



HANGJIN YIHEWUSU PHASE I 49.5MW WIND POWER PROJECT



Document Prepared by Climate Bridge (Shanghai) Ltd.

Tel: +86 21 6246 2036; Fax: +86 21 2301 9950

Project Title	Hangjin Yihewusu Phase I 49.5MW Wind Power Project
Version	2.1
Report ID	NA
Date of Issue	24-June-2021
Project ID	1128
Monitoring Period	21-Mar-2016 to 25-Mar-2021
Prepared By	Yumei Peng
Contact	Block B, Level 24, Jiangong Mansion, 33 Fushan Road, Pudong New Area, Shanghai, P.R. of China Telephone: +86 21 6246 2036; Email: projects@climatebridge.com http://www.climatebridge.com

CONTENTS

1	PROJECT DETAILS.....	1
1.1	Summary Description of the Implementation Status of the Project	1
1.2	Sectoral Scope and Project Type	1
1.3	Project Proponent	1
1.4	Other Entities Involved in the Project	2
1.5	Project Start Date	2
1.6	Project Crediting Period	2
1.7	Project Location	3
1.8	Title and Reference of Methodology	3
1.9	Participation under other GHG Programs.....	4
1.10	Other Forms of Credit.....	4
1.11	Sustainable Development.....	4
2	SAFEGUARDS.....	4
2.3	AFOLU-Specific Safeguards	5
3	IMPLEMENTATION STATUS	5
3.1	Implementation Status of the Project Activity	6
3.2	Deviations	7
3.3	Grouped Projects	8
4	DATA AND PARAMETERS.....	8
4.1	Data and Parameters Available at Validation	9
4.2	Data and Parameters Monitored.....	9
4.3	Monitoring Plan.....	11
5	QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS	15
5.1	Baseline Emissions	15
5.2	Project Emissions	20
5.3	Leakage.....	20
5.4	Net GHG Emission Reductions and Removals.....	20

1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The Hangjin Yihewusu Phase I 49.5MW Wind Power Project (hereafter, “the project”) is to utilize wind resources for electricity generation through the construction of a windfarm with a total capacity of 49.5MW in Hangjin County, Ordos City, in the western part of the Inner Mongolia Autonomous Region in China.

The project construction commenced on 26/02/2009, and the operation started on 28/12/2011 and the operational lifetime is 20 years. The project has get registered as a CDM project on 07/09/2012 (UNFCCC registration reference number of 7221¹), issued 189,860 tCO₂e during the first monitoring period from 07/09/2012 to 20/11/2014 and 135,902 tCO₂e during the second monitoring period from 21/11/2014 to 20/03/2016. The project also has registered as a VCS project on 29/09/2013 (VCS ID 1128), issued 58,339 tCO₂e during the first monitoring period from 28/12/2011 to 06/09/2012. The first crediting period of the VCS project is from 28/12/2011 to 27/12/2021.

The project installed and operated 33 sets wind turbines with capacity of 1.5 MW each, which amount to a total capacity of 49.5 MW. The electricity generated by the project is supplied to the North China Power Grid (NCPG), displacing part of electricity generated by NCPG which is dominated by fossil fuel-fired power plants. The estimated annual net electricity generation supplied to the grid is 117,784 MWh.

In this monitoring period (from 21/03/2016 to 25/03/2021 including both 21/03/2016 and 25/03/2021 days), the total net electricity supplied is 559,770.56 MWh, and the emission reductions achieved is 501,498 tCO₂e.

1.2 Sectoral Scope and Project Type

Sectoral scope: 1. Energy (renewable/non-renewable);

Project type: Wind power generation project;

The project is not a grouped project.

1.3 Project Proponent

Organization name	Inner Mongolia Guodian New Energy Co.,Ltd.
-------------------	--

¹ <https://cdm.unfccc.int/Projects/DB/JCI1346997827.74/view>

Contact person	Wa Gao
Title	Project Manager
Address	Room 2, Guibin Building, Dianli Community, Jinchuan Development District
Telephone	+86 0471 2653 722
Email	3542346576@qq.com

1.4 Other Entities Involved in the Project

Organization name	Climate Bridge (Shanghai) Ltd.
Role in the Project	VCU Buyer
Contact person	Zhiwen Gao
Title	General Manager
Address	Block B, Level 24, Jiangong Mansion, 33 Fushan Road, Pudong New Area, Shanghai, China 200120
Telephone	+86-2162462036
Email	gao.zhiwen@climatebridge.com

1.5 Project Start Date

The project started on 28/12/2011 (The start date of generators operation).

1.6 Project Crediting Period

The project crediting period is ten years, twice renewable for a total of 30 years. However, as the project is also registered as a CDM project with a seven year twice renewable project crediting period, it is not eligible for VCU issuance beyond the end of those 21 years. The project first crediting period is from 28/12/2011 to 27/12/2021 (10 years).

1.7 Project Location

The project is located in Hangjin County, Ordos City, in the western Inner Mongolia of China. The geographical coordinates of the centre of the project area are E107.5411°, N40.0589°.

