



CGN INNER MONGOLIA ZHURIHE PHASE I WIND FARM PROJECT

Document Prepared by

CGN Carbon Asset Management (Beijing) Co., Ltd

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1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

CGN Inner Mongolia Zhurihe Phase I Wind Farm Project is generating renewable electricity utilizing wind power and sells the generated output to the North China Power Grid (NCPG). The Project involves the installation of 25 wind turbines, each with a rated power output of 2000 kW, manufactured by Beijing Beizhong Stream Turbine Generator Co., Ltd, and the total installed capacity is 50MW. The ex-ante expected net generation of the project activity is approximately 123,962MWh per year, with a load factor of 28.30%.

Project timeline:

Construction start date	01/05/2008
Commissioning start date	04/03/2009
Fully commissioning date	13/04/2009

The total emission reductions achieved in the current monitoring period from 21/12/2016 to 03/03/2019 are 237,397 tCO_{2e}.

1.2 Sectoral Scope and Project Type

Sectoral scope 1: energy industries (Renewable sources)

Project type: wind power project.

The project is not a grouped project.

1.3 Project Proponent

Organization name	CGN Wind Power Co., Ltd.
Contact person	Shi Lei
Title	CDM office director
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1.4 Other Entities Involved in the Project

Organization name	CGN Carbon Asset Management (Beijing) Co. Ltd
Role in the Project	Consultancy
Contact person	Xu Xiansong
Title	CDM manager
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1.5 Project Start Date

04/03/2009 (commissioning start date)

1.6 Project Crediting Period

There is a deviation for the crediting period. The project is registered under VCS 3.4 and completed validation before 19/03/2020, thus it remains eligible to apply the crediting period requirements under VCS Version 3 which shall be a maximum of ten years and may be renewed at most twice, so the first renewable crediting period of the project shall be updated from 04/03/2009~22/12/2009 to 04/03/2009~03/03/2019. Moreover, as the project is also registered as a CDM project with a seven year twice renewable project crediting period and furthermore, the project has the lifetime of 20 years, it is not eligible for VCU issuance beyond 03/03/2029.

1.7 Project Location

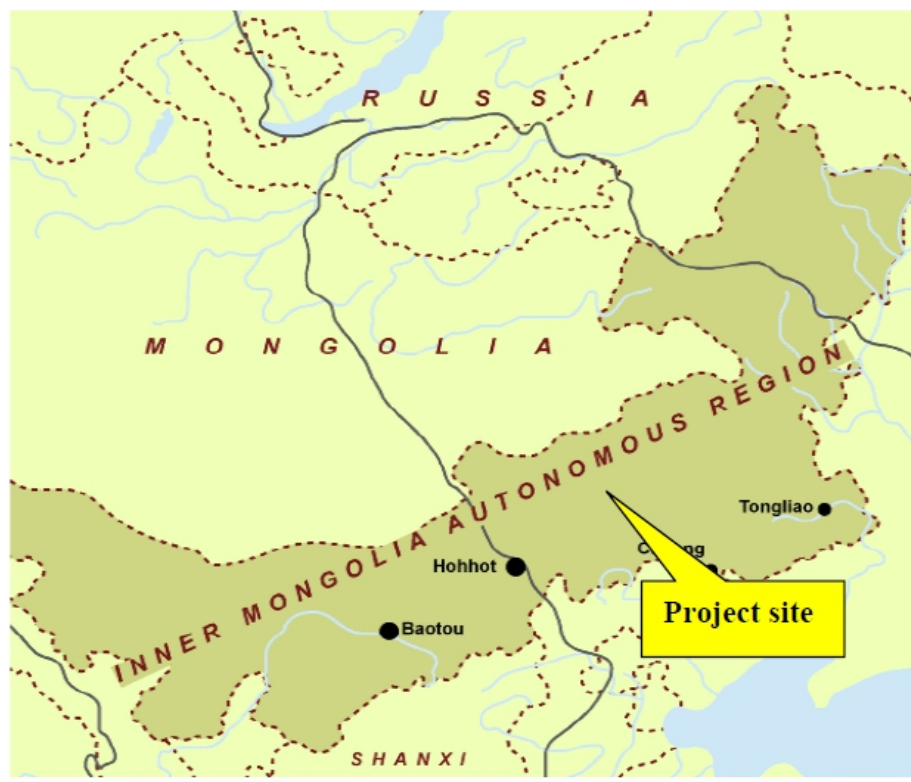
CGN Inner Mongolia Zhurihe Phase I Wind Farm lies in the middle north part of Inner Mongolia Autonomy Region of People's Republic of China. It is located at the latitude 42°27'40'' North and longitude 112°46'30''. The average

altitude of the project site is 1180 m above sea level. Figure A1 and A2 shows respectively the location of Xilinguole City in China map and the project site in the map of Inner Mongolia Autonomy Region.

Figure A1. The location of the proposed project in the map of P. R. China



Figure A2. The location of the proposed project in the map of Inner Mongolia Autonomous Region, P. R. China



1.8 Title and Reference of Methodology

The approved methodology applied in the proposed project activity is ACM0002 (version 07)

– “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”.

“Tool to calculate the emission factor for an electricity system” (version 07.0)

1.9 Participation under other GHG Programs

The Project was registered as a CDM project on 23/12/2009 (Ref.1577). The first CDM crediting period is from 23/12/2009 to 22/12/2016, and the crediting period has been successfully renewed on 21/05/2019 with the 2nd CDM crediting period from 23/12/2016 to 22/12/2023. The status of emission reduction issuance of the project is shown as below:

1 st verification period under VCS	04/03/2009 - 22/12/2009	Issued
1 st verification period under CDM	23/12/2009 - 28/02/2011	Issued
2 nd verification period under CDM	01/03/2011 - 31/05/2012	Issued

3 rd verification period under CDM	01/06/2012 - 31/12/2012	Awaiting issuance request
4 th verification period under CDM	01/01/2013 - 20/12/2016	Issued
The current monitoring period under VCS	21/12/2016 - 03/03/2019	

The GHG emission reductions of 528,045tCO₂e CERs generated from 23/12/2009 - 28/02/2011, 01/03/2011 - 31/05/2012 and 01/01/2013 - 20/12/2016 (both days included) by the project has been issued.

