Monitoring report form (Version 03.2)

Monitoring report

Title of the project activity	Inner Mongolia China Water Group Huade Cheliwusu Wind Farm 49.5MW Project
Reference number of the project activity	5909
Version number of the monitoring report	1.0
Completion date of the monitoring report	16/06/2014
Registration date of the project activity	21/03/2012
Monitoring period number and duration of this monitoring period	1st monitoring period: 01/04/2012 - 28/02/2014 (first and last days included, 699 days in all)
Project participant(s)	China Water Group Huade Wind Power Co., Ltd. (Project owner) Eco-Tec Asia (UK) Ltd. (Buyer)
Host Party(ies)	China
Sectoral scope(s) and applied methodology(ies)	01: Energy Industries (renewable resources) Wind Power Generation ACM0002: Consolidated baseline methodology for grid-connected electricity generation from renewable sources (Version 12.1.0, EB 58)
Estimated amount of GHG emission reductions or net anthropogenic GHG removals by sinks for this monitoring period in the registered PDD	95,181 tCO_2e / 365days × 699days = 182,278 tCO_2e
Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period	94,898 tCO_2e
Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved during the period up to 31 December 2012(if applicable)	0 tCO_2e
Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved during the period from 1 January 2013 onwards (if applicable).	94,898 tCO_2e

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

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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 all wind turbines started full commercial 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

In this monitoring period, 94,898 tCO_2e emission reductions were achieved.

A.2. Location of project activity

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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 if 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

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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

SECTION B. Implementation of project activity

B.1. Description of implemented registered project activity

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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 Xinjiang Goldwind Technology 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:

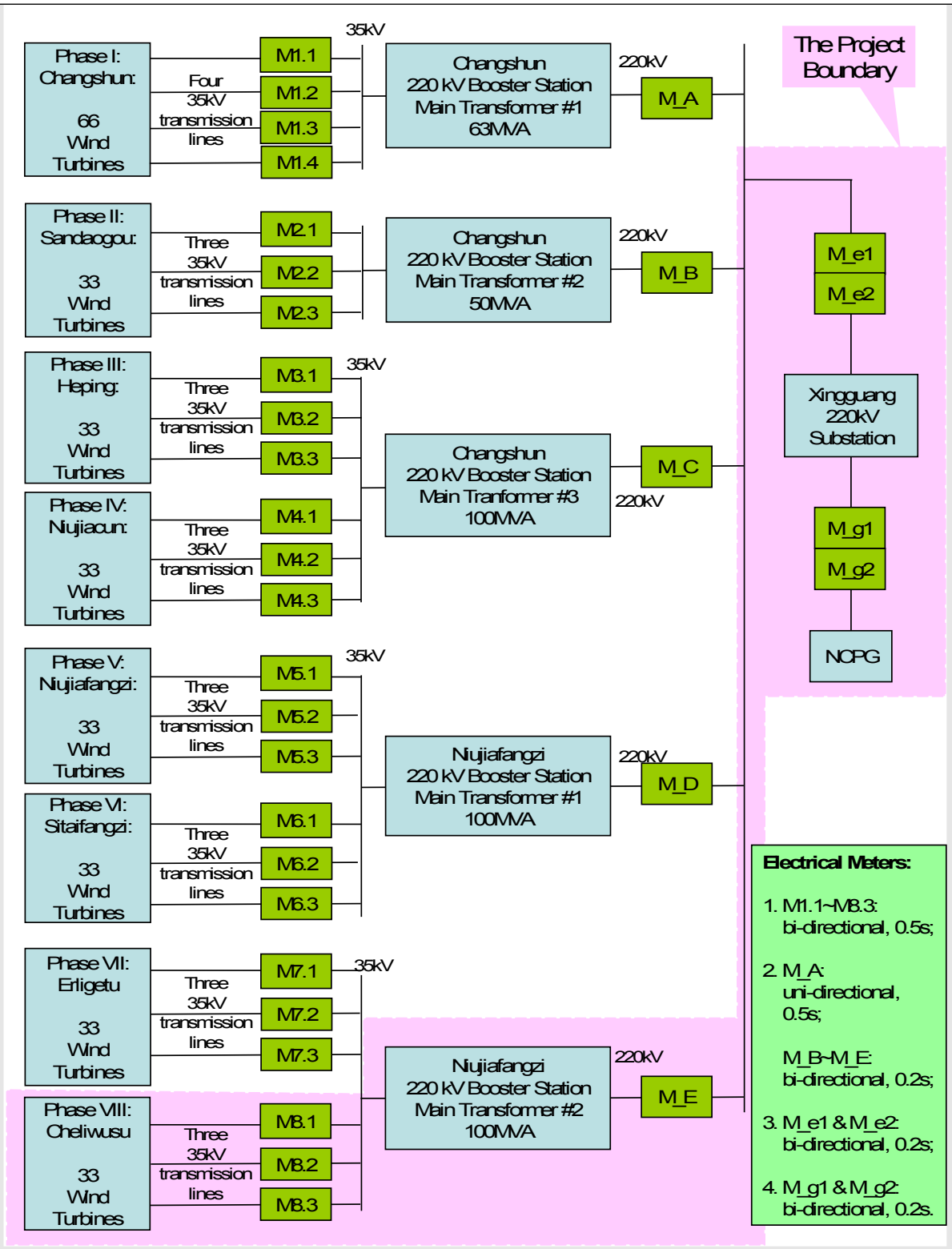

Figure 1 Electricity Generation Process by Wind Energy

B.2. Post registration changes

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

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The Project is implemented as in the registered monitoring plan and applied methodology, no temporary deviation is applied.

B.2.2. Corrections

>>
The Project is implemented as in the registered monitoring plan, no correction is applied.

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

>>
The Project is implemented as in the registered monitoring plan and applied methodology, no permanent changes is applied.

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

>>
None.

B.2.5. Changes to start date of crediting period

>>
None.

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

>>
Not applicable.

SECTION C. Description of monitoring system

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1. Data collection procedures

① Data generation and aggregation

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 signed a contract with the project owner to take the monthly imported electricity amount as pre-agreed amount instead of monitored amount.	$ES_{p\ ,\ export,\ y}$ (p=A, B, C, D, E) $ES_{p\ ,\ import,\ y}$ (p=B, C, D, E)	$ES_{total,\ ,\ export,\ y}$ & $ES_{total,\ ,\ import,\ y}$		$EG_{facility,y}$
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_A ~ M_E (p=A; uni-directional / p=B, C, D, E; bi-directional)	2 evaluation meters (M_e1 as main and M_e2 as its back-up	2 gateway meters (M_g1 as main and M_g2 as its back-up	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

			meter)	meter)	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.				

② **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 except for $ES_{j,i,import,y}$, 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. To be conservative, the Formula <1> is revised to:

Formula <1*>:

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

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

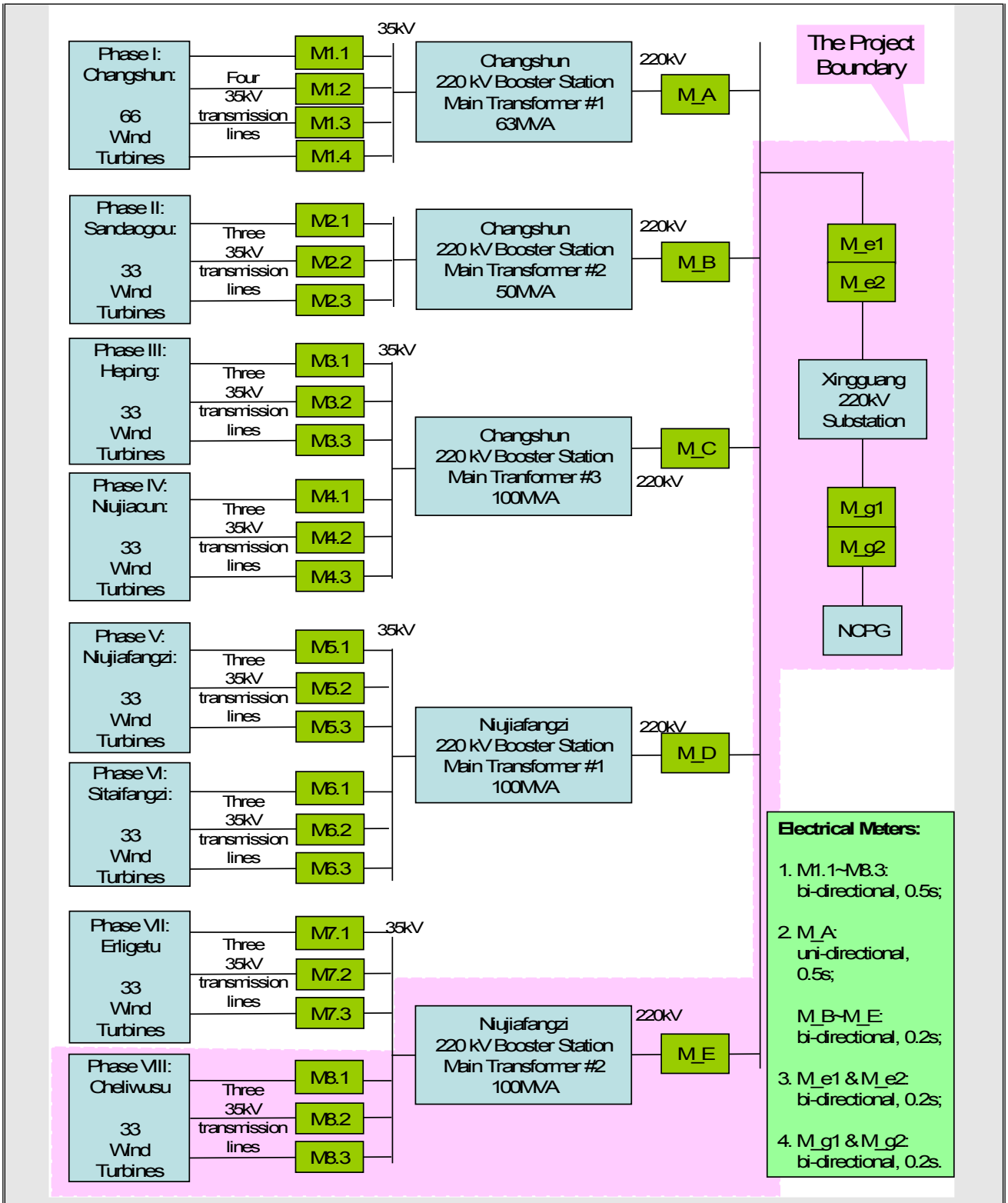

Figure 2 Diagram for metering points of the Project

2. 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 3 below.

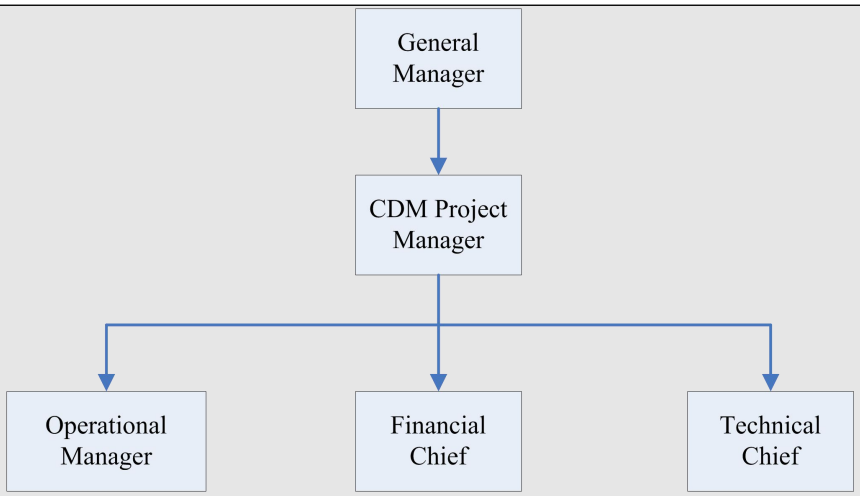

Figure 3 Structure of CDM group

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.