The detail location of the project is shown as below:

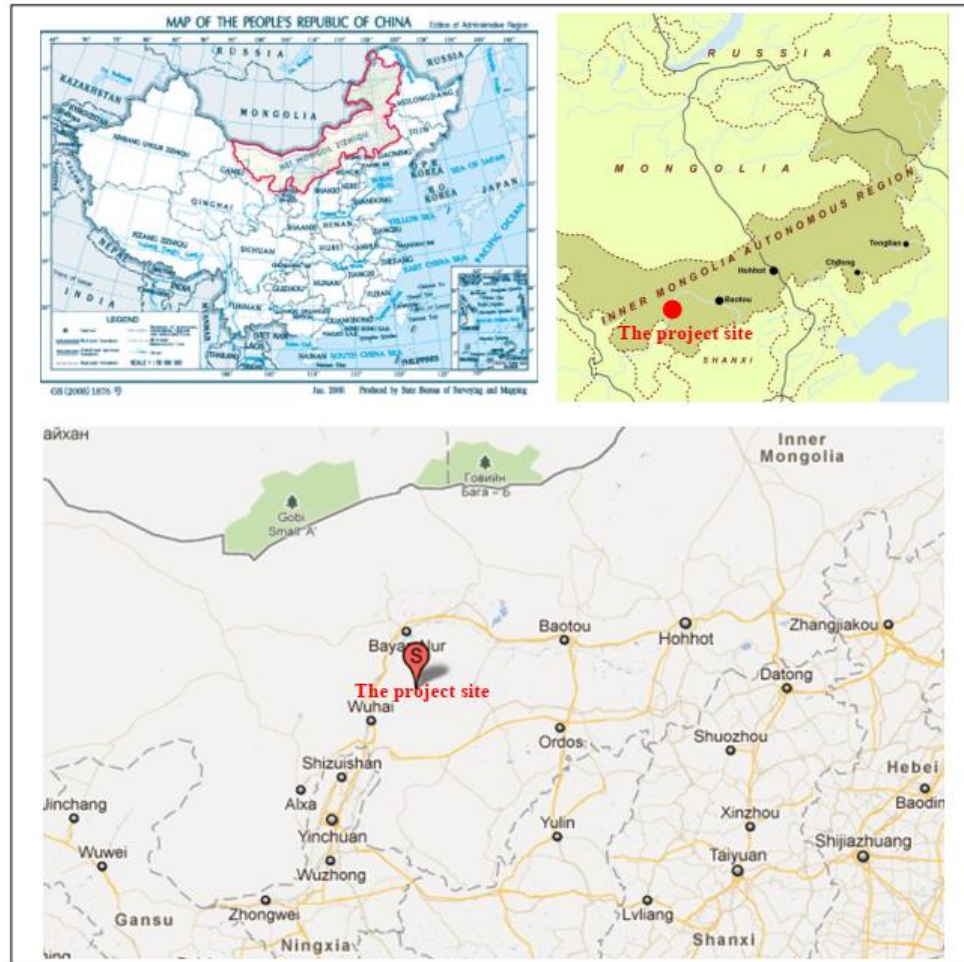


Figure 1 Location of the Project

1.8 Title and Reference of Methodology

Following approved baseline & monitoring methodology is applied:

ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (Version 12.3.0);

Tool for the demonstration and assessment of additionality (Version 06.0.0)

Tool to calculate the emission factor for an electricity system (Version 02.2.1)

For more information regarding the methodology please refer to

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

1.9 Participation under other GHG Programs

The project has been registered as a Clean Development Mechanism (CDM) project in UNFCCC on 07/09/2012 (UNFCCC Ref. 7221), with the renewable crediting period of 3*7 years started from 07/09/2012. The project issued 189,860 tCO_{2e} during the first monitoring period from 07/09/2012 to 20/11/2014 and 135,902 tCO_{2e} during the second monitoring period from 21/11/2014 to 20/03/2016 under CDM program.

Please refer to the following link for details:

<https://cdm.unfccc.int/Projects/DB/JCI1346997827.74/view>

1.10 Other Forms of Credit

Emission Trading Programs and Other Binding Limits

The project does not reduce GHG emissions from activities that are included in an emissions trading program or any other mechanism that includes GHG allowance trading.

Other Forms of Environmental Credit

The project has not sought or received another form of GHG-related environmental credit, including renewable energy certificates, during this monitoring period. None of the credits will be claimed in the same period.

1.11 Sustainable Development

The Project will contribute to sustainable development in the following ways:

- (a) Creating short-term and long-term job opportunities in the project area during the project's construction and operation.
- (b) Displacing part of the electricity generated by coal-fired power plants, and thus improving the local environment and reducing greenhouse gas (GHG) emissions.

2 SAFEGUARDS

2.1 No Net Harm

The project not only increases employment opportunities and income to local residents, but also improves current situation of electricity usage and the situation of transport. Thus, there are no negative environmental and/or socio-economic impacts due to the project.

2.2 Local Stakeholder Consultation

Local Stakeholder Consultation during the project preparation stage:

The first stage:

Between 17 August 2011 and 19 August 2011, the staff from the Inner Mongolia Guodian New Energy Co., Ltd. carried out a survey among local villagers and residents living in the project area. The questionnaires used for assessing the project's impacts on the local environment, as well as on the region's social and economic development were sent out to local villagers and residents. 50 questionnaires were distributed, and 46 questionnaires had been returned. The response rate is 92%. The respondents are representative in terms of age, occupation and education, so their attitude towards the impacts of the project can therefore be seen as a comprehensive reflection of the attitudes of the residents possibly affected by the project.

In summary, the local people support and agree with the construction of the project. They believe that the project will have a positive impact on the local economic development and their living conditions, without having negative impacts on the environment and the ecosystem.

Local Stakeholder Consultation during the project implementation stage:

Communications with local stakeholders are being carried out at periodic intervals. Key implementation schedules or changes of the project will be communicated to the local authority, who will inform the neighbourhood committee and the residents, the comments and suggestions from residents will be collected by the local authority meanwhile. And the local government agencies and competent authorities will conduct spot checks on the implementation of the project from time to time, and give suggestions on the involved rectification problems. There are no negative comments received for the project. In line with VCS requirements all the processes have been implemented to receive comments from local stakeholders as well as communicate with them at periodic intervals.

2.3 AFOLU-Specific Safeguards

There is not applicable due to the project is non-AFOLU project.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The project involves the installation of 33 sets of wind turbines with capacity of 1.5 MW each, which amounts to a total installed capacity of 49.5MW. The selected wind turbines are based on the signed contract with models of WD82-1500. The construction of the project was started in 26/02/2009. Turbines and generators started operation on 28/12/2011, and the operational lifetime is 20 years. The estimated net annual power supplied to the grid is 117,784 MWh.