Please refer to the following link for details:

<https://cdm.unfccc.int/Projects/DB/DNV-CUK1200642678.34/view?cp=1>

1.10 Other Forms of Credit

Emission Trading Programs and Other Binding Limits

The project has been registered as VCS project with Ref. VCS1182 and VCUs of 80,706 tCO₂e have been issued for the monitoring period from 04/03/2009-22/12/2009. All credits from 21/12/2016 to 03/03/2019 will be only claimed under VCS program as VCUs for the project to avoid double counting, which will not be used for compliance with emission trading programs or to meet binding limits on GHG emissions.

Other Forms of Environmental Credit

The project hasn't sought or received another form of environmental credits.

1.11 Sustainable Development

The proposed project promotes local sustainable development through the following aspects:

1. Generate renewable electricity

The proposed project activity generates renewable electricity by the wind farm, which further helps to achieve the national action to promote renewable energy development.

2. GHG emission reduction

The proposed project activity will achieve obvious GHG emission reductions by avoiding CO₂ emissions, as grid-connected fossil fuel-fired power

dominates in the NCPG, which contributes to the China's commitment to peak carbon dioxide emissions before 2030.

3. Pollutants emission reduction through replacing fossil fuel combustion

The proposed project utilizes wind energy for generating electricity which would have been generated through alternate fuels (fossil fuel) based power plants, contributing to reduction in specific emissions including GHG emissions. Thus, it reduces fossil fuel consumption and avoids pollutants emission, such as sulfur dioxide and dust brought by fossil fuel combustion. Therefore, the proposed project has obvious environmental benefits.

4. Employment opportunities

The implementation of the proposed project will offer job opportunities for local people during both the construction and operational period. The proposed project leads to alleviation of poverty by establishing direct and indirect employment benefits. Such benefits will, for example, be accrued out during maintenance operations of the project activity or as generation of permanent labor in the form of security services, cleaning services. The infrastructure in and around the project area will also improve due to project activities. This includes development of road network and improvements of electricity quality, frequency and availability.

2 SAFEGUARDS

2.1 No Net Harm

An Environmental Impact Assessment (EIA) for the CGN Inner Mongolia Zhurihe Phase I Wind Farm has been completed by Inner Mongolia Power Exploration & Design Institute assigned by the Project owner, and has been approved by the Environmental Protection Bureau of Inner Mongolia Autonomous Region. The EIA is summarised as follows:

1 The analysis of the environment impact in the construction period

Construction machinery and construction activity will generate noise. Since the local residential area is far away from the wind farm site, the impact of construction noise to the local region is light.

The waste water from the construction site is mainly the waste water generated by the construction workers. This small quantity of sewage will be treated by deposition in a septic tank, avoiding the impact on the environment. The waste water during the construction period, therefore, will have no impact on the local environment.

The project temporarily uses and disturbs the grass for construction use. The occupied land will be restored according to its characteristics after construction and will ensure its reutilization. Overall, land use impact on the local residents arising from the Project is considered to be insignificant.

2 The analysis of the environment impact in operation period

The noise from the wind turbines is reduced mainly by the selection of low noise equipment.

Furthermore the resident regions are far away from the wind farm, so the noise does not influence the residential districts nearest to the site.

Solid waste and liquid waste will be produced by operation staff during operation period. The emitted waste quantity is very small and might have no interference with the environment after treatment.

3. Conclusion

The Wind Farm does not put the much pressure on the local environment when generating renewable power. However it will bring great environmental benefit as well as the social benefit.

2.2 Local Stakeholder Consultation

Local stakeholders Consultation during the project preparation stage:

In Dec 2007, the staff from CGN Wind Power Co., Ltd. carried out a survey of the local villagers and residents in the area. 1 page questionnaire was designed to fill in and has the following sections

Following is a summary of the local survey. The survey forms are available from the project owner.

1 page questionnaire was designed to be easy to fill in and has the following sections:

Project introduction

Respondent's basic information and education level

Questions on:

1. Do you agree with the development of the Project?
2. Will the Project raise effects on your environment of living, studying and working?
3. Will construction, operation or decommissioning of the Project affect natural resources or ecosystems, such as water, habitats, etc?
4. Will the Project cause noise, vibration or release of electromagnetic radiation that could adversely affect your health?
5. Do you think the proposed project will have promotion in local economic development?
6. Do you have any suggestion about the project?

The survey had a 100% response rate and the following is a summary of the key findings (the questionnaires were sent to 30 households):

The people being surveyed as follows:

Gender	Male	6	20%
	Female	24	80%
Education	Elementary school	2	7%
	Junior high school	15	50%
	Senior high school	10	33%
	University or above	3	10%
Occupation	Officer	3	10%
	Worker	7	23%
	Farmer	16	54%
	Merchant	1	3%
	Others	3	10%

Their opinions

1. Will the Project raise effects on your environment of living, studying and working?	Yes	No	Not Sure
	0	97%	3%
2. Will construction, operation or decommissioning of the Project affect natural resources or ecosystems, such as water, habitats, etc?	Yes	No	Not Sure
	0	97%	3%
3. Will the Project cause noise, vibration or release of electromagnetic radiation that could adversely affect your health?	Yes	No	Not Sure
	0	93%	7%
4. Do you think the proposed project will have promotion in local economic development?	Yes	No	Unclear
	100%	0	0
5. Do you agree with the development of the Project?	Yes	No	No Concern
	100%	0	0

Conclusions from the survey:

The survey shows that the proposed project has strong local support among the local people. They all believe the proposed project will promote the local economic development and agree the project construction.

The villagers and local government are all supportive of the proposed project and to date there has been no need to modify the project design according to the comments received.

