

**MONITORING REPORT FORM (F-CDM-MR)**  
**Version 02.0****MONITORING REPORT**

<b>Title of the project activity</b>	<b>Liaoning Qujiagou Wind Farm Project</b>
<b>Reference number of the project activity</b>	<b>3862</b>
<b>Version number of the monitoring report</b>	<b>01</b>
<b>Completion date of the monitoring report</b>	<b>17/07/2012</b>
<b>Registration date of the project activity</b>	<b>29/12/2010</b>
<b>Monitoring period number and duration of this monitoring period</b>	<b>Monitoring period Number: 01 Monitoring period Dates: 01 /01 /2011 – 31/05/2012 (first and last days included)</b>
<b>Project participant(s)</b>	<b>Fuxin Shenhua Xiehe Wind Power Co., Ltd. Energy Systems International B.V.</b>
<b>Host Party(ies)</b>	<b>China</b>
<b>Sectoral scope(s) and applied methodology(ies)</b>	<b>Scope 1 Approved consolidated baseline and monitoring methodology ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (Version 11).</b>
<b>Estimated amount of GHG emission reductions or net anthropogenic GHG removals by sinks for this monitoring period in the registered PDD</b>	<b>150,485 tCO<sub>2</sub>e</b>
<b>Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period</b>	<b>132,393 t CO<sub>2</sub>e</b>

**SECTION A. Description of project activity****A.1. Purpose and general description of project activity**

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Liaoning Qujiagou Wind Farm Project (hereinafter referred to as the Project) is a newly built wind farm sited within Houxinqiu Town, Zhangwu County, Fuxin City, Liaoning Province, P.R.China. It is invested, constructed and operated by Fuxin Shenhua Xiehe Wind Power Co., Ltd..

The total installed capacity of the Project is 49.5 MW equipped with 33 sets of wind turbines with a unit capacity of 1,500 kW. The estimated electricity delivered to Northeast China Grid by the Project is 103,346 MWh per year and the average annual operating hours is 2,088 h with a power load factor of 0.2381. Electricity generated by the Project will be delivered to Northeast China Grid via the Step-up substation at the Project Site.

Northeast China Grid is dominated by thermal power plants. In the absence of the Project, equivalent amount of annual power output will be generated and supplied by Northeast China Grid which the Project is connected to. This is the same with the baseline scenario of the Project. It is expected that the Project as a renewable energy source will generate emission reductions of about 106,242 tCO<sub>2</sub>e per year by avoiding CO<sub>2</sub> emissions from the same amount of electricity generation from Northeast China Grid, which is mainly composed of traditional thermal power plants.

The Project commenced construction on 03/12/2008. The first turbine was commissioned on 18/09/2019, And all the 33 sets of turbine have been put into operation gradually till 20/12/2009.

The expected technical lifetime of the Project is 20 years as stated in the registered PDD.

This Monitoring Report is for the first phase of monitoring period, which is from 01/01/2011-31/05/2012. The total emission reduction achieved in this monitoring period is 132,393 tCO<sub>2</sub>e.

**A.2. Location of project activity**

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The Project is sited about 3 km southeast to the downtown of Houxinqiu Town, Zhangwu County, Fuxin City, Liaoning Province, P.R.China. The center of the Project Site has geographical coordinates with east longitude of 122°50'01" and north latitude of 42°34'43". The area of the wind farm is 14 km<sup>2</sup>.

**A.3. Parties and project participant(s)**

Party involved (host) indicates a host Party)	Private and/or public entity(ies) project participants (as applicable)	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
People's Republic of China (host)	Fuxin Shenhua Xiehe Wind Power Co., Ltd.	No
Netherlands	Energy Systems International B.V.	No

**A.4. Reference of applied methodology**

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The proposed project will use the approved consolidated baseline and monitoring methodology ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (Version 11).

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).

For more information regarding the methodology and the tools as well as their consideration by the Executive Board, please refers to the web site:

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

#### **A.5. Crediting period of project activity**

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A renewable crediting period is chosen. There is no post-registration change to the start date of the crediting period. The first crediting period of the project activity is from 01 /01 /2011 to 31/12/2017.

### **SECTION B. Implementation of project activity**

#### **B.1. Description of implemented registered project activity**

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The Project commenced construction on 03/12/2008. The first turbine was commissioned on 18/09/2019, And all the 33 sets of turbine have been put into operation gradually till 20/12/2009.

The project implementation follows monitoring plan in the registered PDD.

#### **B.2. Post registration changes**

##### **B.2.1. Temporary deviations from registered monitoring plan or applied methodology**

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The monitoring for this project during this monitoring period is conducted in accordance with the MP of the registered PDD and applied methodology. Thus, temporary deviation did not occur and thus is not applicable for the project.