The project has get registered as a CDM project on 07/09/2012 (UNFCCC registration reference number of 7221²), issued 189, 860 tCO₂e during the first monitoring period from 07/09/2012 to 20/11/2014 and 135,902 tCO₂e during the second monitoring period from 21/11/2014 to 20/03/2016. The project also has registered as a VCS project on 29/09/2013 (VCS ID 1128), issued 58,339 tCO₂e during the first monitoring period from 28/12/2011 to 06/09/2012. The first crediting period of the VCS project is from 28/12/2011 to 27/12/2021. In this second monitoring period (from 21/03/2016 to 25/03/2021 including both 21/03/2016 and 25/03/2021 days), the total net electricity supplied is 559,770.56 MWh, and the emission reductions achieved is 501,498 tCO₂e. The wind power generated is switched through a main transformer at Project site, and then connected to the Kubuqi substation, then transmitted to the North China Power Grid (NCPG) finally.

During this monitoring period, the meter M_i (DSSD566, 0.5s) was changed to new meter M_i (DHZ719, 0.5s) on 09/11/2018. The accuracy is not changed and remains 0.5s.

The main technical parameters of the wind turbine generators are presented in Table 1.

Table 1 Key technical parameters of the equipment

Parameters	Data
Model	WD82-1500
Rated power (kW)	1500
Rotor diameter (m)	82
Cut-in wind speed (m/s)	3
Rated wind speed (m/s)	10.5
Cut-out wind speed (m/s)	25
Quantity	33
Operation Lifetime (y)	20

The diagram of connection structure and the meter location and the corresponding meter equipment description in the project are shown in below figure 2 and table 2:

² <https://cdm.unfccc.int/Projects/DB/JCI1346997827.74/view>

Table 2. Meter equipment in the Project

Meter	Description
M_i	M_i meter to record the electricity imported from the 10kV backup power supply grid for emergencies from the grid. Controlled by the grid company.
M_s	Main meter, bi-directional meter which is used to record the electricity exported by the project to the grid and the amount of electricity imported from the grid. Controlled by the grid company.
M_s'	Back up meter of M_s . Controlled by the grid company.

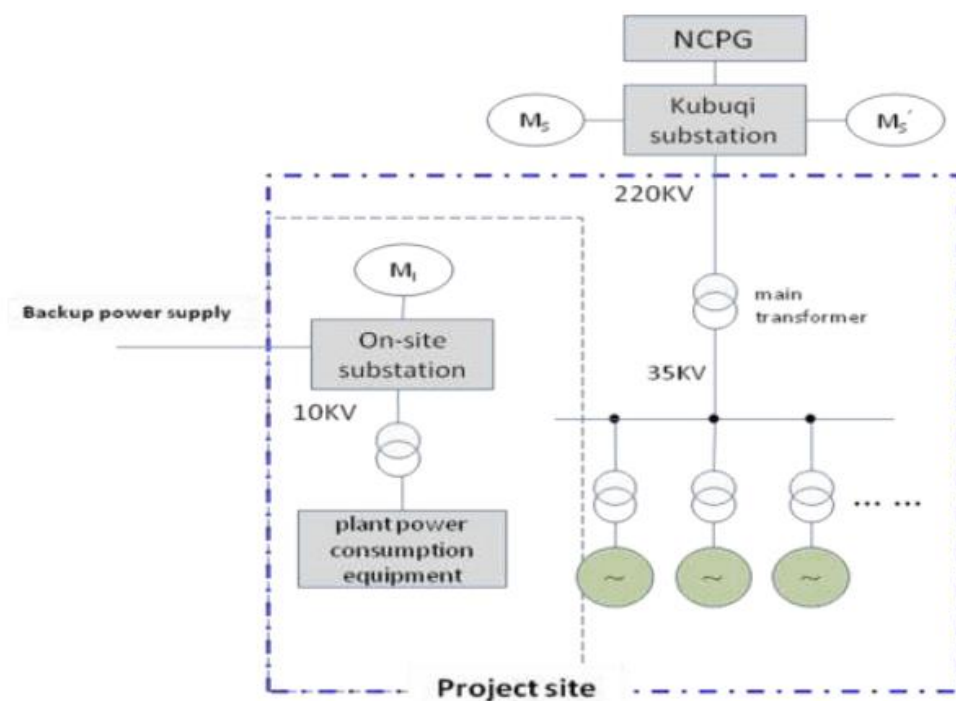


Figure 2 Connection structure and the meter location

3.2 Deviations

3.2.1 Methodology Deviations

There is no deviation applied to this monitoring period.

3.2.2 Project Description Deviations

The project is registered under VCS Standard Version 3.3 and which is completed validation before 19 March 2020, thus it remains eligible to apply the crediting period requirements under

VCS Standard Version 3.3, the first crediting period of the project deviates from 28/12/2011~06/09/2012 to 28/12/2011~27/12/2021 (3*10 years). The first crediting period of the project is 28/12/2011~27/12/2021.

The project was registered as a CDM project by UNFCCC on 07/09/2012 (UNFCCC Ref. 7221) and post registration change occurred and the revised CDM PDD was approved by UNFCCC on 17/04/2015. According to the revised CDM PDD, the name of the substation where the meter M_s and M_s' actually locate is named Kubuqi Substation, instead of the previous Balagong Substation.

In the first monitoring period, the location of the meter M_i (unidirectional meter) measured the electricity imported from the 10kV backup power line for emergencies, is located in the on-site substation in the project site, instead of the Yihewusu Substation that was described in the registered PDD. The meter is owned by the grid company and this change of location of meter is beyond project proponents' control. During the first monitoring period, only in the first month after the operation of the project, some electricity (30.060 MWh) was imported from this backup power line, no electricity was imported in other months of the first monitoring period.