The project owner has an overall environment-friendly plan to guarantee that the project has the minimum negative impact on the environment during the project construction and operation.

Local stakeholder Consultation during the project implementation stage:

The project owner has set out the mechanism for on-going communication with local stakeholders and the communications with local stakeholders are being carried out at periodic intervals.

Firstly, stakeholders were informed of the status and progress of the project through the bulletin board on the village committee, and their comments can be recorded in the village committee's complaint book. This information is fed back to the project proponent by the contact person for a timely response.

Secondly, stakeholders can communicate and give feedback directly to the project proponent at any time through the published phone number of contact person.

Finally, the contract person of project owner also meets local villagers to collect their comments and suggestions yearly.

During this monitoring period, the project carried out the communication with local stakeholders in line with the mechanism. Village committee's complaint book were quarterly checked by the contact person, and the contact person visited the villages in March of 2016, 2017, 2018 and 2019 to communicate with stakeholders. Meanwhile, the local authority has also conducted spot checks on the implementation of the project yearly. There are no negative comments received for the project during this monitoring period. In line with VCS requirements all the processed have been implemented to receive comments from local stakeholders as well as communicate with them.

2.3 AFOLU-Specific Safeguards

The Project is not an AFOLU project.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The Project involves the installation of 25 wind turbines (type: BZD80-2000), each with a rated power output of 2000 kW, manufactured by Beijing Beizhong Stream Turbine Generator Co., Ltd, and the total installed capacity is 50MW. The project activity was started construction on 01/05/2008. The first turbine was commissioned on 04/03/2009, and all the wind turbines have been put into operation gradually till 13/04/2009, and well operated during this monitoring period. The main specifications of the turbine/generator are listed as below Table:

Item	Unit	Index
Type	-	BZD80-2000

Rated capacity	kW	2000
Number of blades		3
Rotor diameter	m	80
Cut-in speed	m/s	3.0
Rated wind speed	m/s	13.5
Cut-off speed	m/s	25
Height of hub	m	80
Rated voltage	V	690

During this monitoring period, the wind farm has a good running, smooth data transfer and grid connection, and no special events happened.

No events or situations occurred during the monitoring period, which may impact the applicability of the methodology.

3.2 Deviations

3.2.1 Methodology Deviations

There are no methodology deviations applied during this monitoring period.

3.2.2 Project Description Deviations

There is a deviation for the crediting period. The project is registered under VCS 3.4 and completed validation before 19/03/2020, thus it remains eligible to apply the crediting period requirements under VCS Version 3 which shall be a maximum of ten years and may be renewed at most twice, so the first renewable crediting period of the project shall be updated from 04/03/2009~22/12/2009 to 04/03/2009~03/03/2019, and it has no impacts on the applicability, additionality or baseline of the project. Moreover, as the project is also registered as a CDM project with a seven year twice renewable project crediting period and furthermore, the project has the lifetime of 20 years, it is not eligible for VCU issuance beyond 03/03/2029.

There are no other project description deviations applied during this monitoring period.

3.3 Grouped Projects

The project is not a grouped project.

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	EF_{grid,CM,y}
Data unit	tCO ₂ / MWh
Description	Combined margin emission factor for grid connected power generation in year y
Source of data	Approved revised CDM PDD with Ref No.1577
Value applied	1.0548
Justification of choice of data or description of measurement methods and procedures applied	Refer to the approved revised CDM PDD with Ref No.1577 The data source is from public data of China DNA.
Purpose of Data	Calculation of baseline emissions
Comments	The data is calculated ex-ante according to the applied tool.

4.2 Data and Parameters Monitored

Data / Parameter	EG_y
Data unit	MWh
Description	Quantity of net electricity supplied to the grid by the project during year y
Source of data	Monthly reading records of the main meter and the separate meters
Description of measurement methods and procedures to be applied	Calculated as exports minus imports.
Frequency of monitoring/recording	Continuously measurement and monthly recording

Value monitored	225,063.96 MWh
Monitoring equipment	The net electricity supplied to the grid is continuously measured by the main meter and the backup meter (both bi-directional) installed at the Wenduer substation, and 15 separate meters M1~M15 installed at the project site. The project activity shares the main meter and the backup meter with other three wind farms, named CGN Inner Mongolia Zhurihe Phase II Wind Farm Project (Project A), CGN Inner Mongolia Zhurihe Phase III Wind Farm Project (Project B) and CGN Inner Mongolia Zhurihe Phase IV Wind Farm Project (Project C). Therefore, separate meters M1~M15 are installed at the project site so that the electricity generation can be monitored for each wind farm separately for calculating the share of this wind farm of the total net electricity exported to the grid. M1~M4 are installed in Line1#~4# respectively to monitor the generation from the project activity; M5~M8 are installed in Line5#~8# respectively to monitor the generation from Project A; M9~M12 are installed in Line9#~12# respectively to monitor the generation from Project B; M13~M15 are installed in Line13#~15# respectively to monitor the generation from Project C. The electricity will be monitored by the project owner and the grid company. Details can be showed in Table 1.
QA/QC procedures to be applied	The metering equipment is calibrated annually for accuracy by a qualified third party in accordance with industry standard. Monthly generation data is approved and signed off by monitoring staff before it is accepted and stored, and cross-checked with the receipts of sales. Data will be archived for 2 years following the end of the last crediting period.
Purpose of the data	Baseline Emission calculation
Calculation method	$EG_y = EG_{total} * E_{project} / (E_{project} + E_{others})$ $EG_{total} = TEG_y - CEG_y$
Comments	-

