staffs of the wind power plant for data monitoring and data management.

The training contains CDM knowledge, operational regulations, quality control (QC) standard, data monitoring and data management.

3.3.4 Meters maintenance and calibration

The periodical calibration and maintenance of the meters comply with the related standards and regulations of national power sector, so as to ensure the precision of meters. The meters have been calibrated annually and the calibration records shown that the accuracy of the meters during the monitoring period is in line with the approved monitoring plan.

3.3.5 Emergency procedures

In case of emergencies, which mean condition that project entity cannot monitor the main meter due to the unexpected accident, the project entity follows the following procedure:

In case that the monitoring meters cannot be monitored due to the unexpected accident, the data is confirmed by the grid company and the project owner.

During this monitoring period, no emergency happen.

4 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

4.1 Baseline Emissions

According to the registered CDM-PDD, the baseline emissions of the project are calculated as follows*:*

$$BE_y = EG_{facility,y} \times EF_{grid,CM,y} = (EG_{export,\ y} - EG_{import,\ y} - EG_{import\ backup,\ y}) \times EF_{grid,CM,y} \quad (1)$$

Where:

$EG_{facility,y}$	=	The net electricity supplied by the project activity to the grid(MWh);
$EG_{export,\ y}$	=	Electricity delivered to NCPG by the proposed project (MWh);
$EG_{import,\ y}$	=	Electricity consumed by the proposed project which is imported from the NCPG at the main line (MWh);
$EG_{import\ backup\ ,y}$	=	Electricity consumed by the proposed project which is imported from the NCPG at the backup line (MWh);
$EF_{grid,CM,y}$	=	Combined margin CO_2 emission factor for grid connected power generation in year *y* (tCO_2/MWh);

The electricity data from 30/06/2010 to 21/06/2011 are as follows:

Period	**Electricity delivered to NCPG by the project (MWh) ($EG_{export,\ y}$)**		
	Sales receipts	Meter readings	Conservative value

30/06/2010 – 24/07/2010	10,265.887	1,939.000	10,265.887
25/07/2010 – 24/08/2010		1,670.375	
25/08/2010 – 24/09/2010		2,603.125	
25/09/2010 – 24/10/2010		2,038.750	
25/10/2010 – 24/11/2010		2,428.125	
25/11/2010 – 24/12/2010	17,416.547	18,066.125	17,416.547
2010-Total	/	/	27,682.434
25/12/2010 – 24/01/2011	17,526.324	18,274.375	17,526.324
25/01/2011 – 24/02/2011	8,349.575	8,613.500	8,349.575
25/02/2011 – 24/03/2011	12,085.064	12,634.125	12,085.064
25/03/2011 – 24/04/2011	11,815.559	12,087.250	11,815.559
25/04/2011 – 24/05/2011	10,971.581	11,111.625	10,971.581
25/05/2011 – 21/06/2011	4,872.000	4,970.875	4,872.000
2011-Total	/	/	65,620.103
Total			93,302.537

Period	**Electricity consumed by the project which is imported from the NCPG at the main line (MWh) ($EG_{import, y}$)**		
	Sales receipts	Meter readings	Conservative value
30/06/2010 – 24/07/2010	0.875	0.875	0.875
25/07/2010 – 24/08/2010	1.750	1.750	1.750
25/08/2010 – 24/09/2010	3.500	3.500	3.500
25/09/2010 – 24/10/2010	19.250	19.250	19.250
25/10/2010 – 24/11/2010	26.250	26.250	26.250
25/11/2010 – 24/12/2010	19.250	19.250	19.250
2010-total	/	/	70.875
25/12/2010 – 24/01/2011	7.000	7.000	7.000
25/01/2011 – 24/02/2011	61.250	61.250	61.250
25/02/2011 – 24/03/2011	20.125	20.125	20.125
25/03/2011 – 24/04/2011	12.250	12.250	12.250
25/04/2011 – 24/05/2011	37.625	37.625	37.625
25/05/2011 – 21/06/2011	45.500	45.500	45.500
2011-Total	/	/	183.750
Total	/	/	254.625

Period	**Electricity consumed by the project which is imported from the NCPG at the backup line (MWh) ($EG_{import\ backup, y}$)**		
	Sales receipts	Meter readings	Conservative value
30/06/2010 – 24/07/2010	0	0	0
25/07/2010 – 24/08/2010	0	0	0
25/08/2010 – 24/09/2010	0	0	0
25/09/2010 – 24/10/2010	0	0	0
25/10/2010 – 24/11/2010	0	0	0
25/11/2010 – 24/12/2010	0	0	0
2010-total	/	/	0
25/12/2010 – 24/01/2011	0	0	0
25/01/2011 – 24/02/2011	0	0	0
25/02/2011 – 24/03/2011	0	0	0

25/03/2011 – 24/04/2011	0	0	0
25/04/2011 – 24/05/2011	0	0	0
25/05/2011 – 21/06/2011	0	0	0
2010-total	/	/	0
Total	/	/	0
2010 - $EG_{facility,y}$	/	/	27,611.559
2011 - $EG_{facility,y}$			65,436.353
$EG_{facility,y}$			93,047.912

Therefore, the baseline emissions in 2010 and 2011 are calculated as follows:

$BE_{y,2010}$=27,611.559 × 0.9502 tCO_2/MWh = 26,236 tCO_2e

$BE_{y,2011}$=65,436.353 × 0.9502 tCO_2/MWh = 62,177 tCO_2e

Thus, the total baseline emissions from 30/06/2010 to 21/06/2011 are 88,413 tCO_2e.

4.2 Project Emissions

The Project is a wind power project that the project emissions should not be considered as per ACM0002, i.e. PE_y = 0 tCO_2e

4.3 Leakage

According to ACM0002, the leakage of the Project is considered as zero, i.e. Ly=0 tCO_2e.

4.4 Net GHG Emission Reductions and Removals

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)
Year 2010	26,236	0	0	26,236
Year 2011	62,177	0	0	62,177
Total	88,413	0	0	88,413