In this second monitoring period, the meter M_i (DSSD566, 0.5s) measured the electricity imported from the 10kV backup power line for emergency was changed to new meter M_i (DHZ719, 0.5s) on 09/11/2018, and the accuracy is not changed and remains 0.5s. In addition, old M_i meter was installed, calibrated and checked in accordance with the JJG 1055-97 technical norm of the calibration of AC watt-hour meters at place of installation during the period from 20/09/2015 to 08/09/2018. In the period from 09/11/2018 to 19/08/2020, new M_i meter was installed, calibrated, and checked in accordance with the national standard the latest version 'Electricity meter installation technical management code' consistent with the registered CDM PDD. And the meter is owned by the grid company and these changes of meter are beyond project proponents' control.

However, these change does not impact the applicability of the methodology, additionality or the appropriateness of the baseline scenario.

3.3 Grouped Projects

The project is not a grouped project.

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

The parameters ($FC_{i,j,y}$, NCV_i , $OXID_i$, EG_y , $EF_{CO_2,i}$, $COEF_{j,y}$,and $GEN_{j,y}$) used for calculation of the baseline grid emission factor ($EF_{grid,CM,y}$) available at validation in the registered PD are replaced by the parameter of $EF_{grid,CM,y}$ directly here.

Data / Parameter	$EF_{grid,CM,y}$
Data unit	tCO ₂ e/MWh
Description	The baseline grid emission factor
Source of data	Registered PD
Value applied	0.8959
Justification of choice of data or description of measurement methods and procedures applied	According to registered PD, the project chooses ex-ante for the calculation of the grid emission factor, therefore no need to monitor during the crediting period
Purpose of Data	Calculations of baseline emission
Comments	This parameter is ex ante determined in registered PD and fixed during the first crediting period

4.2 Data and Parameters Monitored

Data / Parameter	$EG_{facility,y}$				
Data unit	MWh				
Description	Quantity of net Electricity delivered to the grid by the project				
Source of data	Monitoring electricity meter				
Description of measurement methods and procedures to be applied	Calculated based on M_s and M_i				
Frequency of monitoring/recording	Continuous measurement, monthly recording				
Value monitored	<table border="1"> <thead> <tr> <th>Year</th><th>Value</th></tr> </thead> <tbody> <tr> <td> </td><td> </td></tr> </tbody> </table>	Year	Value		
Year	Value				

	21/03/2016~31/12/2016	81,556.49		
	01/01/2017~31/12/2017	114,322.92		
	01/01/2018~31/12/2018	108,907.65		
	01/01/2019~31/12/2019	108,366.98		
	01/01/2020~31/12/2020	110,277.82		
	01/01/2021~25/03/2021	36,338.70		
	Total	559,770.56		
Monitoring equipment	Electricity meter:			
	Type	M _s	M _s '	M _l
		ZMQ202C bi-directional meter	ZMQ202C bi-directional meter	DSSD566 (old meter) DHZ719 (new meter) unidirectional meter
	Serial No.	96913470	96867840	07301011037610 (old meter) 040120570073 (new meter)
	Accuracy	0.2s	0.2s	0.5s
	Calibration frequency	yearly	yearly	yearly
	Date of last calibration	15/05/2015 20/04/2016 17/04/2017 16/04/2018 12/04/2019 10/04/2020	15/05/2015 20/04/2016 17/04/2017 16/04/2018 12/04/2019 10/04/2020	20/09/2015 (old meter) 15/09/2016 (old meter) 09/09/2017 (old meter) 08/09/2018 (old meter) 09/11/2018 (new meter) 20/08/2019 (new meter) 19/08/2020 (new meter)
	Validity	14/05/2016 19/04/2017 16/04/2018 15/04/2019 11/04/2020 09/04/2021	14/05/2016 19/04/2017 16/04/2018 15/04/2019 11/04/2020 09/04/2021	19/09/2016 14/09/2017 08/09/2018 07/09/2019 08/11/2019 19/08/2020 18/08/2021
QA/QC procedures to be applied	The accuracy of meters M _s , M _s ' and M _l is 0.2s, 0.2s and 0.5s, respectively. The meters are calibrated annually by the independent qualified party. Data measured by meters will be cross checked by records for sold and purchased electricity.			

Purpose of the data	Calculations of baseline emission
Calculation method	$EG_{facility,y} = EG_{net,M_s,y} - EG_{imp,M_I,y}$
Comments	-

4.3 Monitoring Plan

1. Operation and management structure

The project owner has established a specialized organization for project monitoring, which is shown as follows:

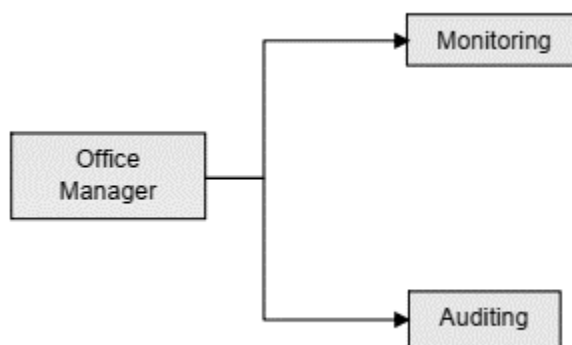


Figure 3 Management Structure of Monitoring Plan

The key responsibilities of each role are described as follows:

A CDM manager is appointed who has the overall responsibilities of monitoring the project. The measurement of the electricity exports and imports are carried out by the monitoring officers. In addition, the project developer will designate internal verifiers who are responsible for the internal verification of the measurement, the collection of electricity records, and the calculation of the emission reductions.