Table 1 Detailed information of the meters

Meters	Accuracy Class	Serial number	Date of calibration	Validity
Main meter	0.2s	95232541	02/03/2016	01/03/2017
			01/03/2017	28/02/2018
			20/02/2018	19/02/2019
			10/02/2019	09/02/2020
Backup meter	0.2s	95232545	02/03/2016	01/03/2017
			01/03/2017	28/02/2018
			20/02/2018	19/02/2019
			10/02/2019	09/02/2020
M1	0.5s	96716256	02/03/2016	01/03/2017
			01/03/2017	28/02/2018
			20/02/2018	19/02/2019
			10/02/2019	09/02/2020
M2	0.5s	96716255	02/03/2016	01/03/2017
			01/03/2017	28/02/2018
			20/02/2018	19/02/2019
			10/02/2019	09/02/2020
M3	0.5s	96716257	02/03/2016	01/03/2017
			01/03/2017	28/02/2018
			20/02/2018	19/02/2019
			10/02/2019	09/02/2020
M4	0.5s	94316656	02/03/2016	01/03/2017
			01/03/2017	28/02/2018
			20/02/2018	19/02/2019
			10/02/2019	09/02/2020
M5	0.5s	96716250	02/03/2016	01/03/2017

Meters	Accuracy Class	Serial number	Date of calibration	Validity
			01/03/2017	28/02/2018
			20/02/2018	19/02/2019
			10/02/2019	09/02/2020
M6	0.5s	96716251	02/03/2016	01/03/2017
			01/03/2017	28/02/2018
			20/02/2018	19/02/2019
			10/02/2019	09/02/2020
M7	0.5s	96716259	02/03/2016	01/03/2017
			01/03/2017	28/02/2018
			20/02/2018	19/02/2019
			10/02/2019	09/02/2020
M8	0.5s	96716254	02/03/2016	01/03/2017
			01/03/2017	28/02/2018
			20/02/2018	19/02/2019
			10/02/2019	09/02/2020
M9	0.5s	96716253	02/03/2016	01/03/2017
			01/03/2017	28/02/2018
			20/02/2018	19/02/2019
			10/02/2019	09/02/2020
M10	0.5s	87565489	02/03/2016	01/03/2017
			01/03/2017	28/02/2018
			20/02/2018	19/02/2019
			10/02/2019	09/02/2020
M11	0.5s	96716258	02/03/2016	01/03/2017
			01/03/2017	28/02/2018

Meters	Accuracy Class	Serial number	Date of calibration	Validity
			20/02/2018	19/02/2019
			10/02/2019	09/02/2020
M12	0.5s	96716252	02/03/2016	01/03/2017
			01/03/2017	28/02/2018
			20/02/2018	19/02/2019
			10/02/2019	09/02/2020
M13	0.5s	09040060580392	02/03/2016	01/03/2017
			01/03/2017	28/02/2018
			20/02/2018	19/02/2019
			10/02/2019	09/02/2020
M14	0.5s	09040060580383	02/03/2016	01/03/2017
			01/03/2017	28/02/2018
			20/02/2018	19/02/2019
			10/02/2019	09/02/2020
M15	0.5s	09040060580381	02/03/2016	01/03/2017
			01/03/2017	28/02/2018
			20/02/2018	19/02/2019
			10/02/2019	09/02/2020

4.3 Monitoring Plan

According to the registered PDD, the monitoring system is specified as below:

1. Monitoring system and data collection

The net electricity supplied to the grid is continuously measured by the main meter and the backup meter installed at the substation. The main meter and the backup meter are bidirectional and has two-way metering, recording both the electricity exports to the grid (TEG_y) and imports from the grid (CEG_y); net

electricity supplied to the grid by the project (EG_y) is calculated by the method given in the monitoring plan contained in the approved revised PDD.

Currently, the project activity shares the same transformer, substation and transmission line with other three wind farms, named CGN Inner Mongolia Zhurihe Phase II Wind Farm Project (UNFCCC ref. No. 3453, hereafter referred to as Project A), CGN Inner Mongolia Suniteyouqi Phase 3 Windfarm Project (UNFCCC Ref. 5746, hereafter referred to as Project B) and Sunite Phase IV 49.5 MW Wind Power Project (UNFCCC Ref. 7875, hereafter referred to as Project C). According to the Annex 4 of the approved revised PDD, if the proposed project has to share the same transformer, substation or transmission line with some other wind farms, appropriate additional meters will be installed. Therefore, separate meters M1~M15 are installed at the project site so that the electricity generation can be monitored for each wind farm separately for calculating the share of this wind farm of the total net electricity exported to the grid. M1~M4 are installed in Line1#~4# respectively to monitor the generation from the project activity; M5~M8 are installed in Line5#~8# respectively to monitor the generation from Project A; M9~M12 are installed in Line9#~12# respectively to monitor the generation from Project B; M13~M15 are installed in Line13#~15# respectively to monitor the generation from Project C.

Therefore, the electricity generation can be monitored respectively to calculate the share of this wind farm of the total net exported electricity to the grid (EG_{total}).

The net electricity supplied by the project activity (EG_y) is calculated as follows:

$$EG_y = EG_{total} * E_{project} / (E_{project} + E_{others})$$

$$EG_{total} = TEG_y - CEG_y$$

EG_{total} is the total net electricity supplied to the grid based on the data metered by the main meter;