##### **B.2.2. Corrections**

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The monitoring for this project during this monitoring period is conducted in accordance with the MP of the registered PDD and applied methodology. Thus, corrections did not occur and thus is not applicable for the project.

##### **B.2.3. Permanent changes from registered monitoring plan or applied methodology**

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The monitoring for this project during this monitoring period is conducted in accordance with the MP of the registered PDD and applied methodology. Thus, permanent changes did not occur and thus is not applicable for the project.

##### **B.2.4. Changes to project design of registered project activity**

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The monitoring for this project during this monitoring period is conducted in accordance with the MP of the registered PDD and applied methodology. Thus, changes to project design of registered project activity did not occur and thus is not applicable for the project.

##### **B.2.5. Changes to start date of crediting period**

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Start date of monitoring period is 01/01/2011, the same as the date in the registered PDD.

##### **B.2.6. Types of changes specific to afforestation or reforestation project activity**

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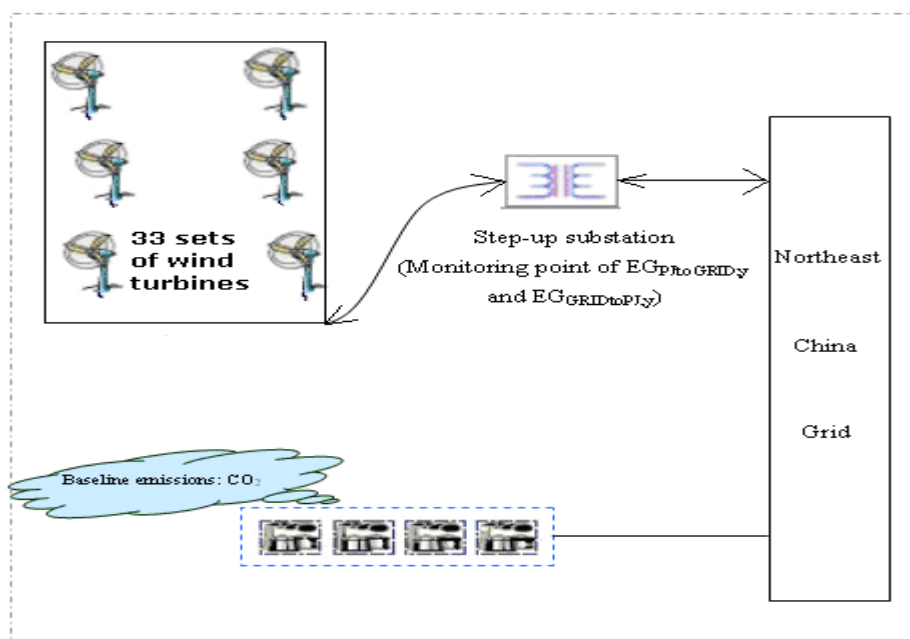
This is not applicable since the project is not afforestation or reforestation project activities

## SECTION C. Description of monitoring system

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### Monitoring System

The net electricity generation of the Liaoning Qujiagou Wind Farm Project is monitored through the main metering equipment installed at the Step-up substation at the Project Site, recording exports to the grid (supply) and imports from the grid (consumption). Net generation supplied is calculated as exports minus imports. The backup meter is also installed at the same substation. The accuracy of the meters is 0.2s.

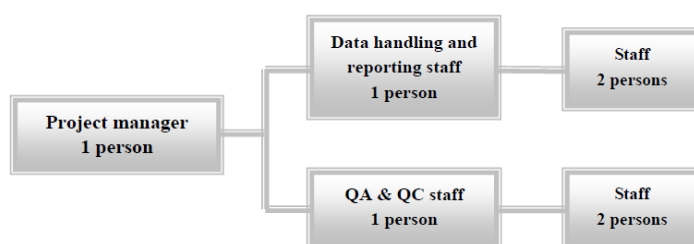


### Data Collection Procedures

- Electricity generated by project and electricity imported from grid are continuously measured by Monitoring meter and monthly recorded by appointed staff.
- As per the regulation of the grid company, the designated personnel from Grid Company and the project owner record meter reading at 24:00 of last day of each month on receipts.
- Based on the Monthly Reading Records, the grid company issue electricity transaction.
- wind farm cross checked with receipts and reports of the readings to the DOE before the verification is requested.

### Organizational structure

The Project Manager is responsible for 1) implementation and supervision of the monitoring activity and 2) communication of this CDM project. The data handling and reporting personnel are responsible for managing, processing and submitting data. The QA & QC personnel are responsible for calibration of meters and supervision of the whole process quality.



**Roles and responsibilities**

The Project manager supervises the whole monitoring activities and management. And all the monitored data was recorded by Reporting manager and checked by QA & QC manager. The QA & QC manager is also duty on maintenance of the meters.

