



XINJIANG JIMUNAI CGN 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

The Xinjiang Jimunai CGN Phase I Wind Farm Project (hereinafter referred to the project) is to utilize wind resources for electricity generation through the construction of a wind farm with the installation of 33 wind turbines with capacities of 1,500 kW each, which amount to a total installed capacity of 49.5 MW in Jimunai County, Xinjiang Uygur Autonomous Region, P.R. China. The electricity generated from the Project is sold to Xinjiang Uygur Power Grid, an integral part of the Northwest China Power Grid (NWPG). By replacing the electricity generated from fossil fuel-fired power plants dominated NWPG. The Project achieves greenhouse gas (GHG) emission reductions by avoiding CO₂ emissions. The estimated annual net electricity output and emission reductions of the project are 117,315 MWh and 107,695 tCO₂e, respectively.

The Project started construction on 25/07/2010, and the first wind turbine was put into operation on 19/03/2011, and all wind turbines were put into operation on 23/03/2011. The expected operation period of the Project is 20 years as stated in the registered VCS PD Version 01 dated 20/11/2013 and registered CDM PDD Version 3 dated 19/08/2011.

The project has been registered as VCS project with project ID.1183. VCU of 61,417tCO₂e have been issued for the monitoring period from 19/03/2011 to 27/10/2011 and VCUs of 340,692tCO₂e have been issued for the monitoring period from 01/01/2017 to 31/12/2020. The project also has been registered as CDM project with Ref. 5289. CERs of 74,517 tCO₂e have been issued for the monitoring period from 28/10/2011 to 27/05/2012 and CERs of 357,061 tCO₂e have been issued for the monitoring period from 01/01/2013 to 31/12/2016. For further information, please refer to section 1.9.

During this monitoring period from 01/01/2021 to 18/03/2021, the total emission reduction achieved is 24,582 tCO₂e.

Audit Type	Period	Program	VVB Name	Number of years
Verification	19-March-2011 – 27-October-2011	VCS	Shenzhen CTI International Certification Co., Ltd	0.61
Verification	28-October-2011 – 27-May-2012	CDM	ERM Certification and Verification Services	0.58
Verification	28-May-2012 – 31-December-2012	CDM	-(Awaiting issuance request)	0.59

Verification	01-January-2013 – 31-December-2016	CDM	Shenzhen CTI International Certification Co., Ltd (CTI)	4.00
Verification	01-January-2017 – 31-December-2020	VCS	China Classification Society Certification Company	4.00
Verification	01-January-2021 – 18-March-2021	VCS	Shenzhen CTI International Certification Co., Ltd (CTI)	0.20
Total				10.00

1.2 Sectoral Scope and Project Type

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

Project type: Grid-connected wind power project

The project is not a grouped project.

1.3 Project Proponent

Organization name	Xinjiang Jimunai CGN Wind Power Co., Ltd.
Contact person	Shi Lei
Title	Manager
Address	No.2 Building, Area 12 of Advanced Business Park, No. 188 west of South 4th Ring Road, Beijing, The People's Republic of China
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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	Xing Hao
Title	VCS project manager

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1.5 Project Start Date

The project started on 19/03/2011 (operation start date)

1.6 Project Crediting Period

19/03/2011-18/03/2021 which covers 10 years

In the registered PD, the crediting period is described as from 19/03/2011 to 27/10/2011. A deviation is requested for the crediting period in the registered PD. The project is registered under VCS Standard Version 3.4 and completed validation before 19/03/2020. thus, it remains eligible to apply the crediting period requirements under VCS Standard Version 3.4 which shall be a maximum of ten years and may be renewed at most twice, so the first renewable crediting period of the project should be updated from 19/03/2011- 27/10/2011 to 19/03/2011-18/03/2021.

Furthermore, as the project is also registered as a CDM project with a seven year twice renewable project crediting period starting form 28/10/2011 and considering the project started on 19/03/2011 with a 20 years lifetime, thus, it is not eligible for VCU issuance beyond 18/03/2031. Therefore, the project's total crediting period cannot exceed 18/03/2031.

1.7 Project Location

The project is located at the southwest of Jimunai County, Xinjiang Uygur Autonomous Region, P. R.China. The geographical coordinates of the project are 86.0054° - 86.8443° east longitude and 47.5454° - 47.5796° north latitude. Figures 1 and 2 below show the location of the project.

Figure 1. The location of the proposed project in the map of P. R. China



Figure 2. The location of the project in the map of Xinjiang Uygur Autonomous Region, P. R. China



1.8 Title and Reference of Methodology

The methodology applied to the project is as follows:

Methodology:

ACM0002: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (version 12.1.0).

