Monitoring report form

(Version 05.1)

Complete this form in accordance with the Attachment "Instructions for filling out the monitoring report form" at the end of this form.

MONITORING REPORT		
Title of the project activity	Inner Mongolia China Water Group Huade Cheliwusu Wind Farm 49.5MW Project	
UNFCCC reference number of the project activity	5909	
Version number of the monitoring report	1.0	
Completion date of the monitoring report	24/09/2015	
Monitoring period number and duration of this monitoring period	2nd monitoring period: 01/03/2014 - 20/08/2015 (first and last days included, 538 days in all)	
Project participant(s)	China Water Group Huade Wind Power Co., Ltd. (Project owner) Eco-Tec Asia (UK) Ltd. (Buyer)	
Host Party	China	
Sectoral scope(s)	01: Energy Industries (renewable resources) Wind Power Generation	
Selected methodology(ies)	ACM0002: Consolidated baseline methodology for grid-connected electricity generation from renewable sources (Version 12.1.0，EB 58)	
Selected standardized baseline(s)	-	
Estimated amount of GHG emission reductions or net GHG removals by sinks for this monitoring period in the registered PDD	95,181tCO_2e / 365days × 538days = 140,294tCO_2e	
Total amount of GHG emission reductions or net GHG removals by sinks achieved in this monitoring period	GHG emission reductions or net GHG removals by sinks reported up to 31 December 2012	GHG emission reductions or net GHG removals by sinks reported from 1 January 2013 onwards
	0	133,613

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

>>

The purpose of Inner Mongolia China Water Group Huade Cheliwusu Wind Farm 49.5MW Project (hereafter "the Project") is to utilize wind resources for electricity generation. The Project involves the installation of 33 sets of wind turbines with unit capacity of 1500kW, reaching a total capacity of 49.5MW. The electricity supplied by the Project is sold to the North China Power Grid ("NCPG"). The Project will reduce greenhouse gas ("GHG") emissions by avoiding carbon dioxide emissions from the generation of electricity by fossil fuel power plants.

The Project delivers estimated 102,246 MWh of electricity per year to the NCPG with an average load factor of 23.6%. The Project will reduce greenhouse gas ("GHG") emissions by avoiding carbon dioxide emissions from the generation of electricity by fossil fuel power plants that presently supply the NCPG. The Project's annual expected emissions reduction is 95,181 tCO_2e.

Relevant dates for the Project activity are as below

Table 1 Project Timeline

Construction start date	20/04/2011
Date of grid connection agreement signed and started operation	01/03/2013
Date of CDM registration	21/03/2012
Fixed crediting period	01/04/2012-31/03/2022
The 1st monitoring period (this monitoring period)	01/04/2012-28/02/2014
The second monitoring period (this monitoring period)	01/03/2014-20/08/2015

In this monitoring period, 133,613tCO_2e emission reductions were achieved.

A.2. Location of project activity

>>

The Project is located at Cheliwusu Wind Farm 20 km away from the southwest of Changshun Town, Huade County, Ulanqab City in the Inner Mongolia Autonomous Region of the People's Republic of China. Huade County is located in the north of Ulanqub City, and centre of Inner Mongolia Autonomous Region. The centre geographic coordinates of the wind farm is 114.0023°E, 41.7366°N. The Project site covers an area of 113.9668°E ~ 114.0269°E and 41.7165°N ~ 41.7529°N

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 whether the Party involved wishes to be considered as project participant (yes/no)
China (host)	China Water Group Huade Wind Power Co., Ltd.	No
United Kingdom of Great Britain and Northern Ireland	Eco-Tec Asia (UK) Ltd	No

A.4. Reference of applied methodology and standardized baseline

>>

The applied approved methodology to the Project is ACM0002: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (Version 12.1.0, EB 58)

The methodology refers to the following tools:

"Tool for the demonstration and assessment of additionality" (Version 05.2.1 EB 39)
"Tool to calculate the emission factor for an electricity system" (Version 02.2.1, EB63)

For more information please refer to:
http://cdm.unfccc.int/methodologies/PAmethodologies/approved.html

A.5. Crediting period of project activity

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Table 2 Crediting Period of the Project

Crediting period	Fixed crediting period
Starting date of crediting period	01/04/2012
End date of crediting period	31/03/2022

A.6. Contact information of responsible persons/entities

>>

Responsible Person: Wu Xin
Responsible Entity: Eco-Tec Asia (UK) Ltd
Address: 12 Zhong Guan Cun South Street, A803, Tianzuo International Building, Haidian District, Beijing.
Postcode: 100081
Telephone: (86)-10-6215 6001 ext 822
Facsimile: (86)-10-6215 6006
E-mail: colin.wu@ecotec-asia.com

SECTION B. Implementation of project activity

B.1. Description of implemented registered project activity

>>

The Project activity was started construction on 20/04/2011. All the wind turbines have been put into full commercial operation since 01/03/2013, and well operated during this monitoring period.

During this monitoring period, the Project was in normal and smooth operation as per the registered PDD without any emergencies or special events. There have been no overhaul times, downtimes of equipment, exchange of equipment that occurred during the monitoring period; and no events or situations that occurred during the monitoring period, which may impact the applicability of the applied methodology.

All 33 sets of wind turbines are produced by Sinovel Wind Group Co., Ltd. with a rated capacity of 1.5MW, accumulating a total capacity of 49.5MW. Key technical parameters of the wind turbines are listed in table 3.

Table 3 Key Technical Specifications of Wind Turbines

Parameters		Value
Manufacturer / Type		Sinovel Wind Group Co., Ltd. SL1500/77
Life Time (Year)		20
Annual Operation Hours (Hours)		2066
Plant Load Factor (PLF)		23.6
Wind Wheel	Diameter (m)	77.4
	Rated Capacity (kW)	1500
	Cut-in Wind Speed (m/s)	3
	Rated Wind Speed (m/s)	11
	Cut-out Wind Speed (m/s)	20

	Type	variable blade
Generator	Type	Direct-drive permanent magnet synchronous generator
	Capacity (kW)	1520
	Rated Voltage (V)	690
Tower	Type	cone
	Hub Height (m)	62.4
Power factor		0.9 (inductor) ~ 0.95 (capacitor)

These turbines are expected to deliver 102,246 MWh of electricity to the NCPG annually.