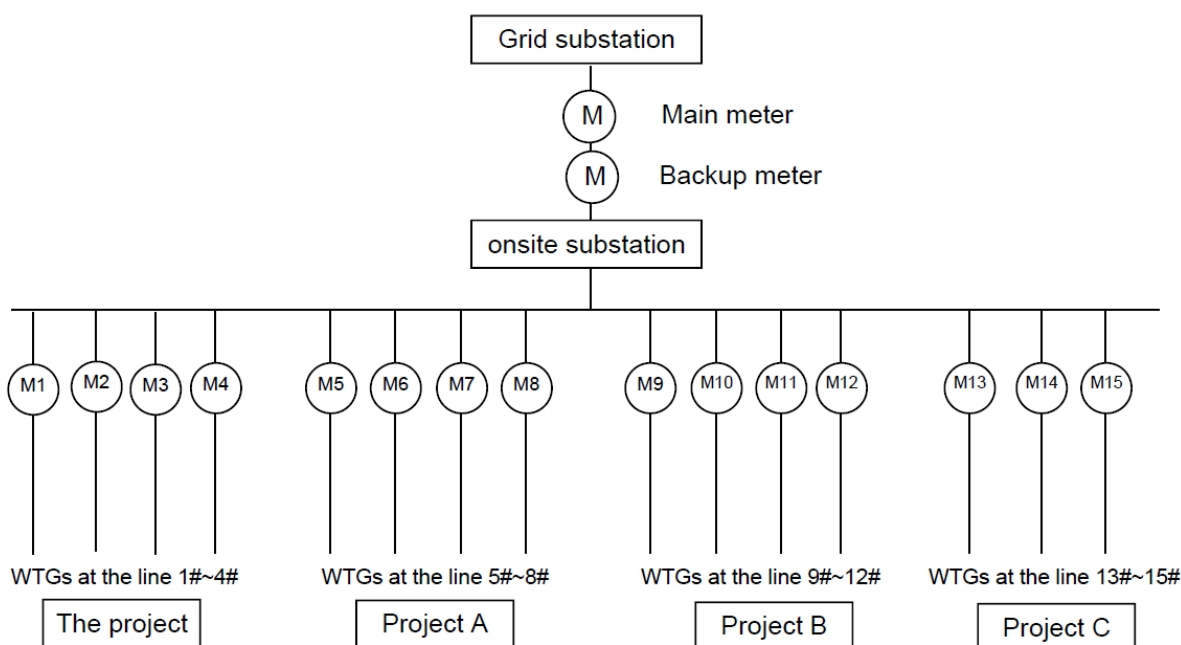
$E_{project}$ is the electricity generation from the project activity metered by the separate meters;

E_{others} is the electricity generation from other projects metered by the other separate meters;

TEG_y is the total electricity exported to the grid by the proposed project and other projects

CEG_y is the total electricity imported from the grid by the proposed project and other projects.

The location of the main meter, backup meter, separate meters in relation to the grid, project, other project transmission lines are displayed as following diagram:



2. Information Flow

The cut-off time is 24:00 of the 20th day of every month;

The readings of the main meter and the separate meters are monitored continuously, recorded daily and aggregated monthly;

Each month, the grid company issues sales receipts to the developer upon the confirmed data;

The electricity data of the separate meters is cross checked with the sales receipts issued by the grid company and the conservative value will be used.

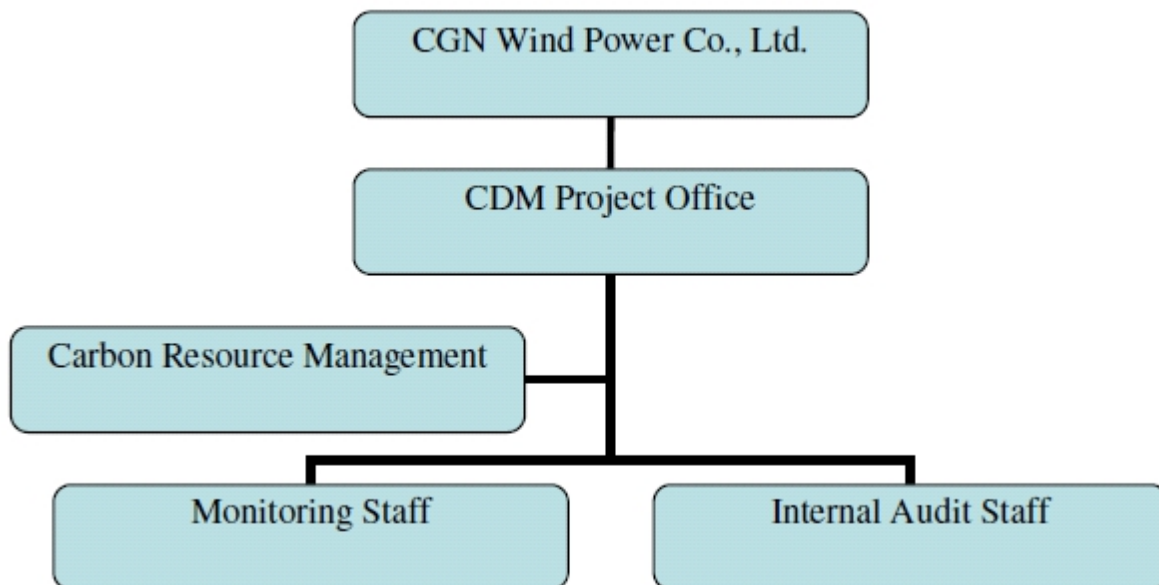
The wind farm carries out an internal audit on and reports the readings to the VVB before the verification is requested.

3. Organizational structure and responsibilities

Overall responsibility for monitoring and carrying out the monitoring following this monitoring plan lies with the CGN Wind Power Co., Ltd. Carbon Resource

Management Ltd had advised the project developer on how to perform the monitoring work. The staffs who were responsible for electricity meter readings and recording, and who were responsible for auditing the metered data had been trained according to the CDM requirements.

The operating and management structure of monitoring is illustrated as follows:



4. Calibration

The metering equipments are calibrated and checked for accuracy in accordance with relevant industry standards. The metering equipments shall have sufficient accuracy so that any error resulting from such equipment shall not exceed 0.5%. The net generation output registered by the meters alone will suffice for the purpose of emission reduction verification as long as the error in the meters is within the agreed limits.

The meters are calibrated and checked annually for accuracy. Calibration is carried out by the qualified entity. No errors occurred during this monitoring period.

5. Emergency procedures

The meters were calibrated and checked annually for accuracy. Calibration was carried out by the qualified entity. Meters had been jointly inspected and sealed on behalf of the parties concerned. No errors occurred during this monitoring period.

Should any previous months reading of the main meter be inaccurate by more than the allowable error, or otherwise functioned improperly, the net generation output shall be determined by:

- (a) Firstly, by reading backup meter, unless a test by either party reveals it is inaccurate;
- (b) If the backup system is not within acceptable limits of accuracy or operation is performed improperly the project operator and NCPG shall jointly prepare an reasonable and conservative estimate of the correct reading, and provide sufficient evidence that this estimation is reasonable and conservative.