Reference:

<http://cdm.unfccc.int/UserManagement/FileStorage/VA17EM2PNDJWBTFY34KGRLZO68S9UQ>

The applied tools:

“Tool for the demonstration and assessment of additionality” (version 05.2)

“Tool to calculate the emission factor for an electricity system” (version 02.1.0)

Reference:

<https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-01-v5.2.pdf>

<http://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-07-v2.1.0.pdf>

1.9 Participation under other GHG Programs

The project has been registered as CDM project and the UNFCCC reference number is 5289, the first CDM crediting period is from 28/10/2011 to 27/10/2018, and the crediting period has been successfully renewed on 02/05/2019 with the 2nd CDM crediting period from 28/10/2018 to 27/10/2025. Total GHG emission reductions of 431,578 tCO₂e generated from 28/10/2011 to 31/12/2016 (both days included) by the project has been issued as CER under CDM program (As shown in the following table).

Period	emission reductions(tCO ₂ e)
28/10/2011 to 27/05/2012	74,517
28/05/2012 to 31/12/2012	Awaiting issuance request
01/01/2013 to 31/12/2016	357,061
Total	431,578

Please refer to the following link for details:

<https://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1317203879.14/view?cp=1>

1.10 Other Forms of Credit and Supply Chain (Scope 3) Emissions

Emission Trading Programs and Other Binding Limits

China has a national emissions trading scheme only cover the high-emission industries, such as thermal power generation, petrochemical, chemical, building materials, iron and steel, non-ferrous, paper, aviation and other key emission industries that emitted at least 26,000 tons of CO₂e/year, not including renewable project.

The proponent of the project (Xinjiang Jimunai CGN Wind Power Co., Ltd.) is a wind power company and is not included in the compliance entity list by China national Emission Trading Scheme (ETS). Furthermore, the project is not registered as a China Certified Emission

Reduction (CCER) project, thus it is not eligible for emission reductions transaction under the China's ETS.

Therefore, 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. The net GHG emission reductions generated during this monitoring period have not been used for compliance under such programs or mechanisms.

Furthermore, a statement on no double counting will be submitted to Verra to confirm the credits in this monitoring period has not been counted and will not be counted under emission trading programs and other binding limits.

Other Forms of Environmental Credit

The project has not sought or received another form of environmental credits.

1.11 Sustainable Development Contributions

The project activity is a renewable wind power project located at the southwest of Jimunai County, Xinjiang Uygur Autonomous Region, P. R.China. In this monitoring period,



The project utilizes wind energy resources to generate and supply 26779.720 MWh renewable electricity to NWPG during this monitoring period, which contributes to SDG 7.



The project provides 22 job opportunities for local people during this monitoring period and the average salary rate of the project's employees is higher than the local average salary rate, which has a positive effect on the local economy and contributes to SDG 8.



The project reduces 24,582 tCO₂e GHG emission during this monitoring period and contributes to SDG 13.

These contribute to achieve China's stated sustainable development priorities, included strengthening resistance capacity to climate risks, increasing labor force participation rate, increasing the share of clean energy consumption.

Table 1: Sustainable Development Contributions

Row number	SDG Target	SDG Indicator	Net Impact on SDG Indicator	Current Project Contributions	Contributions Over Project Lifetime ¹
1)	7.2	Renewable energy supplied to the power grid	Implemented activities to increase	26779.720 MWh of net electricity from renewable sources has been supplied to the power grid during the monitoring period	An accumulated 26779.720 MWh of net electricity from renewable sources has been supplied to the power grid by end of the reporting period.
2)	8.5	Numbers of job opportunities provided by implementation of the project	Implemented activities to increase	The project provides 22 job opportunities for local people during the operational period. The lowest annual salary of those 22 jobs is 60,000 RMB which is 130% higher than the per capita disposable income of Xinjiang Uygur Autonomous Region in 2021 published by the Statistic Bureau of Xinjiang Uygur Autonomous Region. Reference: http://tjj.xinjiang.gov.cn/tjj/tjgn/202203/7ab304445f174a7eb1f5165	22 Local people have been employed by the project as long-term employee.

¹ This is the first time to report sustainable development contributions of the project. Therefore, the information for the project lifetime and the current monitoring period are the same as per VCS requirement.

				be4f94041.shtml	
3)	13.0	Tonnes of greenhouse gas emissions avoided or removed	Implemented activities to increase	The project has achieved obvious GHG emission reductions by avoiding 24,582 tCO ₂ e emissions, as grid-connected fossil fuel-fired power dominates in the NWPG during this monitoring period.	An accumulated 24,582 tCO ₂ e of GHG emission reduction have been achieved by the project by end of the reporting period.

2 SAFEGUARDS

2.1 No Net Harm

The project doesn't cause significant impact on the environment and socio-economic as to the conclusion of the EIA. The conclusions of EIA are documented below:

Ambient air

The impact on ambient air quality of the project is mainly from dust during the construction phase. The excavation work is the primary emission source; however, it is a ground source and the particle size are quite large so that dust deposit quickly on the ground. Immediately replant the areas where construction has completed, and sprinkling water on the road frequently should be conducted. Therefore, the project doesn't pose any threat on the quality of ambient air.