The project will share the same gateway electrical meters at the Xingguang 220kV Substation with other seven projects developed by the same project owner. The list of the eight projects that share the same gateway electrical meters at the Xingguang 220kV Substation is as below:

- Huade Phase I project: *Huade Changshun 49.5MW Wind Power Project* (ref. No. 2093);
- Huade Phase II project: *Inner Mongolia China Water Group Huade Sandaogou Wind Farm 49.5MW Project* (ref. No. 5781);
- Huade Phase III project: *Inner Mongolia China Water Group Huade Heping Wind Farm 49.5MW Project* (ref. No. 5900);
- Huade Phase IV project: *Inner Mongolia China Water Group Huade Niujiacun Wind Farm 49.5MW Project* (ref. No. 5883);
- Huade Phase V project: *Inner Mongolia China Water Group Huade Niujiafangzi Wind Farm 49.5MW Project* (ref. No. 5992);
- Huade Phase VI project: *Inner Mongolia China Water Group Huade Sitaifangzi Wind Farm 49.5MW Project* (ref. No. 5990);
- Huade Phase VII project: *Inner Mongolia China Water Group Huade Erligetu Wind Farm 49.5MW Project* (ref. No. 5904);
- **the Project:**
  Huade Phase VIII project: *Inner Mongolia China Water Group Huade Cheliwusu Wind Farm 49.5MW Project* (ref. No. 5909);

The two bi-directional gateway meters (one is the main meter and the other is the back-up meter) are installed at the 220kV side of the Xingguang 220kV Substation to monitor the total amount of electricity delivered to and purchased from the NCPG by the eight projects simultaneously and the net total amount of electricity supplied to the NCPG by the eight projects activity would be calculated based on the readings of those meters. In order to calculate the exact amount of electricity delivered to and purchased from the NCPG by the eight projects respectively, there have installed an bi-directional electrical meter at each of the 35kV transmission lines for each of the eight projects.

The line diagram showing all relevant monitoring points is as following:

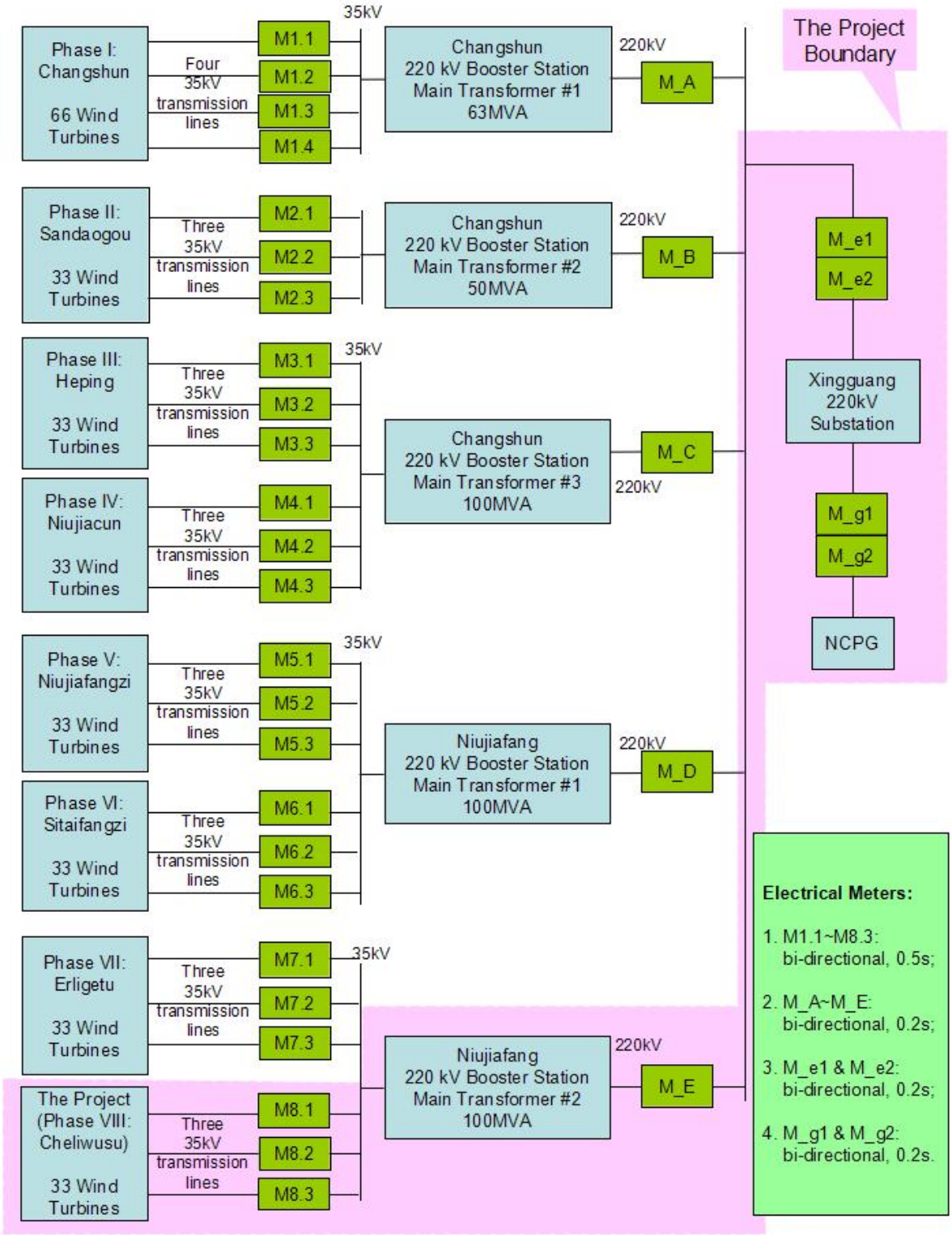

Figure 1 Electricity Generation Process by Wind Energy

B.2. Post-registration changes

B.2.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline

>>
N/A

B.2.2. Corrections

>>

The name of the booster station was changed from “Niujiafangzi” to “Niujiafang”. The correction was described in PRC-5781-001 which has been approved by EB.

B.2.3. Changes to start date of crediting period

>>
N/A

B.2.4. Inclusion of a monitoring plan to the registered PDD that was not included at registration

>>
N/A

B.2.5. Permanent changes from registered monitoring plan, applied methodology or applied standardized baseline

>>
The accuracy of electricity meter and the recording time of the electricity amount were changed. The changes were described in PRC-5781-001 which has been approved by EB.