2. Monitoring data and monitoring system

The electricity generated by the 33 wind turbine generators is transformed to 35kV by the 33 box-type transformers, connected to the on-site main transformer which increases the voltage to 220kV, and then delivered to the nearby Kubuqi substation. All electricity is finally delivered to the Inner Mongolia Grid and the NCPG.

The metering systems include M_s , M_s' , M_I , of which M_s and M_s' are installed at the Kubuqi substation in Balagong town, and M_I is installed at the onsite substation. All the electricity meters except M_I are bi-directional meters which measure the amount of electricity supplied to the grid

and the amount of electricity imported from the grid. M_I measures the electricity imported from the 10kV backup power supply grid for emergencies.

M_S is the main meter and M_S' is the backup meter, which will be used when main meter is malfunctioning. The net electricity delivered to the grid of M_S (M_S') minus the electricity imported from the grid through M_I is the total net electricity delivered to the grid of the project ($EG_{facility,y} = EG_{net,M_S,y} - EG_{imp,M_I,y}$), which is used as for the ER calculation.

M_S and M_S' meters are installed, calibrated and checked in accordance with the national standard the latest version 'Electricity meter installation technical management code'. And M_I meters are installed, calibrated and checked in accordance with the JJG 1055-97 technical norm of the calibration of AC watt-hour meters at place of installation during period from 20/09/2015 to 08/09/2018. In the period from 09/11/2018 to 19/08/2020, M_I meters are installed, calibrated and checked in accordance with the national standard the latest version 'Electricity meter installation technical management code'. The accuracy of the meters is no less accurate than 0.5s.

See the location of each electricity meter in Figure 4.

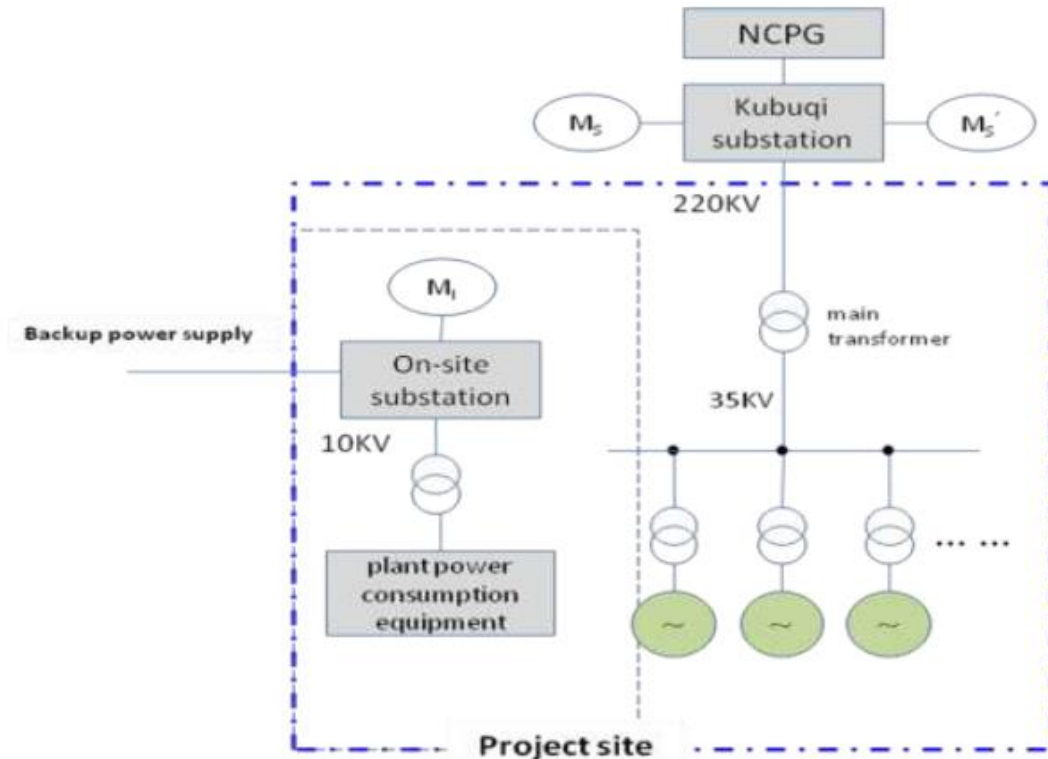


Figure 4 Power line diagram of the monitoring system

The receipts of the electricity supplied to the grid by this project and the electricity imported from the grid are issued based on the power purchase agreement (PPA) between the project entity and the power grid company and the readings from the meters.

3. Monitoring procedure

According to monitoring plan in the registered PDD, the quantity of net electricity exported to the grid by the project is calculated as followed:

$$EG_{facility,y} = EG_{net,M_s,y} - EG_{imp,M_1,y}$$

$$EG_{net,M_s,y} = EG_{exp,M_s,y} - EG_{imp,M_s,y}$$

Where:

$EG_{facility,y}$ = Net electricity exported to the Grid by the project in year y (to calculate ER) (MWh)

$EG_{net,M_s,y}$ = Net electricity supplied to the grid measured by the Ms (Ms' as backup) in year y (MWh)

$EG_{exp,M_s,y}$ = Export electricity exported to the grid measured by the Ms (Ms' as backup) in year y (MWh)

$EG_{imp,M_s,y}$ = Imported electricity imported to the project measured by the Ms (Ms' as backup) in year y (MWh)

$EG_{imp,M_1,y}$ = Electricity consumed by the project for emergency measured by M₁ in year y (MWh).

4. Quality assurance and quality control

The workers are trained to be competent and the metering equipment are calibrated according to the national rules of the latest version Electricity meter installation technical management code or JJG 1055-97 technical norm of the calibration of AC watt-hour meters at place of installation, and sealed as per the industry practices at regular intervals, with the purpose to provide credible, accurate, transparent and conservative monitoring data and ensure the real, measurable, long-term GHG emission reduction from this project.