Impact from noise

There is some noise during the operation of wind turbines. The equipments and techniques with lower noise was chosen to apply. Improvement on construction process and strengthening of equipment maintenance is emphasized. Meanwhile, the project site is very far from the village or resident.

Consequently, the noise of operation has little impact to the surrounding environment. As a result, the noise doesn't impact the work and daily life of local residents.

Electromagnetic impact

The operation of the wind farm generates electromagnetic pollution, whereas the pollution is slight. In addition, the project is very far from local residents and village. Therefore, the electronic magnetic pollution to the surrounding environment is insignificant.

Impact from Solid waste

Solid wastes generated from the project activity are excavated earth material and domestic solid waste. Part of the excavated earth material was backfilled, and the rest was used for land levelling and road construction near the project site. The domestic solid waste was collected and treated together with the waste from local residents. As the report indicates, solid waste is handled properly.

Impact from Wastewater

Wastewater is mainly domestic wastewater. Wastewater quantity is fairly small and treatment methods was applied for on-site primary treatment, and then the wastewater was treated together with the local wastewater. Small-scale septic tanks should be built on the site, through which the wastewater can meet the second-degree standard of discharge after treatment.

Therefore, the impact of wastewater is limited and mitigate.

Impact on natural environment

In order to protect the landscape, vehicles are prohibited from driving on the landscape randomly and timely afforestation is required; hunting wild animals is strictly forbidden at the same time. The lands permanently taken by wind farms are normally mountain ridges, where most of the vegetation is grass and shrub, without rare plants. Hence, the project construction has little impact on the mountain's eco-environment.

The fly height of birds is usually higher than 150m, which is about 50m higher than the height of wind turbines and birds usually can avoid obstacles as far as 100-200 meters away. In addition, the project site locates on mountainous area, with no lakes and marshes around, thus it is not a habitat for birds. Hence, the project construction and operation have insignificant influence on the birds.

Impact on social-economic

The project is to utilize wind energy resources to generate and supply renewable net electricity to NWPG. By replacing the electricity generated from fossil fuel-fired power plants dominated NWPG, the Project achieves greenhouse gas (GHG) emission reductions by avoiding CO₂ emissions.

In the operational period, the project provides 22 job opportunities for local people and has not negative social-economic impact.

2.2 Local Stakeholder Consultation

Brief description how comments by local stakeholders have been invited and compiled:

The project developer has sent out questionnaires to the stakeholders in the local County for the comments of the project construction on 30/06/2010. 40 copies of questionnaire were distributed, and 38 pieces of reply were received. The recovery ratio is 95%. Among the interviewees, there were 35 farmer, 2 government officials and 1 student. 15 of them have educational level of middle school, 22 of high school and 1 of college.

An invitation notice for stakeholder comments was later issued by the project owner, representatives of local stakeholders, including governmental officials of the local county and local residents, etc attended the meeting in Jimunai County government meeting room on 02/07/ 2010 to discuss the questionnaires collected, introduce the project and further expressed their concerns or opinions. No negative opinion on construction of the project is heard and environmental considerations expressed by stakeholders are discussed on the meeting.

The questions regarding the proposed project were mainly as follows:

- a). Is the current living and/or working environment quiet?
- b). Do you currently experience electromagnetic interference when watching TV at home?

- c). Are there any negative impacts of the proposed project on the everyday life of local residents?
- d). Is the proposed project going to help improve the living and/or working environment?
- e). Which is the environmental topic that concerns you the most during the construction and operation of the proposed project?
- f). Do you support the proposed project?

Summary of the comments received:

The summary of survey is listed as the following:

- 37 of them consider their current living and/or working environment is quiet, only one person is unsure.
- 37 of them currently do not experience electromagnetic interference when watching TV at home, and only 1 person is unsure.
- 38 of them think there are not any negative impacts on their daily life.
- 38 of them think the project will help improve their living and/or working environment.
- Regarding the construction and operation of the proposed project, 32 of them are most concerned with the noise level, and 6 of them are most concerned with wastewater from the project.
- 38 of them support the implementation of the project.

Conclusion:

The local community possesses basically positive comments on the effects of the proposed project. The interviewees considered that local social, economic and environmental development would be beneficial from the proposed project. The response was overall supportive to the project implementation.

Report on how due account was taken of any comments received:

As shown in the questionnaires, local residents were most concerned with noise level, and some of them were concerned with wastewater. As discussed in the EIA report, these issues are well illuminated and instructions were given to mitigate the potential impacts of these issues. With good implementation of the above-mentioned measures by the project developer, the proposed project will not have significant negative impact on the local environment.