B.2.6. Changes to project design of registered project activity

>>
N/A

B.2.7. Types of changes specific to afforestation or reforestation project activity

>>

N/A

SECTION C. Description of monitoring system

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As described in the registered PDD, the net electricity supplied to the grid from the Project ($EG_{facility\ ,\ y}$) is monitored parameters. Its monitoring system is achieved by the following monitored parameters:

Table 4 The Data Collection and Handling

Monitoring Data	$ES_{j.i,\ export\ ,y}$ (j=I, II, III, IV, V, VI, VII, VIII; i=1, 2, 3, 4 for Phase I project, i=1, 2, 3 for the other 7 projects) $ES_{j.i,\ import\ ,y}$ have not been monitored as per PDD due to the fact that the electricity company has taken the monthly imported electricity amount as pre-set amount instead of	$ES_{p\ ,\ export,\ y}$ (p=A, B, C, D, E) $ES_{p\ ,\ import,\ y}$ (p=A, B, C, D, E)	$ES_{total,\ ,\ export,\ y}$ & $ES_{total,\ ,\ import,\ y}$	$EG_{facility,y}$

	monitored amount.				
Monitoring Equipments	25 meters: Mj.i (j=1, 2, …, 8; i=1, 2, 3, 4 for Phase I project, i=1, 2, 3 for the other 7 projects)	5 meters: M_p (p=A, B, C, D, E; bi-directional)	2 evaluation meters (M_e1 as main and M_e2 as its back-up meter)	2 gateway meters (M_g1 as main and M_g2 as its back-up meter)	Measured based on the meters: M_g1, Mj.i (j=1, 2, …, 8; i=1, 2, 3, 4 for Phase I project where j=1, i=1, 2, 3 for the other 7 projects where j=2 ~ 7).
Data Collection	The Project owner will record these data on the 20th of every month, and store the relevant documents.			The grid company and the Project owner will record these data on the 20th of every month The grid company will issue the invoice of imported electricity and the project owner will issue the invoice of exported electricity.	The Project owner will perform calculation based on Formula <1> and the monitored results every month, and store the relevant documents.
Data Handling	Monthly monitoring results will be signed off and approved by CDM Project Manager before it is accepted and stored. This internal audit will check compliance with operational procedures in the monitoring plan, and will also identify potential improvements to procedures to improve monitoring and reporting in future.				
	The Project owner will provide meter readings and invoice photocopies to DOE for verification.				

- **Data calculation**

Based on the registered PDD, $EG_{facility,y}$ can be calculated as follows:

Formula <1>:

$$EG_{facility,y} = ES_{total,export,y} \times \frac{\sum_{i=1}^{3} ES_{VIII,\ i,\ export,\ y}}{\sum_{i=1}^{4} ES_{I,\ i,\ export,\ y} + \sum_{j=II}^{VIII}\sum_{i=1}^{3} ES_{j,\ i,\ export,\ y}}$$

$$- ES_{total,import,y} \times \frac{\sum_{i=1}^{3} ES_{VIII,\ i,\ import,\ y}}{\sum_{i=1}^{4} ES_{I,\ i,\ import,\ y} + \sum_{j=II}^{VIII}\sum_{i=1}^{3} ES_{j,\ i,\ import,\ y}}$$

Where:

$EG_{facility,y}$: is quantity of net electricity generation supplied by the Project to the NCPG in year y.

$ES_{total,export,\ y}$: is the total amount of electricity exported to the grid from all the eight projects developed by the same project owner as listed above measured by the same gateway meter(s) M_g1 (and M_g2 as its back-up);

$ES_{total,\ import,\ y}$: is the total amount of electricity imported from the grid to all the eight projects developed by the same project owner as listed above measured by the gateway meter(s) M_g1 (and M_g2 as its back-up);

$ES_{j,\ i,\ export\ ,y}$: is the electricity exported to the grid by the Phase j project part i (j=I, II, III, …, VIII; i=1, 2, 3, 4 for Phase I project, i=1, 2, 3 for the other 7 projects) measured by the meter Mj.i (j=1, 2, 3, …, 8; i=1, 2, 3, 4 for Phase I project, i=1, 2, 3 for the other 7 projects) at the project site;

$ES_{j,\ i,\ import\ ,y}$: is the electricity imported from the grid to the Phase j project part i (j=I, II, III, …, VIII; i=1, 2, 3, 4 for Phase I project, i=1, 2, 3 for the other 7 projects) measured by the meter Mj.i (j=1, 2, 3, …, 8; i=1, 2, 3, 4 for Phase I project, i=1, 2, 3 for the other 7 projects) at the project site;

During this monitoring period, all parameters in Formula <1> have been monitored and recorded.

The location of main meters, separate meters and transmission lines are displayed as following:

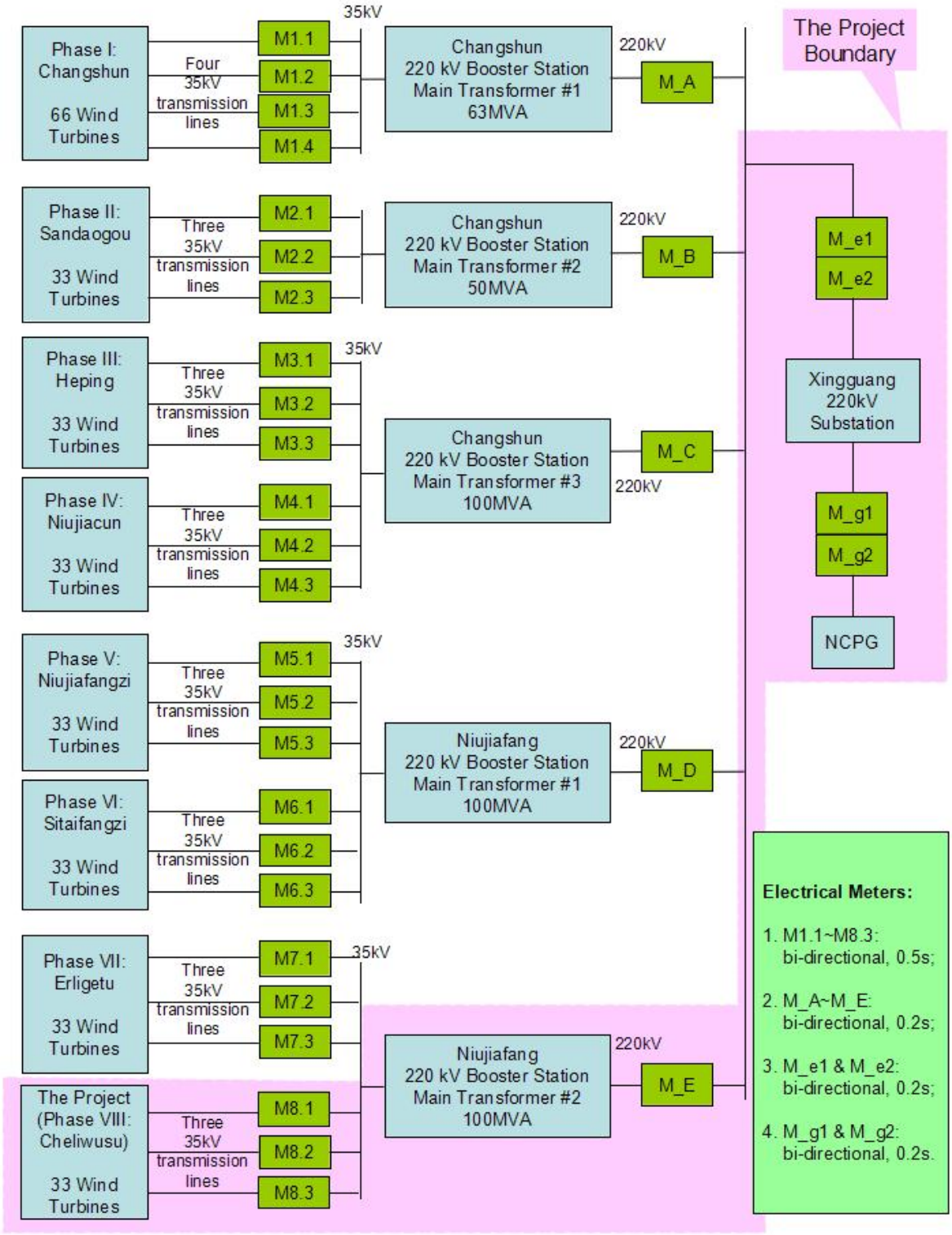

Figure 2 Diagram for metering points of the Project

- **Monitoring organization**

The Project owner retains overall responsibility for daily monitoring and reporting. A CDM group will be established within the Project owner to carry out the required monitoring work. The project owner will appoint a CDM manager with responsibility for monitoring the data related to the calculation of emission reductions. Technical and financial teams will also be organized to assist the CDM manager, as displayed in Figure below.

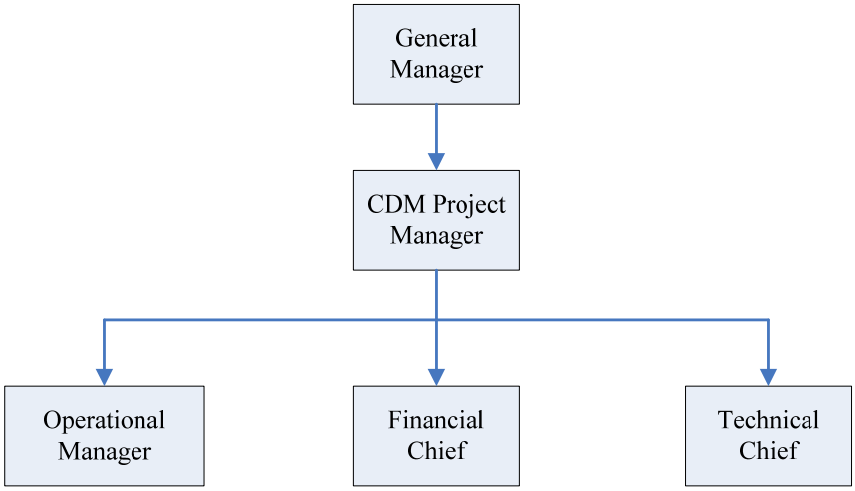

Figure 3 Structure of CDM group

The responsibilities of the Project staff are as follow:

- **General Manager**: to be responsible for the overall execution of the monitoring plan;
- **CDM project Manager**: to make sure each division of the monitoring team works as stipulated in the monitoring plan; report the monitoring work to general manager; responsible for periodic verification, etc.;
- **Operation Manager**: to be responsible for daily operation and electricity meter reading and recording;
- **Financial Chief**: to keep sales and/or purchase receipts, if any; and
- **Technical Chief**: to make sure that all the electricity meters are maintenance regularly according to industrial standard.
- **Emergency procedure**

Once a monitoring meter in fault, it shall be replaced immediately with another calibrated meter by a professional engineer within one month. Failure events will be recorded in the site events log book. The fault meter shall be repaired and calibrated only by national designated institutions with metering certificate.

- If the main gateway meter M_g1 reading exceeds the allowable error or the meter functions improperly, the net electricity supplied to NCPG by the Project shall be determined according to Formula <1*> as follows:
  - The total amount of electricity exported to or imported from the grid will be calculated according to the backup gateway meter M_g2, unless a test by either party reveals that it is inaccurate;
- If the errors of both the gateway meters M_g1 and M_g2 exceed the national or trade standard allowance levels or the meters function improperly, the quantity of net electricity supplied to the NCPG by the Project will be calculated according to Formula <1*> as follows:
  - The total amount of electricity exported to or imported from the grid will be calculated according to the main evaluation electricity meter M_e1 readings with consideration of the historical line loss rate, unless either party doubts the meter's accuracy;

Formula <1*>:

- $$EG_{facility,y} = ES_{total,export,y} \times \frac{\sum_{i=1}^{3} ES_{VIII,\ i,\ export,\ y}}{\sum_{i=1}^{4} ES_{I,\ i,\ export,\ y} + \sum_{j=II}^{VIII} \sum_{i=1}^{3} ES_{j,\ i,\ export,\ y}} - ES_{total,import,y}$$

- If the errors of both the gateway meters M_g1 and M_g2, as well as the main evaluation electricity meter M_e1 exceed the national or trade standard allowance levels or the meters function improperly,

the quantity of net electricity supplied to NCPG by the Project will be calculated according to Formula <1> as follows:

• The total amount of electricity exported to or imported from the grid will be calculated according to the back-up evaluation electricity meter M_e2 readings with consideration of the historical line loss rate, unless either party doubts the meter's accuracy;

- If the errors of all the two gateway meters M_g1 and M_g2 and the two evaluation meters M_e1 and M_e2, or any of the meters Mj.i (j≠7, 8; j=1, 2, 3, 4, 5, 6; i=1, 2, 3, 4 for Phase I project and i=1, 2, 3 for other seven projects) exceed the national or trade standard allowance levels or the meters function improperly, the quantity of net electricity supplied to NCPG by the Project will be calculated according to Formula <2> as follows:

  • The readings from the meter at the 220kV sides of the main transformer connecting to the Project at the wind farm on-site booster station will be used, with consideration of historical transmission line losses.