Monthly net on-grid electricity supplied data will be approved and signed off by the Manager before it is accepted and stored. The monthly electricity data should be crosschecked with the records for sold and purchased electricity. This audit will guarantee the compliance with monitoring procedures in this monitoring plan. This internal audit will also identify potential improvements to procedures to improve monitoring and reporting in future years. The monitoring officers will also attend a training session organized by the CDM consultant. The purpose of training is to assure those staffs are competent to conduct the monitoring plan, thus to make the monitored data accurate.

(1) For measurement equipment - Calibration of meters

The monitoring meters are calibrated and checked for accuracy so that the metering equipment shall have sufficient accuracy within the agreed limits. The meters are calibrated and checked annually by qualified third party for accuracy according to the national rules of the latest version Electricity meter installation technical management code or JJG 1055-97 technical norm of the calibration of AC watt-hour meters at place of installation. The records were supplied to the wind farm operator and maintained by the operator.

(2) For emergency situation

In case the main meter operates abnormally, the readings from the backup meter will be adopted. If both the main and back-up meters are out of order, the data monitored within this certain period shall not be counted.

In this monitoring period, no emergency happened.

(3) For monitoring process

The operation log, records for sold and purchased electricity and other data reports related to emission reduction calculation are kept for the verification. As no error occurred during this monitoring period, the back-up meter M_s' is not used, and the records of the main meter M_s are the main data source for the emission reduction calculation.

In this monitoring period, every month at 24:00 of 20th in each month during period from 21/3/2016 to 20/12/2020, reading records of the main meter M_s , and the recording of the exported and imported electricity is changed to 24:00 of 25th in January, March, May, July, August, October and December or 24:00 of 24th in April, June, September and November in 2021. Additionally, the recording of the exported and imported electricity in February is changed into 24:00 of 22nd in nonleap year or 24:00 of 23rd in leap year. The reading records of electricity supplied by the project and the reading records of electricity supplied by NCPG were provided by the grid company and were confirmed by the project owner, and records for sold and purchased electricity were issued accordingly.

The meter M_i is used to measure the electricity imported from the 10kV backup power line for emergencies. The reading records were provided by the grid company and were confirmed by the project owner, and records for purchased electricity were issued by the grid company accordingly.

(4) For human resource management - Training program

To secure the steady operation of the project and the accuracy of the monitoring data, the project owner has set training program for the staffs. The training plan also included the staff training report and their training assessment.

The procedures of quality assurance and quality control has been continually supplemented and updated for perfection.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

In accordance with the calculating steps and formulas provided in ACM0002 (version 12.3.0) “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”, Baseline emissions are calculated according to the following formula:

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

$$EG_{facility,y} = EG_{net,M_s,y} - EG_{imp,M_I,y} \quad (2)$$

$$EG_{net,M_s,y} = EG_{exp,M_s,y} - EG_{imp,M_s,y} \quad (3)$$

Where:

BE_y = Baseline emissions of the project in year y (tCO₂e)

$EF_{grid,CM,y}$ = Baseline emission factor (tCO₂e/MWh)

$EG_{facility,y}$ = Net electricity exported to the Grid by the project in year y (to calculate ER) (MWh)

$EG_{net,M_s,y}$ = Net electricity supplied to the grid measured by the M_s (M_s' as backup) in year y (MWh)

$EG_{exp,M_s,y}$ = Export electricity exported to the grid measured by the M_s (M_s' as backup) in year y (MWh)

$EG_{imp,M_s,y}$ = Imported electricity imported from the grid measured by the M_s (M_s' as backup) in year y (MWh)

$EG_{imp,M_I,y}$ = Electricity consumed by the project for emergency measured by M_I in year y (MWh).

$EF_{grid,CM,y}$ is Baseline emission factor in the monitoring period. As per the registered PD of the project the value is 0.8959tCO₂e/MWh.

BE_y calculation process is show in below table 3.

Table 3 The Baseline Emission Calculation

Period ³		$EG_{exp,M_S,y}$		$EG_{imp,M_S,y}$		$EG_{imp,M_I,y}$		$EG_{facility,y}$
		A	B	C	D	E	F	G=Min(A,B)- Max(C,D)-Max(E,F)
		Meter recordings	records for sold and purchased electricity	Meter recordings	records for sold and purchased electricity	Meter recordings	records for sold and purchased electricity	
		MWh	MWh	MWh	MWh	MWh	MWh	
21/03/2016	20/04/2016	10,317.69	10,317.69	16.72	16.72	0.00	0.00	10,300.97
21/04/2016	20/05/2016	12,307.37	12,307.37	12.01	12.01	0.00	0.00	12,295.36
21/05/2016	20/06/2016	8,232.97	8,232.97	18.7	18.7	0.00	0.00	8,214.27
21/06/2016	20/07/2016	8,801.50	8,801.50	10.45	10.45	0.00	0.00	8,791.05
21/07/2016	20/08/2016	7,826.31	7,826.31	18.23	18.23	0.00	0.00	7,808.08
21/08/2016	20/09/2016	5,463.50	5,463.50	41.55	41.55	0.00	0.00	5,421.95
21/09/2016	20/10/2016	8,753.47	8,753.47	31.98	31.98	0.00	0.00	8,721.49
21/10/2016	20/11/2016	11,865.75	11,865.75	21.44	21.44	0.00	0.00	11,844.31
21/11/2016	20/12/2016	4,125.75	4,125.75	45.96	45.96	0.00	0.00	4,079.79
21/12/2016	31/12/2016	4,090.54	4,090.54	11.32	11.32	0.00	0.00	4,079.22

³ The recording of the exported and imported electricity is at 24:00 of 20th in each month during period from 21/3/2016 to 20/12/2020, and the recording of the exported and imported electricity is changed to 24:00 of 25th in January, March, May, July, August, October and December or 24:00 of 24th in April, June, September and November in 2021. Additionally, the recording of the exported and imported electricity in February is changed into 24:00 of 22nd in nonleap year or 24:00 of 23rd in leap year. In the monitoring period from 21/03/2016 to 25/03/2021, the electricity from 21st in December to 21st or 25th in January of each year is divided into two periods (period from 21st to 31th in December and the other period from 1st to 20th or 25th in January), and the electricity from 21th to 31th in December of each year is from daily meter recordings and then added into December. These electricity data is approved by the local grid company.