**Emergency procedures**

A main meter and a back-up meter are installed at Transformer Substation to monitor electricity delivered to Northeast China Grid. The back-up meter will be used for measurement if the main meter failures to function in a normal or satisfactory manner.

**SECTION D. Data and parameters****D.1. Data and parameters fixed ex ante or at renewal of crediting period**

Data/Parameter	EF
Unit	tCO <sub>2</sub> /MWh
Description	Emission factor which is ex-anted according to the applied methodology.
Source of data	The baseline emission factor $EF_{grid,CM,y}$ of Northeast China Grid is calculated as the weighted average of the Operating Margin emission factor ( $EF_{grid,OM,y}$ ) and the Build Margin emission factor ( $EF_{grid,BM,y}$ ), where the weight of Operating Margin, $\omega_{OM}$ is 0.75 and Build Margin, $\omega_{BM}$ is 0.25 by default.
Value(s) applied	1.028025
Purpose of data	The data is used for the baseline emission calculation.
Additional comment	The baselines emission factor was determined ex ante and will be used throughout the first crediting period.

**D.2. Data and parameters monitored**

Data/Parameter	EG <sub>PJtoGRID,y</sub>					
Unit	MWh					
Description	Electricity exported to grid by the proposed project through the main line in year y.					
Measured/Calculated /Default	Continuously measured by the bidirectional meters (one main meter and one backup meter) installed at the Step-up substation at the Project Site and monthly recorded.					
Source of data	Measured by meter.					
Value(s) of monitored parameter	129,012.94					
Monitoring equipment	Meters	Serial No.	Accuracy class	Calibration date	Validity	Calibration frequency
	M1	96627034	0.2s	02/06/2011	Yes	Annually
		96627034	0.2s	01/01/2011	Yes	Annually
	M2	96627035	0.2s	02/06/2011	Yes	Annually
		96627035	0.2s	01/01/2011	Yes	Annually
Measuring/Reading/ Recording frequency	Continuously measurement and monthly recording					
Calculation method (if applicable)	NA					
QA/QC procedures	The electricity supplied to the grid is monitored and recorded and the project operator is responsible for recording this set of data. Data will be archived for 2 years following the end of the last crediting period by means of electronic and paper backup. Receipts from electricity sales are obtained for double check. The calibration frequency is once a year.					
Purpose of data	Baseline emission calculation					
Additional comment	-					



Data/Parameter	EG <sub>GRIDtoPJ,y</sub>					
Unit	MWh					
Description	Electricity imported from the grid to the project through the main line in year y.					
Measured/Calculated /Default	Continuously measured by the bidirectional meters (one main meter and one backup meter) installed at the Step-up substation at the Project Site and monthly recorded.					
Source of data	Measured by meter.					
Value(s) of monitored parameter	228.76					
Monitoring equipment	Meters	Serial No.	Accuracy class	Calibration date	Validity	Calibration frequency
	M1	96627034	0.2s	02/06/2011	Yes	annually
		96627034	0.2s	01/01/2011	Yes	Annually
	M2	96627035	0.2s	02/06/2011	Yes	annually
		96627035	0.2s	01/01/2011	Yes	Annually
Measuring/Reading/ Recording frequency	Continuously measurement and monthly recording					
Calculation method (if applicable)	Not applicable					
QA/QC procedures	The measurement will be in compliance with the national guidelines and requirements of the grid company for accuracy and reliability. The calibration will be carried out according to relevant national standards and regulations by authorized organization.					
Purpose of data	Baseline emission calculation					
Additional comment	-					



<b>Data/Parameter</b>	$EG_{facility, y}$
<b>Unit</b>	MWh
<b>Description</b>	Quantity of net electricity generation supplied to the Grid by the project activity in year y.
<b>Measured/Calculated/Default</b>	Measured by $EG_{PJtoGRID, y}$ minus $EG_{GRIDtoPJ, y}$
<b>Source of data</b>	Measured by meter.
<b>Value(s) of monitored parameter</b>	128,784.18
<b>Monitoring equipment</b>	N/A
<b>Measuring/Reading/Recording frequency</b>	Continuously measurement and monthly recording
<b>Calculation method (if applicable)</b>	Not applicable
<b>QA/QC procedures</b>	The metering equipments at the project site will be calibrated by a qualified Meter Calibration Organization according to the management standard. Power imported from the grid will be double checked according to electricity sales receipts. The accuracy of the metering equipments is not lower 0.5s.
<b>Purpose of data</b>	Baseline emission calculation
<b>Additional comment</b>	-

### D.3. Implementation of sampling plan

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The parameters monitored described in section D.2 above are not involved the sampling approach.