  Formula <2>:

$$EG_{facility,y} = ES_{E,\ export,\ y} \times \frac{\sum_{i=1}^{3} ES_{VIII,\ i,\ export,\ y}}{\sum_{j=VII}^{VIII}\sum_{i=1}^{3} ES_{j,\ i,\ export,\ y}} - ES_{E,\ import,\ y} \times \frac{\sum_{i=1}^{3} ES_{VIII,\ i,\ import,\ y}}{\sum_{j=VII}^{VIII}\sum_{i=1}^{3} ES_{j,\ i,\ import,\ y}}$$

- If the errors of any of the meters at 35kV lines Mj.i (j=7, 8; i=1, 2, 3) exceed the national or trade standard allowance levels or the meters function improperly, the electricity generation during the period of erroneous measurement and replacement of the fault meter shall not be accounted to calculate the emission reduction for conservative consideration.

  For the above situation (2), (3),and (4):

  • If the evaluation electricity meter does not have an acceptable level of precision, the project owner and the grid company will design a reasonable and conservative evaluation method together. In this event, the project owner will provide sufficient evidence to demonstrate the method's rationality and conservatism during the validation and verification processes.

If the project owner and the grid company are unable to agree on the evaluation method, they will participate in an arbitration process to ensure the consistency of the evaluation method as provided for by their agreement.

SECTION D. Data and parameters

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

Data/parameter:	$EF_{grid,\ CM,\ y}$
Unit	tCO_2/MWh
Description	Baseline emission factor
Source of data	Registered PDD
Value(s) applied)	0.9309
Choice of data or measurement methods and procedures	-
Purpose of data	Baseline emission calculation
Additional comments	Ex-anted according to the applied methodology

D.2. Data and parameters monitored

Data / Parameter:	$ES_{j.i,\ export\ ,y}$ (j=I, II, III, IV, V, VI, VII, VIII; i=1, 2, 3, 4 for Phase I project, i=1, 2, 3 for the other 7 projects)
Unit:	MWh
Description:	Electricity exported to the grid by the Phase j project (j=I, II, III, IV, V, VI, VII, VIII) part i (i=1, 2, 3, 4 for Phase I project, i=1, 2, 3 for the other 7 projects) in year y.
Measured/ Calculated / Default:	Measured by the separate bi-directional meter Mj.i at the Phase j project's site with the accuracy of 0.5s.
Source of data:	Meter records.
Value(s) of monitored parameter:	Refer to Section E.

Monitoring equipment:	Information of monitoring equipments: Mj.i

Item	M1.1	M1.2	M1.3	M1.4
Type	DTSD341	DTSD341	DTSD341	DTSD341
SN	09060094860005	09060094860004	09060094860010	09060094860011
Item	M2.1	M2.2	M2,3	
Type	DTSD341	DTSD341	DTSD341	
SN	100804020900 0013	100804020900 0009	100804020900 0014	
Item	M3.1	M3.2	M3.3	
Type	DTSD341	DTSD341	DTSD341	
SN	100804020900 0008	100804020900 0002	100804020900 0012	
Item	M4.1	M4.2	M4.3	
Type	DTSD341	DTSD341	DTSD341	
SN	100804020900 0004	100804020900 0003	100804020900 0001	
Item	M5.1	M5.2	M5.3	
Type	DTSD719	DTSD719	DTSD719	
SN	420052504110 8348712	420052504110 8348711	420052504110 8348706	
Item	M6.1	M6.2	M6.3	
Type	DTSD719	DTSD719	DTSD719	
SN	420052504110 8348709	420052504110 8348713	420052504110 8348718	
Item	M7.1	M7.2	M7.3	
Type	DTSD719	DTSD719	DTSD719	
SN	420052504110 8348704	420052504110 8348720	420052504110 8348707	
Item	M8.1	M8.2	M8.3	
Type	DTSD719	DTSD719	DTSD719	
SN	420052504110 8348715	420052504110 8348705	420052504110 8348721	
Accuracy class	0.5S			
Calibration frequency	Annual			
Calibration date	1/3/2014 1/2/2015			
Clibration entiry	Ulanqab Electric Power Bureau (01/02/2012 and 01/05/2012) Inner Mongolia Ke Gao Electric Technology Testing Co., Ltd. (10/07/2012 and 07/07/2013)			

Measuring/ Reading/ Recording frequency:	Measuring continuously/ Reading daily / Recording monthly.
Calculation method (if applicable):	N/A.
QA/QC procedures:	Meters have been calibrated and checked yearly by a qualified third party for accuracy in accordance with national standards JJG1055-7017 and DL/T448－2000.
Purpose of data:	Baseline emission calculation.
Additional comment:	N/A.

Data / Parameter:	$ES_{j.i,\ import\ ,y}$ (j=I, II, III, IV, V, VI, VII, VIII; i=1, 2, 3, 4 for Phase I project, i=1, 2, 3 for the other 7 projects)
Unit:	MWh
Description:	Electricity imported from the grid to the Phase j project (j=I, II, III, IV, V, VI, VII, VIII) part i (i=1, 2, 3, 4 for Phase I project, i=1, 2, 3 for the other 7 projects) in year y.
Measured/ Calculated / Default:	Measured by the separate bi-directional meter Mj.i at the Phase j project's site with the accuracy of 0.5s.
Source of data:	Meter records.
Value(s) of monitored parameter:	$ES_{j.i,\ import\ ,y}$ have not been monitored as per PDD due to the fact that the electricity company has signed a contract with the project owner to take the monthly imported electricity amount as pre-agreed amount instead of monitored amount.
Monitoring equipment:	The same 25 meters to monitor $ES_{j.i,\ export\ ,y}$.
Measuring/ Reading/ Recording frequency:	Measuring continuously/ Reading daily / Recording monthly.
Calculation method (if applicable):	N/A.
QA/QC procedures:	Meters have been calibrated and checked yearly by a qualified third party for accuracy in accordance with national standards JJG1055-7017 and DL/T448－2000.
Purpose of data:	Baseline emission calculation.
Additional comment:	During this monitoring period, $ES_{j,\ i,\ import\ ,y}$, has not been monitored due to the fact that the electricity company has signed a contract with the project owner to take the monthly imported electricity amount as pre-agreed amount instead of monitored amount.

Data / Parameter:	$ES_{total,\ export,\ y}$
Unit:	MWh
Description:	Total electricity exported to the grid by all the 8 projects (including the Project) in year y.
Measured/ Calculated / Default:	Measured by the gateway electrical meter M_g1 (and M_g2 as its back-up meter) at the 220kV Xingguang substation with the accuracy of 0.2s.
Source of data:	Meter records.
Value(s) of monitored parameter:	Refer to Section E.