Subtotal-2016		81,784.85	81,784.85	228.36	228.36	0.00	0.00	81,556.49
01/01/2017	20/01/2017	7,437.35	7,437.35	20.58	20.58	0.00	0.00	7,416.77
21/01/2017	20/02/2017	7,763.28	7,763.28	49.63	49.63	0.00	0.00	7,713.65
21/02/2017	20/03/2017	7,184.52	7,184.52	26.69	26.69	0.00	0.00	7,157.83
21/03/2017	20/04/2017	12,545.31	12,545.31	11.38	11.38	0.00	0.00	12,533.93
21/04/2017	20/05/2017	10,470.88	10,470.88	14.54	14.54	0.00	0.00	10,456.34
21/05/2017	20/06/2017	7,638.62	7,638.62	19.17	19.17	0.00	0.00	7,619.45
21/06/2017	20/07/2017	8,382.99	8,382.99	24.59	24.59	0.00	0.00	8,358.40
21/07/2017	20/08/2017	6,363.08	6,363.08	15.39	15.39	0.00	0.00	6,347.69
21/08/2017	20/09/2017	8,648.87	8,648.87	19.45	19.45	0.00	0.00	8,629.42
21/09/2017	20/10/2017	7,789.31	7,789.31	26.17	26.17	0.00	0.00	7,763.14
21/10/2017	20/11/2017	11,597.25	11,597.25	24.75	24.75	0.00	0.00	11,572.50
21/11/2017	20/12/2017	14,025.63	14,025.63	22.67	22.67	0.00	0.00	14,002.96
21/12/2017	31/12/2017	4,761.40	4,761.40	10.56	10.56	0.00	0.00	4,750.84
Subtotal-2017		114,608.49	114,608.49	285.57	285.57	0.00	0.00	114,322.92
01/01/2018	20/01/2018	8,657.10	8,657.10	19.21	19.21	0.00	0.00	8,637.89
21/01/2018	20/02/2018	9,546.37	9,546.37	53.27	53.27	0.00	0.00	9,493.10
21/02/2018	20/03/2018	10,867.19	10,867.19	15.34	15.34	0.00	0.00	10,851.85
21/03/2018	20/04/2018	13,641.13	13,641.13	7.73	7.73	0.00	0.00	13,633.40
21/04/2018	20/05/2018	9,576.68	9,576.68	20.21	20.21	0.00	0.00	9,556.47
21/05/2018	20/06/2018	10,437.88	10,437.88	12.01	12.01	0.00	0.00	10,425.87
21/06/2018	20/07/2018	6,515.69	6,515.69	22.91	22.91	0.00	0.00	6,492.78
21/07/2018	20/08/2018	5,983.18	5,983.18	27.65	27.65	0.00	0.00	5,955.53
21/08/2018	20/09/2018	3,726.44	3,726.44	18.87	18.87	0.00	0.00	3,707.57

21/09/2018	20/10/2018	5,301.63	5,301.63	29.47	29.47	0.00	0.00	5,272.16
21/10/2018	20/11/2018	11,545.25	11,545.25	15.08	15.08	0.00	0.00	11,530.17
21/11/2018	20/12/2018	10,957.56	10,957.56	35.95	35.95	0.00	0.00	10,921.61
21/12/2018	31/12/2018	2,448.61	2,448.61	19.36	19.36	0.00	0.00	2,429.25
Subtotal-2018		109,204.71	109,204.71	297.06	297.06	0.00	0.00	108,907.65
01/01/2019	20/01/2019	4,452.01	4,452.01	35.20	35.20	0.00	0.00	4,416.81
21/01/2019	20/02/2019	10,415.38	10,415.38	46.55	46.55	0.00	0.00	10,368.83
21/02/2019	20/03/2019	7,052.81	7,052.81	31.56	31.56	0.00	0.00	7,021.25
21/03/2019	20/04/2019	9,876.88	9,876.88	21.89	21.89	0.00	0.00	9,854.99
21/04/2019	20/05/2019	12,133.93	12,133.93	10.63	10.63	0.00	0.00	12,123.30
21/05/2019	20/06/2019	8,478.94	8,478.94	21.89	21.89	0.00	0.00	8,457.05
21/06/2019	20/07/2019	7,287.81	7,287.81	18.21	18.21	0.00	0.00	7,269.60
21/07/2019	20/08/2019	8,043.19	8,043.19	23.96	23.96	0.00	0.00	8,019.23
21/08/2019	20/09/2019	7,531.88	7,531.88	24.81	24.81	0.00	0.00	7,507.07
21/09/2019	20/10/2019	6,870.62	6,870.62	35.69	35.69	1.17	1.17	6,833.76
21/10/2019	20/11/2019	13,320.50	13,320.50	22.63	22.63	0.00	0.00	13,297.87
21/11/2019	20/12/2019	10,767.19	10,767.19	47.42	47.42	0.00	0.00	10,719.77
21/12/2019	31/12/2019	2,524.21	2,524.21	46.76	46.76	0.00	0.00	2,477.45
Subtotal-2019		108,755.35	108,755.35	387.20	387.20	1.17	1.17	108,366.98
01/01/2020	20/01/2020	4,589.48	4,589.48	85.03	85.03	0.00	0.00	4,504.45
21/01/2020	20/02/2020	7,404.93	7,404.93	56.35	56.35	0.00	0.00	7,348.58
21/02/2020	20/03/2020	12,430.38	12,430.38	24.05	24.05	0.00	0.00	12,406.33
21/03/2020	20/04/2020	6,765.37	6,765.37	36.43	36.43	0.00	0.00	6,728.94
21/04/2020	20/05/2020	11,686.63	11,686.63	22.69	22.69	0.00	0.00	11,663.94