6. Data management

All monitoring data and records will be archived in electronic format as well as on paper. The electronic documents will be backed up on compact disc or hard disc. All data collected as part of monitoring should be archived electronically and be kept at least for 2 years after the end of the last crediting period.

7. Training program

The project developer will train all related staff before the start of the crediting period. The training contains CDM knowledge, operational regulations, quality control (QC), quality assurance (QA), data monitoring requirements and data management regulations, etc.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

The baseline emission BE_y (tCO₂) during the monitoring period results from:

$$BE_y = EG_y \times EF_{\text{grid, CM},y}$$

The detailed calculation of EG_y is calculated below:

Table 2 the monitored data of the separate meters (Unit: MWh)

Monitoring Period		Electricity generation of the project activity metered by the separate meters				E _{project}
		#1	#2	#3	#4	Total
Start	End	A	B	C	D	E=A+B+C+D
21/12/2016	20/01/2017	1774.07	2052.68	2093.88	1861.96	7782.59
21/01/2017	20/02/2017	1840.21	2180.25	2049.20	2359.43	8429.09
21/02/2017	20/03/2017	1911.83	1749.16	1907.13	1511.25	7079.37
21/03/2017	20/04/2017	1822.37	1743.83	1827.20	2291.39	7684.79
21/04/2017	20/05/2017	2272.51	2431.59	2669.20	2607.91	9981.21
21/05/2017	20/06/2017	1317.02	1259.02	1188.52	1031.85	4796.41
21/06/2017	20/07/2017	1446.27	1636.84	1310.60	1857.96	6251.67
21/07/2017	20/08/2017	1577.29	1481.59	1547.57	1571.59	6178.04
21/08/2017	20/09/2017	2436.05	1964.17	2210.29	2659.07	9269.58
21/09/2017	20/10/2017	1793.91	1792.16	1991.68	1877.60	7455.35
21/10/2017	20/11/2017	3926.15	3664.06	3909.59	4068.01	15567.81
21/11/2017	20/12/2017	1968.54	2295.26	2081.34	2225.98	8571.12
21/12/2017	20/01/2018	2670.64	2877.97	2948.95	2933.57	11431.13
21/01/2018	20/02/2018	2367.06	2121.19	2654.34	3003.57	10146.16
21/02/2018	20/03/2018	2939.89	3029.70	3318.43	3469.43	12757.45
21/03/2018	20/04/2018	3261.96	3146.72	3039.93	3621.78	13070.39
21/04/2018	20/05/2018	1975.29	2259.89	2030.26	2074.34	8339.78
21/05/2018	20/06/2018	1959.93	2129.25	2088.17	1802.86	7980.21
21/06/2018	20/07/2018	1590.78	1671.66	1775.08	1628.12	6665.64
21/07/2018	20/08/2018	765.86	825.29	644.87	945.20	3181.22
21/08/2018	20/09/2018	2771.43	2724.23	2711.42	2904.50	11111.58
21/09/2018	20/10/2018	1852.83	2237.67	2207.02	1979.50	8277.02

21/10/2018	20/11/2018	1827.57	1668.71	1729.92	2751.96	7978.16
21/11/2018	20/12/2018	3062.68	2820.70	2462.37	3384.95	11730.70
21/12/2018	20/01/2019	2352.64	2401.49	2678.14	2237.23	9669.50
21/01/2019	20/02/2019	957.09	894.23	890.43	840.84	3582.59
21/02/2019	03/03/2019	850.36	756.37	784.90	1010.49	3402.12
Total		-				228370.68
Monitoring Period		Electricity generation of the other Project A metered by the separate meters				E _{others,A}
		#5	#6	#7	#8	Total
Start	End	F	G	H	I	J=F+G+H+I
21/12/2016	20/01/2017	1997.47	1854.53	2289.24	2088.32	8229.56
21/01/2017	20/02/2017	2225.06	2123.34	1946.76	2513.16	8808.32
21/02/2017	20/03/2017	1893.11	1610.83	1959.80	1993.03	7456.77
21/03/2017	20/04/2017	1854.60	1881.43	1959.24	2327.41	8022.68
21/04/2017	20/05/2017	2213.35	2835.90	2794.36	2609.12	10452.73
21/05/2017	20/06/2017	1154.61	1314.87	1229.45	1254.21	4953.14
21/06/2017	20/07/2017	1428.07	1331.69	1648.47	1726.68	6134.91
21/07/2017	20/08/2017	1704.00	1343.86	1429.08	1722.86	6199.80
21/08/2017	20/09/2017	2095.05	2531.48	2332.21	2258.52	9217.26
21/09/2017	20/10/2017	2107.97	1641.80	1989.61	2075.55	7814.93
21/10/2017	20/11/2017	3534.20	4114.16	3861.98	4235.45	15745.79
21/11/2017	20/12/2017	2408.77	2118.33	2400.62	2491.23	9418.95
21/12/2017	20/01/2018	2950.07	2500.99	3127.69	3388.47	11967.22
21/01/2018	20/02/2018	2614.80	2202.60	2345.96	3262.17	10425.53
21/02/2018	20/03/2018	2957.46	3288.81	3097.42	3022.45	12366.14
21/03/2018	20/04/2018	3163.61	4155.56	3243.10	3186.99	13749.26
21/04/2018	20/05/2018	2076.48	2022.98	2286.30	2664.69	9050.45
21/05/2018	20/06/2018	1982.19	2023.93	1913.33	2393.40	8312.85