<table>
<tr><td>Monitoring equipment:</td><td>Information of monitoring equipments:

M_g1 (M_g2 as its back-up meter) and M_e1 (M_e2 as its back-up meter)
<table>
<tr><td>Item</td><td>M_g1</td><td>M_g2</td><td>M_e1</td><td>M_e2</td></tr>
<tr><td>Type</td><td>LANDIS</td><td>LANDIS</td><td>LANDIS</td><td>LANDIS</td></tr>
<tr><td>SN</td><td>95 411 060</td><td>95 411 068</td><td>96 057 671</td><td>95 411 066</td></tr>
<tr><td>Accuracy class</td><td colspan="4">0.2S</td></tr>
<tr><td>Calibration frequency</td><td colspan="4">Annual</td></tr>
<tr><td>Calibration date</td><td colspan="2">1/3/2014
1/2/2015</td><td colspan="2">1/3/2014
1/2/2015</td></tr>
<tr><td>Clibration entiry</td><td colspan="4">Inner Mongolia Electric Power Research Institute Electric Metering Testing Centre</td></tr>
</table></td></tr>
<tr><td>Measuring/ Reading/ Recording frequency:</td><td>Measuring continuously/ Reading daily / Recording monthly.</td></tr>
<tr><td>Calculation method (if applicable):</td><td>N/A.</td></tr>
<tr><td>QA/QC procedures:</td><td>Meters have been calibrated and checked yearly by a qualified third party for accuracy in accordance with national standards JJG1055-7017 and DL/T448－2000.</td></tr>
<tr><td>Purpose of data:</td><td>Baseline emission calculation.</td></tr>
<tr><td>Additional comment:</td><td>N/A.</td></tr>
</table>

Data / Parameter:	$ES_{total, import, y}$
Unit:	MWh
Description:	Total electricity imported from the grid to all the 8 projects (including the Project) in year y.
Measured/ Calculated / Default:	Measured by the gateway electrical meter M_g1 (and M_g2 as its back-up meter) at the 220kV Xingguang substation with the accuracy of 0.2s.
Source of data:	Meter records.
Value(s) of monitored parameter:	Refer to Section E.
Monitoring equipment:	The same 4 meters to monitor $ES_{total, export, y}$.
Measuring/ Reading/ Recording frequency:	Measuring continuously/ Reading daily / Recording monthly.
Calculation method (if applicable):	N/A.
QA/QC procedures:	Meters have been calibrated and checked yearly by a qualified third party for accuracy in accordance with national standards JJG1055-7017 and DL/T448－2000.
Purpose of data:	Baseline emission calculation.
Additional comment:	N/A.

Data / Parameter:	$ES_{p, export, y}$
Unit:	MWh
Description:	The amount of electricity exported to the grid from the wind farm connected to the transformer p (p=A, B, C, D, E) in year y.
Measured/ Calculated / Default:	Measured by the electrical meter M_p at the 220kV side of the 35~220kV on-site booster station with the accuracy of 0.2s (p=A, B, C, D, E) respectively.
Source of data:	Meter records.

<table>
<tr><td>Value(s) of monitored parameter:</td><td>Refer to Section E.</td></tr>
<tr><td>Monitoring equipment:</td><td>Information of monitoring equipments:

M_p
<table>
<tr><td>Item</td><td>M_A</td><td>M_B</td><td>M_C</td><td>M_D</td><td>M_E</td></tr>
<tr><td>Type</td><td>DTSD718</td><td>DTSD341</td><td>DTSD341</td><td>DTSD718</td><td>DTSD718</td></tr>
<tr><td>SN</td><td>420041504
1108347261</td><td>100804018
40001</td><td>100804018
40002</td><td>420041504
1108347258</td><td>420041504
1108347260</td></tr>
<tr><td>Accuracy class</td><td colspan="5">0.2S</td></tr>
<tr><td>Calibration frequency</td><td colspan="5">Annual</td></tr>
<tr><td>Calibration date</td><td colspan="5">1/3/2014
1/2/2015</td></tr>
<tr><td>Clibration entiry</td><td colspan="5">Ulanqab Electric Power Bureau (01/02/2012 and 01/05/2012)
Inner Mongolia Ke Gao Electric Technology Testing Co., Ltd. (01/04/2013)</td></tr>
</table></td></tr>
<tr><td>Measuring/ Reading/ Recording frequency:</td><td>Measuring continuously/ Reading daily / Recording monthly.</td></tr>
<tr><td>Calculation method (if applicable):</td><td>N/A.</td></tr>
<tr><td>QA/QC procedures:</td><td>Meters have been calibrated and checked yearly by a qualified third party for accuracy in accordance with national standards JJG1055-7017 and DL/T448－2000.</td></tr>
<tr><td>Purpose of data:</td><td>Baseline emission calculation.</td></tr>
<tr><td>Additional comment:</td><td>N/A.</td></tr>
</table>

Data / Parameter:	$ES_{p,import,y}$
Unit:	MWh
Description:	The amount of electricity imported from the grid to the wind farm connected to the transformer p (p=A, B, C, D, E) in year y.
Measured/ Calculated / Default:	Measured by the electrical meter M_p at the 220kV side of the 35~220kV on-site booster station with the accuracy of 0.2s (p=A, B, C, D, E) respectively.
Source of data:	Meter records.
Value(s) of monitored parameter:	Refer to Section E.
Monitoring equipment:	The same 5 meters to monitor $ES_{p,export,y}$.
Measuring/ Reading/ Recording frequency:	Measuring continuously/ Reading daily / Recording monthly.
Calculation method (if applicable):	N/A.
QA/QC procedures:	Meters have been calibrated and checked yearly by a qualified third party for accuracy in accordance with national standards JJG1055-7017 and DL/T448－2000.
Purpose of data:	Baseline emission calculation.
Additional comment:	N/A.

Data / Parameter:	$EG_{facility,y}$
Unit:	MWh
Description:	Quantity of net electricity generation supplied by the Project to the grid in year y.

Measured/ Calculated / Default:	Calculated.
Source of data:	Calculated based on the meters: M_g1 (with the meter M_g2 as its back-up meter), Mj.i (j=1, 2, …, 8; i=1, 2, 3, 4 for Phase I project where j=1, i=1, 2, 3 for the other 7 projects where j=2 ~ 7). Formula <1*>: $EG_{facility,y} = ES_{total,export,y} \times \frac{\sum_{i=1}^{3} ES_{II,\ i,\ export,\ y}}{\sum_{i=1}^{4} ES_{I,\ i,\ export,\ y} + \sum_{j=II}^{VIII}\sum_{i=1}^{3} ES_{j,\ i,\ export,\ y}} - ES_{total,import,y}$
Value(s) of monitored parameter:	143531
Monitoring equipment:	The parameter $EG_{facility,y}$ is calculated on the basis on the equation stipulated in the section C.
Measuring/ Reading/ Recording frequency:	Measuring continuously/ Reading daily / Recording monthly.
Calculation method (if applicable):	Calculated with the formula presented in Section C.
QA/QC procedures:	The data is directly used for calculation of emission reduction and cross-checked with electricity ETNs.
Purpose of data:	Baseline emission calculation.
Additional comment:	N/A.