21/05/2020	20/06/2020	11,454.56	11,454.56	28.66	28.66	0.00	0.00	11,425.90
21/06/2020	20/07/2020	8,391.38	8,391.38	32.33	32.33	0.00	0.00	8,359.05
21/07/2020	20/08/2020	9,859.62	9,859.62	28.24	28.24	0.00	0.00	9,831.38
21/08/2020	20/09/2020	7,799.09	7,799.09	41.86	41.86	1.93	1.93	7,755.30
21/09/2020	20/10/2020	6,896.91	6,896.91	40.09	40.09	0.00	0.00	6,856.82
21/10/2020	20/11/2020	9,238.13	9,238.13	43.45	43.45	0.00	0.00	9,194.68
21/11/2020	20/12/2020	8,370.06	8,370.06	72.08	72.08	0.00	0.00	8,297.98
21/12/2020	31/12/2020	5,908.54	5,908.54	4.07	4.07	0.00	0.00	5,904.47
Subtotal-2020		110,795.08	110,795.08	515.33	515.33	1.93	1.93	110,277.82
01/01/2021	25/01/2021	13,428.51	13,428.51	9.24	9.24	0.00	0.00	13,419.27
01/02/2021	22/02/2021	12,767.59	12,767.59	27.72	27.72	0.00	0.00	12,739.87
01/03/2021	25/03/2021	10,225.26	10,225.26	45.70	45.70	0.00	0.00	10,179.56
Subtotal-2021		36,421.36	36,421.36	82.66	82.66	0.00	0.00	36,338.70
Total		561,569.84	561,569.84	1,796.18	1,796.18	3.10	3.10	559,770.56
$EF_{grid, CM, y} (EF)$		0.8959 tCO ₂ e/MWh						
$BE_y (G*EF)$		501,498 tCO ₂ e						

Thus, annually BE_y calculation process table as follows:

Period	$EG_{net, M_S, y}$	$EG_{imp, M_1, y}$	$EG_{facility, y}$	$EF_{grid, CM, y}$	BE_y
	A	B	C=A-B	D	E=C*D
	MWh	MWh	MWh	tCO ₂ e/MWh	tCO ₂ e
21/03/2016~31/12/2016	81,784.85	228.36	81,556.49	0.8959	73,066
01/01/2017~31/12/2017	114,608.49	285.57	114,322.92		102,422
01/01/2018~31/12/2018	109,204.71	297.06	108,907.65		97,570
01/01/2019~31/12/2019	108,755.35	388.37	108,366.98		97,086
01/01/2020~31/12/2020	110,795.08	517.26	110,277.82		98,798
01/01/2021~25/03/2021	36,421.36	82.66	36,338.70		32,556
Total	561,569.84	1,799.28	559,770.56		501,498

In summary, BE_y calculation process as follows:

$$EG_{facility, y} = EG_{net, M_S, y} - EG_{imp, M_1, y} = EG_{net, M_S, y} - (EG_{exp, M_S, y} - EG_{imp, M_S, y}) = 561,569.84 \text{ MWh} - 1,796.18 \text{ MWh} - 3.10 \text{ MWh} = 559,770.56 \text{ MWh}$$

$$BE_y = EG_{facility, y} \times EF_{grid, CM, y} = 559,770.56 \text{ MWh} \times 0.8959 \text{ tCO}_2\text{e/MWh} = 501,498 \text{ tCO}_2\text{e}$$

5.2 Project Emissions

According to ACM0002, being a wind power project, no emissions from the project activity are identified and the project emission is zero.

5.3 Leakage

According to ACM0002, there is no leakage for the project activity. Thus, the leakage emission is zero.

5.4 Net GHG Emission Reductions and Removals

According to the Section 5.1, 5.2 and 5.3 above,

$$BE_y = 501,498 \text{ tCO}_2\text{e};$$

$$PE_y = 0 \text{ tCO}_2\text{e};$$

$$LE_y = 0 \text{ tCO}_2\text{e}; \text{ Therefore, } ER_y = BE_y - PE_y - LE_y = 501,498 - 0 = \text{tCO}_2\text{e}$$

This monitoring period started from 21/03/2016 to 25/03/2021, with totally 1,831 days. Based on the annual estimated emission reductions from the registered CDM PDD and VCS PD, the amount of emission reductions for this monitoring period would be $105,520 \text{ tCO}_2\text{e}/365 \text{ d} \times 1,831 \text{ d} = 529,335 \text{ tCO}_2\text{e}$. The actual emission reductions in this monitoring period (1,831 days) are 501,498 tCO₂e, which is 5.26 % less than the estimation in the registered PD.

As the electricity exported to the grid is about 5.26% less than the ex-ante estimation in registered VCS PD. It is because the wind speed for the monitoring period is slight lower than available historical meteorological data used to calculate annual electricity output in CDM PDD. So, it is reasonable that during this monitoring period, the actual emission reduction is less than the estimated value.

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)
21/03/2016~31/12/2016	73,066	0	0	73,066
01/01/2017~31/12/2017	102,422	0	0	102,422
01/01/2018~31/12/2018	97,570	0	0	97,570
01/01/2019~31/12/2019	97,086	0	0	97,086
01/01/2020~31/12/2020	98,798	0	0	98,798
01/01/2021~25/03/2021	32,556	0	0	32,556
Total	501,498	0	0	501,498