21/06/2018	20/07/2018	1554.92	1513.53	1424.08	2348.51	6841.04
21/07/2018	20/08/2018	827.04	667.60	770.43	1008.04	3273.11
21/08/2018	20/09/2018	2196.51	2631.85	2974.72	3071.06	10874.14
21/09/2018	20/10/2018	1966.73	1691.99	2221.16	2492.72	8372.60
21/10/2018	20/11/2018	2307.12	2102.10	2234.78	2075.78	8719.78
21/11/2018	20/12/2018	3057.60	3502.76	2581.43	3600.32	12742.11
21/12/2018	20/01/2019	2500.70	2251.64	2600.36	3047.30	10400.00
21/01/2019	20/02/2019	997.41	843.49	882.47	1306.72	4030.09
21/02/2019	03/03/2019	863.42	653.60	771.44	1192.38	3480.84
Total						237060.00
Monitoring Period		Electricity generation of the other Project B metered by the separate meters				E _{others,B}
		#9	#10	#11	#12	Total
Start	End	K	L	M	N	O=K+L+M+N
21/12/2016	20/01/2017	1923.58	1680.60	1970.68	2041.03	7615.89
21/01/2017	20/02/2017	1768.20	1596.36	1830.74	1857.98	7053.28
21/02/2017	20/03/2017	1323.49	1531.53	1710.90	1766.73	6332.65
21/03/2017	20/04/2017	2047.47	2259.71	1738.56	2545.70	8591.44
21/04/2017	20/05/2017	2446.06	2979.82	2881.60	3125.58	11433.06
21/05/2017	20/06/2017	1112.24	1316.93	1165.52	1353.73	4948.42
21/06/2017	20/07/2017	1563.90	1537.37	1351.29	1972.05	6424.61
21/07/2017	20/08/2017	1584.78	1570.13	1565.73	1271.33	5991.97
21/08/2017	20/09/2017	2173.57	2443.32	2267.25	2373.55	9257.69
21/09/2017	20/10/2017	1699.32	1992.34	1692.70	1888.55	7272.91
21/10/2017	20/11/2017	3100.10	3759.72	3211.19	3660.50	13731.51
21/11/2017	20/12/2017	1762.51	2064.86	1776.68	2248.48	7852.53
21/12/2017	20/01/2018	2499.59	2478.82	3020.06	3253.89	11252.36
21/01/2018	20/02/2018	2385.97	1998.63	2282.65	2502.19	9169.44

21/02/2018	20/03/2018	2670.51	3135.26	2710.75	2726.88	11243.40
21/03/2018	20/04/2018	3509.13	3469.95	2817.84	3886.60	13683.52
21/04/2018	20/05/2018	2090.27	2083.48	2164.98	2417.67	8756.40
21/05/2018	20/06/2018	2221.11	2286.26	2088.38	1886.80	8482.55
21/06/2018	20/07/2018	1843.23	1524.98	1623.64	2210.22	7202.07
21/07/2018	20/08/2018	828.48	881.56	679.89	824.06	3213.99
21/08/2018	20/09/2018	2877.71	2781.58	2602.33	2743.20	11004.82
21/09/2018	20/10/2018	1942.10	2063.08	1871.97	2044.63	7921.78
21/10/2018	20/11/2018	2052.72	1796.22	1860.98	2089.40	7799.32
21/11/2018	20/12/2018	2730.02	3074.69	3182.96	3843.12	12830.79
21/12/2018	20/01/2019	2303.01	2508.74	2380.78	2605.42	9797.95
21/01/2019	20/02/2019	1102.99	1007.27	830.08	1114.94	4055.28
21/02/2019	03/03/2019	778.78	851.42	801.91	832.73	3264.84
Total						226184.47

Monitoring Period		Electricity generation of the other Project C metered by the separate meters			Eothers,C
		#13	#14	#15	Total
Start	End	P	Q	R	S=P+Q+R
21/12/2016	20/01/2017	2476.55	2681.55	2996.16	8154.26
21/01/2017	20/02/2017	2993.09	3024.90	3019.73	9037.72
21/02/2017	20/03/2017	2714.49	2636.54	2847.83	8198.86
21/03/2017	20/04/2017	3238.99	3239.28	3936.54	10414.81
21/04/2017	20/05/2017	4799.27	4539.51	4609.16	13947.94
21/05/2017	20/06/2017	2186.18	2220.85	2172.67	6579.70
21/06/2017	20/07/2017	2682.05	2515.30	2900.13	8097.48
21/07/2017	20/08/2017	2425.15	2367.08	2993.14	7785.37
21/08/2017	20/09/2017	3442.06	3616.90	3780.16	10839.12
21/09/2017	20/10/2017	3052.76	2885.99	3290.05	9228.80

21/10/2017	20/11/2017	5354.50	5413.25	5525.59	16293.34
21/11/2017	20/12/2017	3014.70	3118.61	3423.08	9556.39
21/12/2017	20/01/2018	4193.05	4342.44	4391.38	12926.87
21/01/2018	20/02/2018	3429.09	3654.69	3905.27	10989.05
21/02/2018	20/03/2018	4461.40	4004.70	4424.87	12890.97
21/03/2018	20/04/2018	5394.55	5037.78	5526.42	15958.75
21/04/2018	20/05/2018	3521.83	3543.67	3622.16	10687.66
21/05/2018	20/06/2018	3366.71	3303.02	3383.08	10052.81
21/06/2018	20/07/2018	2928.52	3022.76	3124.57	9075.85
21/07/2018	20/08/2018	1362.67	1428.67	1512.98	4304.32
21/08/2018	20/09/2018	4408.83	4358.05	4031.90	12798.78
21/09/2018	20/10/2018	2976.78	2873.40	3407.67	9257.85
21/10/2018	20/11/2018	3207.73	3541.72	3839.37	10588.82
21/11/2018	20/12/2018	5354.65	5325.25	5018.56	15698.46
21/12/2018	20/01/2019	4150.13	4731.22	4695.25	13576.60
21/01/2019	20/02/2019	1811.41	1847.11	2241.83	5900.35
21/02/2019	03/03/2019	1386.52	1430.10	1410.03	4226.65
Total					277067.58

Table 3 The monitored data of the main meter and calculation of EG_y (Unit: MWh):

Monitoring Period	Conservative value of TEG _y (cross-check with sales receipts) ¹	Conservative value of CEG _y (cross-check with sales receipts) ²	EG _{total}	E _{project}	E _{others}			EG _y
					E _{others,A}	E _{others,B}	E _{others,C}	

¹ Please refer to the ER calculation spreadsheet for cross-check, the monitored data are consistent with the sales receipts of TEG_y issued by grid company.