D.3. Implementation of sampling plan

>>
N/A

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

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

>>
The baseline emissions in year y is calculated as follows:

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

where:
BE_y: Baseline emissions in year y (tCO_2e/yr);
$EG_{faclitily,y}$: The net electricity supplied to the grid by the project (MWh);
$EF_{grid,CM,y}$: Emission factor of the grid (tCO_2e /MWh) (as calculated ex-ante in the registered PDD and will not be updated during the first crediting period).

According to the registered PDD, the combined baseline emission factor of the North China Power Grid is:

$$EF_{grid,CM,y} = 0.9309\ tCO_2e/MWh.$$

Table 5 Summary of electricity exported to the grid

Period		PHASE Ⅰ: CHANGSHUN (ref. No. 2093)	PHASE Ⅱ: SANDAOGOU (ref. No. 5781)	PHASE Ⅲ: HEPING (ref. No. 5900)	PHASE Ⅳ: NIUJIACUN (ref. No. 5883)	PHASE Ⅴ: NIUJIAFANGZI (ref. No. 5992)	PHASE Ⅵ: SITAIFANGZI (ref. No. 5990)	PHASE Ⅶ: ERLIGETU (ref. No. 5904)	PHASE Ⅷ: CHELIWUSU (ref. No. 5909)	Sub-total	$ES_{total,export,y}$
		$ES_{I,export,y}$	$ES_{II,export,y}$	$ES_{III,export,y}$	$ES_{IV,export,y}$	$ES_{V,export,y}$	$ES_{VI,export,y}$	$ES_{VII,export,y}$	$ES_{VIII,export,y}$		
From	To	MWh	MWh	MWh	MWh	MWh	MWh	MWh	MWh	MWh	MWh
01/03/2014	20/03/2014	8666.71	8990.55	9901.93	9705.42	9029.44	8456.17	8181.56	8255.07	71186.85	72722.04
21/03/	20/04/	7338.37	9837.57	10459.96	10059.98	8845.66	8796.24	8225.39	8220.39	71783.56	73276.11

2014	2014										
21/04/2014	20/05/2014	9048.56	10368.56	10605.73	11039.52	9999.25	9932.11	9487.6	8889.2	79370.53	81148.97
21/05/2014	20/06/2014	9262.93	12239.09	11646.85	11625.73	10850.48	10853.27	10791.99	9459.14	86729.48	88523.99
21/06/2014	20/07/2014	4902.22	7776.96	7157	7155.9	5942.49	6068.03	5526.43	5232.88	49761.91	50453.37
21/07/2014	20/08/2014	4290.7	6554.06	6228.35	6836.13	5929.14	5940.06	5354.31	4772.61	45905.36	46310.27
21/08/2014	20/09/2014	4255.37	6296.97	6245.05	6422.8	5258.92	9248.15	12986.49	12341.64	63055.39	43900.11
21/09/2014	20/10/2014	6855.15	8714.36	8514.92	8414.73	7662.46	7637.97	7278.93	6439.52	61518.04	63239.88
21/10/2014	20/11/2014	9314.26	9059.06	9232.42	9232.39	8438.59	8022.71	7719.35	9157.27	70176.05	71972.41
21/11/2014	20/12/2014	13416.33	9514.89	6797.76	6822.76	13096.72	12381.94	12104.28	13157.86	87292.54	110385.02
21/12/2014	20/01/2015	11052.16	10251.36	6813.16	4272.91	10226.96	9261.99	9602.75	9835.98	71317.27	86461.86
21/01/2015	20/02/2015	7951.71	6647.55	7543.39	8173.46	6704.64	6589.89	6522.28	5956.63	56089.55	57047.22
21/02/2015	28/02/2015	7822.61	7000.69	7074.09	8338.81	6601.91	6728.21	6904.18	5929.86	56400.36	57482.95
01/03/2015	20/03/2015	9424.49	7256.65	11675.2	11704	10353.97	10410.75	10365.67	8473.13	79663.86	86274.37
21/03/2015	20/04/2015	8195.95	8898.19	9450.18	9821.06	8907.42	8421.58	8768.08	6941.64	69404.1	70938.68
21/04/2015	20/05/2015	7287.33	9079.01	9494.16	9851.86	9042.87	9110.14	9024.13	6942.22	69831.72	72264.32
21/05/2015	20/06/2015	3866.76	5741.16	5677.11	5484.87	4685.45	4628.1	9512.84	11703.21	51299.5	39679.75
21/06/2015	20/07/2015	3711.99	5019.67	5410.67	5225.29	4587.22	8539.04	4518.52	3881.3	40893.7	38169.93
21/07/2015	20/08/2015	11052.16	10251.36	6813.16	4272.91	10226.96	9261.99	9602.75	9835.98	71317.27	86461.86
Total		136663.6	149246.35	149927.93	150187.62	146163.59	151026.35	152874.78	145589.55	1181679.77	1210251.23