3. 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.

(1) 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;

(2) 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;

(3) 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;

(4) 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>:

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

(5) 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
Purpose of data:	Baseline emission calculation
Additional comment:	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 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
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 JJG1055-1997 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 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:	Information of monitoring equipments: Mj.i
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 JJG1055-1997 and DL/T448－2000.
Purpose of data:	Baseline emission calculation.
Additional comment:	N/A.

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.
Monitoring equipment:	Information of monitoring equipments: M_g1
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 JJG1055-1997 and DL/T448－2000.
Purpose of data:	Baseline emission calculation.
Additional comment:	N/A.

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:	Information of monitoring equipments: M_g1
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 JJG1055-1997 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 0.5s (p=A) and 0.2s (p=B, C, D, E) respectively.
Source of data:	Meter records.
Value(s) of monitored parameter:	Refer to Section E.

Monitoring equipment:	Information of monitoring equipments: M_p
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 JJG1055-1997 and DL/T448－2000.
Purpose of data:	Baseline emission calculation.
Additional comment:	N/A.

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 0.5s (p=A) and 0.2s (p=B, C, D, E) respectively.
Source of data:	Meter records.
Value(s) of monitored parameter:	Refer to Section E.
Monitoring equipment:	Information of monitoring equipments: M_p
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 JJG1055-1997 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*>: $EG_{facility,y} = ES_{total,export,y} \times \frac{\sum_{i=1}^{3} ES_{VIII,i,export,y}}{\sum_{i=1}^{4} ES_{I,i,export,y} + \sum_{j=II}^{VIII}\sum_{i=1}^{3} ES_{j,i,export,y}} - ES_{total,import,y}$
Value(s) of monitored parameter:	101,942
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

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Not applicable.

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 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
01/04/2012	28/02/2013	N.A. due to no electricity purchase agreement									
01/03/2013	20/03/2013	16,016.28	6,953.24	6,160.00	6,881.56	17,976.56	8,710.52	17,668.56	6,364.12	86,730.84	34,388.91
21/03/2013	20/04/2013	11,564.84	14,293.72	14,733.04	12,534.20	13,395.76	13,885.20	12,688.48	12,909.68	106,004.92	103,423.13
21/04/	20/05/	9,792.16	13,404.16	12,725.16	11,165.28	12,183.36	11,563.44	11,581.08	10,989.44	93,404.08	89,180.43

2013	2013										
21/05/2013	20/06/2013	10,712.80	12,513.48	10,653.72	11,108.72	10,695.44	11,174.24	10,547.60	10,913.00	88,319.00	86,372.09
21/06/2013	20/07/2013	5,401.48	7,523.32	6,711.04	7,486.92	6,142.64	6,750.52	5,803.00	6,480.88	52,299.80	51,307.57
21/07/2013	20/08/2013	6,178.48	8,768.20	8,267.56	8,443.96	5,749.80	6,377.84	6,564.60	7,235.20	57,585.64	56,652.54
21/08/2013	20/09/2013	6,860.84	8,207.92	8,242.92	7,818.44	6,653.92	7,073.92	6,775.16	7,192.36	58,825.48	57,264.53
21/09/2013	20/10/2013	9,527.28	12,934.88	11,519.20	11,653.32	10,539.20	10,917.48	10,045.00	10,376.80	87,513.16	86,222.46
21/10/2013	20/11/2013	9,976.68	9,922.08	10,877.44	10,556.28	8,630.72	9,000.04	10,144.40	10,314.08	79,421.72	77,695.61
21/11/2013	20/12/2013	8,670.76	7,364.00	9,496.20	9,597.28	8,362.20	8,542.24	8,433.32	8,716.12	69,182.12	67,796.44
21/12/2013	20/01/2014	10,658.20	10,484.60	12,015.08	11,629.24	9,244.48	9,918.72	10,439.24	11,058.04	85,447.60	85,110.92
21/01/2014	20/02/2014	5,174.96	5,662.72	6,842.92	6,766.20	5,131.56	5,486.60	5,573.68	5,991.44	46,630.08	45,538.81
21/02/2014	28/02/2014	1,581.16	2,014.60	2,126.04	1,815.80	1,452.92	1,523.20	1,350.72	1,560.16	13,424.60	13,321.00
Total		112,115.92	120,046.92	120,370.32	117,457.20	116,158.56	110,923.96	117,614.84	110,101.32	924,789.04	854,274.44