² Please refer to the ER calculation spreadsheet for cross-check, the monitored data are consistent with the sales receipts of CEG_y issued by grid company.

Start	End	V	Y	Z=V-Y	E	J	O	S	AA=Z*E /(E+J+O +S)
21/12/2016	20/01/2017	31265.09	84.72	31180.37	7782.59	8229.56	7615.89	8154.26	7,635.19
21/01/2017	20/02/2017	32839.46	35.88	32803.58	8429.09	8808.32	7053.28	9037.72	8,296.35
21/02/2017	20/03/2017	28871.15	95.31	28775.84	7079.37	7456.77	6332.65	8198.86	7,008.30
21/03/2017	20/04/2017	34442.04	60.63	34381.41	7684.79	8022.68	8591.44	10414.81	7,611.22
21/04/2017	20/05/2017	45447.80	43.11	45404.69	9981.21	10452.73	11433.06	13947.94	9,891.83
21/05/2017	20/06/2017	21140.09	107.92	21032.17	4796.41	4953.14	4948.42	6579.70	4,741.06
21/06/2017	20/07/2017	26700.42	96.71	26603.71	6251.67	6134.91	6424.61	8097.48	6,180.81
21/07/2017	20/08/2017	25895.61	77.62	25817.99	6178.04	6199.80	5991.97	7785.37	6,098.39
21/08/2017	20/09/2017	38041.05	59.45	37981.60	9269.58	9217.26	9257.69	10839.12	9,124.93
21/09/2017	20/10/2017	31471.61	81.22	31390.39	7455.35	7814.93	7272.91	9228.80	7,365.80
21/10/2017	20/11/2017	60533.61	37.24	60496.37	15567.81	15745.79	13731.51	16293.34	15,354.08
21/11/2017	20/12/2017	34848.83	91.09	34757.74	8571.12	9418.95	7852.53	9556.39	8,415.85
21/12/2017	20/01/2018	46633.50	140.96	46492.54	11431.13	11967.22	11252.36	12926.87	11,170.43
21/01/2018	20/02/2018	39928.87	57.78	39871.09	10146.16	10425.53	9169.44	10989.05	9,932.15
21/02/2018	20/03/2018	48644.57	69.08	48575.49	12757.45	12366.14	11243.40	12890.97	12,580.69
21/03/2018	20/04/2018	55467.04	37.25	55429.79	13070.39	13749.26	13683.52	15958.75	12,831.46
21/04/2018	20/05/2018	36564.60	76.42	36488.18	8339.78	9050.45	8756.40	10687.66	8,261.41
21/05/2018	20/06/2018	34628.61	76.08	34552.53	7980.21	8312.85	8482.55	10052.81	

									7,916.99
21/06/2018	20/07/2018	29204.16	74.94	29129.22	6665.64	6841.04	7202.07	9075.85	6,518.96
21/07/2018	20/08/2018	13881.29	157.06	13724.23	3181.22	3273.11	3213.99	4304.32	3,124.66
21/08/2018	20/09/2018	45358.19	45.33	45312.86	11111.58	10874.14	11004.82	12798.78	10,995.95
21/09/2018	20/10/2018	33656.82	116.18	33540.64	8277.02	8372.60	7921.78	9257.85	8,206.40
21/10/2018	20/11/2018	34529.47	63.97	34465.50	7978.16	8719.78	7799.32	10588.82	7,837.04
21/11/2018	20/12/2018	52157.05	97.57	52059.48	11730.70	12742.11	12830.79	15698.46	11,522.08
21/12/2018	20/01/2019	43062.72	57.82	43004.90	9669.50	10400.00	9797.95	13576.60	9,571.75
21/01/2019	20/02/2019	17467.10	190.39	17276.71	3582.59	4030.09	4055.28	5900.35	3,523.12
21/02/2019	03/03/2019 ³	14162.52	20.69	14141.83	3402.12	3480.84	3264.84	4226.65	3,347.06
Total		956843.27	2152.42	954690.85	228370.68	237060.00	226184.47	277067.58	225063.96

Calculation of BE_y:

Period		EG _y (MWh)	EF _{grid, CM, y} (tCO ₂ /MWh)	BE _y (tCO _{2e})
Start	End	AA	AB	AC=AA*AB
21/12/2016	20/12/2017	97723.81	1.0548	103079
21/12/2017	20/12/2018	110898.22	1.0548	116975
21/12/2018	03/03/2019	16441.93	1.0548	17342
Total		225063.96	1.0548	237,397

³ The cut-off time is 24:00 of the 20th day of every month, and the electricity exported to the grid during the time (21/02/2019-03/03/2019) was calculated based on the monthly report and the daily report of 03/03/2019. The data has been crosschecked or assured by the grid company.

5.2 Project Emissions

According to ACM0002 (Version 20.0), no project emissions were to be counted by the Project.

Hence, $PE_y = 0 \text{ tCO}_2\text{e}$.

5.3 Leakage

According to the baseline methodology ACM0002 (version 20.0), the leakage of the Project is not considered.

5.4 Net GHG Emission Reductions and Removals

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
Year 1 (21/12/2016-20/12/2017)	103,079	0	0	103,079
Year 2 (21/12/2017-20/12/2018)	116,975	0	0	116,975
Year 3 (21/12/2018-3/03/2019)	17,342	0	0	17,342
Total	237,397	0	0	237,397

The annual average emission reductions estimated in the registered CDM-PDD is 130,755 tCO₂e, so the estimated amount of emission reductions for the corresponding 803 days (the duration of this monitoring period) are $803/365 \times 130,755 = 287,661 \text{ tCO}_2\text{e}$, which is higher than the actual value of 237,397 tCO₂e.