Table 6 Summary of electricity imported to the grid

Period		**PHASE Ⅰ: CHANGSHUN (ref. No. 2093)**	**PHASE Ⅱ: SANDAOGOU (ref. No. 5781)**	**PHASE Ⅲ: HEPING (ref. No. 5900)**	**PHASE Ⅳ: NIUJIACUN (ref. No. 5883)**	**PHASE Ⅴ: NIUJIAFANGZI (ref. No. 5992)**	**PHASE Ⅵ: SITAIFANGZI (ref. No. 5990)**	**PHASE Ⅶ: ERLIGETU (ref. No. 5904)**	**PHASE Ⅷ: CHELIWUSU (ref. No. 5909)**	**Sub-total**	**$ES_{total,import,y}$**
		$ES_{Ⅰ,import,y}$	$ES_{Ⅱ,import,y}$	$ES_{Ⅲ,import,y}$	$ES_{Ⅳ,import,y}$	$ES_{Ⅴ,import,y}$	$ES_{Ⅵ,import,y}$	$ES_{Ⅶ,import,y}$	$ES_{Ⅷ,import,y}$		
From	To	MWh	MWh	MWh	MWh	MWh	MWh	MWh	MWh	MWh	MWh
01/03/2014	20/03/2014	184.28	504.11	249.49	273.24	249.94	251.84	190.63	207.58	2111.10	2118.12
21/03/2014	20/04/2014	185.68	407.95	352.15	275.32	251.84	253.76	192.08	209.16	2127.95	2134.26
21/04/2014	20/05/2014	212.28	480.71	402.60	314.76	287.92	290.11	219.60	239.12	2447.09	2439.98
21/05/2014	20/06/2014	217.05	497.33	411.65	321.84	294.39	196.67	224.54	244.49	2407.96	2494.85
21/06/2014	20/07/2014	94.49	258.49	179.20	140.10	128.16	129.13	97.75	106.44	1133.76	1086.08
21/07/2014	20/08/2014	94.43	258.32	179.09	140.02	128.08	129.05	97.69	106.37	1133.05	1085.40
21/08/2014	20/09/2014	100.41	274.69	190.43	148.88	136.19	137.23	103.87	113.11	1204.81	1154.14
21/09/2014	20/10/2014	186.05	508.97	352.86	275.87	252.35	254.27	192.47	209.58	2232.43	2138.55
21/10/2014	20/11/2014	194.16	531.15	368.23	287.89	263.34	265.35	200.85	218.71	2329.67	2231.70
21/11/2014	20/12/2014	333.71	912.91	632.90	494.81	452.62	356.07	345.22	375.91	3904.16	3835.77
21/12/2014	20/01/2015	231.83	634.21	439.68	343.75	314.44	316.84	239.83	261.15	2781.73	2664.75
21/01/2015	20/02/2015	119.63	327.27	226.89	177.39	162.26	163.50	123.76	134.76	1435.47	1375.10
21/02/2015	20/03/2015	130.53	357.08	247.56	193.54	177.04	178.39	135.03	147.03	1566.20	1500.33
21/03/2015	20/04/2015	287.99	787.84	546.19	427.02	390.61	393.59	297.92	324.41	3455.59	3310.27
21/04/2015	20/05/2015	177.43	485.38	336.50	263.08	240.65	242.49	183.55	199.86	2128.95	2039.42
21/05/2015	20/06/2015	234.24	640.80	444.25	347.32	317.71	220.43	242.32	263.86	2710.93	2692.43
21/06/2015	20/07/2015	129.26	353.61	245.15	191.66	175.32	176.66	133.72	145.60	1550.97	1485.75
21/07/2015	20/08/2015	121.57	332.57	230.56	180.26	164.89	166.15	125.76	136.94	1458.70	1397.36
Total		3235.03	8553.40	6035.40	4796.77	4387.74	4121.54	3346.58	3644.06	38120.51	37184.24

Table 7 Summary of net electricity delivered

Period		PHASE Ⅷ: CHELIWUSU (ref. No. 5909)
		EG facility, y
From	To	MWh
01/03/2014	20/03/2014	8224.83
21/03/2014	20/04/2014	8181.53
21/04/2014	20/05/2014	8849.96
21/05/2014	20/06/2014	9401.54
21/06/2014	20/07/2014	5203.63
21/07/2014	20/08/2014	4712.81
21/08/2014	20/09/2014	8484.09
21/09/2014	20/10/2014	6418.99
21/10/2014	20/11/2014	9182.17
21/11/2014	20/12/2014	16269.34
21/12/2014	20/01/2015	11674.54
21/01/2015	20/02/2015	5929.24
21/02/2015	28/02/2015	5902.83
01/03/2015	20/03/2015	8865.47
21/03/2015	20/04/2015	6903.67
21/04/2015	20/05/2015	6922.00
21/05/2015	20/06/2015	8912.86
21/06/2015	20/07/2015	3491.60
Total		143531.08

Based on the electricity records list above, the Baseline Emissions (BE_y) is calculated as follow:

Table 8 Emission reduction of the Project from 01/03/2012 to 28/02/2014

Period	Net electricity delivered(MWh)	$EF_{grid,CM,y}$ (tCO_2e/MWh)	BE_y (tCO2e)
Total	143531.08	0.9309	133,613

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

>>

According to the applied methodology, as a renewable energy project, the project emissions of this project are zero.

E.3. Calculation of leakage

>>

According to the applied methodology, as a renewable energy project, the Leakage of this project are zero.

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

Item	Baseline emissions or baseline net GHG removals by sinks (t CO_2e)	Project emissions or actual net GHG removals by sinks (t CO_2e)	Leakage (t CO_2e)	GHG emission reductions or net GHG removals by sinks (t CO_2e) achieved in the monitoring period		
				Up to 31/12/2012	From 01/01/2013	Total amount
Total	133,613	0	0	0	133,613	133,613

E.5. Comparison of actual emission reductions or net 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 (t CO_2e)	140,294	133,613

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

>>

The total emission reductions for this monitoring period are 133,613 tCO_2e. The actual volume is 4.76% lower than the estimates in the registered PDD.

Appendix 1. Contact information of project participants and responsible persons/entities

Project participant and/or responsible person/ entity	☒ Project participant ☐ Responsible person/ entity for completing the CDM-MR-FORM
Organization name	China Water Group Huade Wind Power Co., Ltd.
Street/P.O. Box	Room 408, No.12, Lane 2, Baiguang Road, Xicheng District
Building	
City	Beijing
State/Region	Beijing
Postcode	100053
Country	P.R. China
Telephone	+86-10-5868 9628
Fax	+86-10-5868 9504
E-mail	
Website	
Contact person	Wang Hong Ye
Title	Department Director
Salutation	Ms.
Last name	Wang
Middle name	
First name	Hong Ye
Department	Planning & Development
Mobile	
Direct fax	+86-10-5868 9504
Direct tel.	+86-10-5868 9628
Personal e-mail	hollywang816@126.com

Project participant and/or responsible person/ entity	☒ Project participant ☒ Responsible person/ entity for completing the CDM-MR-FORM
Organization name	Eco-Tec Asia (UK) Ltd.
Street/P.O. Box	12, Zhong Guan Cun South Street, Haidian District
Building	A803, Tianzuo International Building
City	Beijing
State/Region	
Postcode	100081
Country	P.R. China
Telephone	+86-10-62156001
Fax	+86-10-62156006
E-mail	
Website	
Contact person	Wu Xin
Title	Vice President
Salutation	Mr.
Last name	Wu
Middle name	
First name	Xin
Department	
Mobile	+86-18611685882
Direct fax	+86-10-62156006
Direct tel.	+86-10-62156001 ext 822
Personal e-mail	colin.wu@ecotec-asia.com

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