## SECTION E. Calculation of emission reductions or GHG removals by sinks

### E.1. Calculation of baseline emissions or baseline net GHG removals by sinks

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The baseline emission  $BE_y$  (tCO<sub>2</sub>) during the monitoring period results from:

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

Where:

$BE_y$  is the baseline emissions in year y (tCO<sub>2</sub>e);





$EG_{PJ,y}$  is the quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the project activity in year y (MWh);

$EF_{grid,CM,y}$  is the combined margin CO2 emission factor for grid connected power generation in year y calculated using the latest version of *Tool to Calculate the Emission Factor for an Electricity System* (tCO2e/MWh).

The Project is the installation of a new grid-connected renewable power plant at a site where no renewable power plant was operated prior to the implementation of the project activity, so:

$$EG_{PJ,y} = EG_{facility,y}$$

$$EG_{facility,y} = EG_{PJtoGRID,y} - EG_{GRIDtoPJ,y}$$

Where:

$EG_{PJtoGRID,y}$  - Electricity supplied by the project activity to the grid in year y (MWh)..

$EG_{GRIDtoPJ,y}$  - Electricity imported from the grid by the proposed project during year y (MWh).

$EG_{facility,y}$  - Quantity of net electricity generation supplied to the Grid by the project activity in year y (MWh).

#### Electricity supplied to the Northeast China Grid by the Project

Monitoring period	Electricity supplied to the grid ( $EG_{PJtoGRID,y}$ ) unit: MWh	Electricity imported from the grid ( $EG_{GRIDtoPJ,y}$ ) unit: MWh
01/01/2011-31/01/2011	5733.91	13.79
01/02/2011-02/28/2011	8590.82	14.56
01/03/2011-31/03/2011	11908.54	5.53
01/04/2011-30/04/2011	12774.72	5.88
01/05/2011-31/05/2011	393.61	0.14
01/06/2011-30/06/2011	20046.39	18.9
01/07/2011-31/07/2011	5523.14	13.09
01/08/2011-31/08/2011	3021.48	23.17
01/09/2011-30/09/2011	5727.26	9.45
01/10/2011-31/10/2011	8968.26	7.7
01/11/2011-30/11/2011	4268.04	23.1
01/12/2011-31/12/2011	4728.36	23.73
01/01/2012-31/01/2012	2717.26	34.65
01/02/2012-29/02/2012	6567.19	8.68
01/03/2012-31/03/2012	7866.25	10.99
01/04/2012-30/04/2012	12410.09	5.95
01/05/2012-31/05/2012	7767.62	9.45

### Net Electricity supplied to the NCPG by the Project

Monitoring Period	Electricity supplied to the grid for CERs calculation $EG_{PJtoGRID,y}$ (MWh)	Electricity imported from the grid for CERs calculation $EG_{GRIDtoPJ,y}$ (MWh)	Quantity of net electricity generation supplied to the Grid for CERs calculation $EG_{facility,y}$ (MWh)
	A	B	D=A-B
01/01/2011-31/05/2012	129,012.94	228.76	128,784.18

According to the registered PDD, the Emission factor of the grid is determined ex-ante; the ex-ante determined emission factor is 1.028025 CO<sub>2</sub>e/MWh.

$$BE_y = EG_{PJ,y} \times EF_{grid,CM,y} = 132,393 \text{ tCO}_2\text{e}.$$

### E.2. Calculation of project emissions or actual net GHG removals by sinks

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According to the ACM0002 (Version 11), the emissions of wind power project activity is zero, PE<sub>y</sub>=0

### E.3. Calculation of leakage

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According to the applied methodology, as a renewable energy project, the project leakage of this project is zero

### E.4. Summary of calculation of emission reductions or net anthropogenic GHG removals by sinks

Time Period	Baseline emissions or baseline net GHG removals by sinks (tCO <sub>2</sub> e)	Project emissions or actual net GHG removals by sinks (tCO <sub>2</sub> e)	Leakage (tCO <sub>2</sub> e)	Emission reductions or net anthropogenic GHG removals by sinks (tCO <sub>2</sub> e)
Total	132,393	0	0	132,393

### E.5. Comparison of actual emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD

Item	Values estimated in ex-ante calculation of registered PDD	Actual values achieved during this monitoring period
Emission reductions or GHG removals by sinks (tCO <sub>2</sub> e)	150,485	132,393

### E.6. Remarks on difference from estimated value in registered PDD

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The actual emission reductions during this monitoring period are 132,393 tCO<sub>2</sub>e, which is lower than the estimation in the registered PDD.



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**History of the document**

<b>Version</b>	<b>Date</b>	<b>Nature of revision</b>
02.0	EB 66 13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20).
01	EB 54, Annex 34 28 May 2010	Initial adoption.
<b>Decision Class:</b> Regulatory <b>Document Type:</b> Form <b>Business Function:</b> Issuance		