Table 6 Summary of electricity imported to the grid

Period		**ES total, import ,y**
From	To	MWh
01/04/2012	28/02/2013	N.A. due to no electricity purchase agreement
01/03/2013	20/03/2013	135.00
21/03/2013	20/04/2013	209.25
21/04/2013	20/05/2013	202.50
21/05/2013	20/06/2013	209.25
21/06/2013	20/07/2013	202.50
21/07/2013	20/08/2013	209.25
21/08/2013	20/09/2013	219.21
21/09/2013	20/10/2013	98.80
21/10/2013	20/11/2013	154.82
21/11/2013	20/12/2013	138.14
21/12/2013	20/01/2014	108.69
21/01/2014	20/02/2014	157.54
21/02/2014	28/02/2014	42.71
Total		2,087.66

Table 7 Summary of net electricity delivered

Period		**PHASE Ⅷ: CHELIWUSU (ref. No. 5909)**
		EG facility, y
From	To	MWh
01/04/2012	28/02/2013	0.00
01/03/2013	20/03/2013	2,388.38
21/03/2013	20/04/2013	12,386.01
21/04/2013	20/05/2013	10,290.01
21/05/2013	20/06/2013	10,463.18
21/06/2013	20/07/2013	6,155.42
21/07/2013	20/08/2013	6,908.71
21/08/2013	20/09/2013	6,782.30
21/09/2013	20/10/2013	10,124.96
21/10/2013	20/11/2013	9,935.10
21/11/2013	20/12/2013	8,403.40
21/12/2013	20/01/2014	10,905.78
21/01/2014	20/02/2014	5,693.68
21/02/2014	28/02/2014	1,505.41
Total		101,942

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

Table 8 Emission reduction of the Project from 01/04/2012 to 28/02/2014

Period	Net electricity delivered(MWh)	$EF_{grid,CM,y}$ (tCO_2e/MWh)	BE_y (tCO_2e)
Total	101,942	0.9309	94,898

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 anthropogenic 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 ($t CO_2e$)	Emission reductions or net anthropogenic GHG removals by sinks ($t CO_2e$)
Total	94,898	0	0	94,898

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 ($t CO_2e$)	182,278	94,898

According to the registered PDD, the ex-ante estimated average annual emission reductions are 95,181 tCO2e. This monitoring period covers 699 days, therefore the ex-ante estimated emission reductions should be 182,278 tCO2e as per registered PDD (95,181 tCO_2e / 365days × 699days = 182,278 tCO_2e).

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

>>
The total emission reductions for this monitoring period are 94,898 tCO_2e. As the monitoring period is for 699 days, multiplying the annual volume in the PDD by 699/365days give a volume of 182,278 tCO_2 and so the actual volume is 47.94% lower than the estimates in the registered PDD.

E.7. Actual emission reductions or net anthropogenic GHG removals by sinks during the first commitment period and the period from 1 January 2013 onwards

Item	Actual values achieved up to 31 December 2012	Actual values achieved from 1 January 2013 onwards

Emission reductions or GHG removals by sinks (t CO_2e)	0	94,898

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Document information

Version	*Date*	*Description*
03.2	5 November 2013	Editorial revision to correct table in page 1.
03.1	2 January 2013	Editorial revision to correct table in section E.5.
03.0	3 December 2012	Revision required to introduce a provision on reporting actual emission reductions or net anthropogenic GHG removals by sinks for the period up to 31 December 2012 and the period from 1 January 2013 onwards (EB70, Annex 11).
02.0	13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20).
01	28 May 2010	EB 54, Annex 34. Initial adoption.

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