The mechanism for on-going communication with local stakeholders

The project owner has set out the mechanism for regular communication with local stakeholder to receive public comments.

First, 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 periodical response.

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

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

No negative comments have been received on the project during this monitoring period.

During the construction and operation period of the project, the local government make regular inspection and monitoring to ensure that the project complies with local laws and policy requirements.

No negative comments have been received on the project during this monitoring period.

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 33 wind turbines with capacities of 1500 kW each, which amount to a total installed capacity of 49.5 MW. The wind turbines are supplied by a domestic manufacturer - Goldwind Co., Ltd. The Project uses domestic wind turbines. The main technical specifications of the wind turbine are provided in the following Table.1:

Table 1 Key Technical specifications of wind turbines and generator

Wind Turbine		
Item	Unit	Index

Model	-	77/1500
Rated capacity	kW	1500
Number of blades	-	3
Rotor diameter	m	77
Swept area	m ²	4656
Rotor speed	m/s	36.28/69.75
Cut-in speed	m/s	3.0
Rated wind speed	m/s	11.5
Cut-out speed	m/s	22
Height of hub	m	65
Rated voltage	V	620
Generator		
Rated power	kW	1580
Rated current	A	660
Lifetime	years	20

The project started construction on 25/07/2010. The first wind turbine of the project has been put into operation on 19/03/2011. And all the 33 wind turbines have been put into operation on 23/03/2011. The expected operation period of the Project is 20 years as stated in the registered CDM PDD Version 3 dated 19/08/2011.

During this monitoring period, the project has a good running, smooth data transfer and grid connection, and no special events that may impact the applicability of the methodology occurred.

There is no technique deviation applied during this monitoring period.

3.2 Deviations

3.2.1 Methodology Deviations

There are no methodology deviations applied during this monitoring period.

3.2.2 Project Description Deviations

In the registered PD, the crediting period is described as from 19/03/2011 to 27/10/2011. A deviation is requested for the crediting period in the registered PD. The project is registered under VCS Standard Version 3.4 and completed validation before 19/03/2020. thus, it remains eligible to apply the crediting period requirements under VCS Standard Version 3.4 which shall be a maximum of ten years and may be renewed at most twice, so the first renewable crediting period of the project should be updated from 19/03/2011- 27/10/2011 to 19/03/2011-18/03/2021.

3.3 Grouped Projects

The project is not a grouped project.

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

The baseline grid emission factor $EF_{grid,CM,y}$ is obtained directly from the official source Notification on Determining Baseline Emission Factor of China's Grid by China's DNA. Thus, the relevant basis parameters for calculation of $EF_{grid,CM,y}$ are not described in detail here. With consideration of the fact of the Project, data and parameters that are available at validation are summarized in below tables.

Data / Parameter	$EF_{grid,CM,y}$
Data unit	tCO ₂ e/MWh
Description	Combined margin emission factor for grid connected power generation in year y
Source of data	Registered CDM PDD
Value applied	0.9180
Justification of choice of data or description of measurement methods and procedures applied	Determined ex-ante and fixed for the 1 st crediting period
Purpose of Data	Calculation of baseline emissions
Comments	The baseline emission factor was determined by $EF_{grid,CM,y}$ and $EF_{grid,BM,y}$ in Ex-ante calculation period described in the registered CDM PDD, and will be used throughout the first crediting period.

4.2 Data and Parameters Monitored

Data / Parameter	$EG_{facility,y}$
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Data unit	MWh						
Description	Quantity of net electricity generation supplied to the grid by the Project in year y						
Source of data	Electricity meter reading (M1 as main meter, M2 as backup meter) at the on-site substation. In this monitoring period, the data is <u>Calculated</u> based on the measurement results of $EG_{export,y}$, $EG_{import,y}$ and $EG_{im-backup,y}$:						
Description of measurement methods and procedures to be applied	Calculated based on the measurement results of $EG_{export,y}$, $EG_{import,y}$ and $EG_{im-backup,y}$: $EG_{facility,y} = EG_{export,y} - EG_{import,y} - EG_{im-backup,y}$						
Frequency of monitoring/recording	Continuously measurement, daily recorded and monthly aggregated						
Value monitored	<table border="1"> <thead> <tr> <th>Period</th><th>Value</th></tr> </thead> <tbody> <tr> <td>01/01/2021 to 18/03/2021</td><td>26779.720</td></tr> <tr> <td>Total</td><td>26779.720</td></tr> </tbody> </table>	Period	Value	01/01/2021 to 18/03/2021	26779.720	Total	26779.720
Period	Value						
01/01/2021 to 18/03/2021	26779.720						
Total	26779.720						
Monitoring equipment	Please refer to the monitoring equipment information in the table of parameters $EG_{export,y}$, $EG_{import,y}$ and $EG_{im-backup,y}$.						
QA/QC procedures to be applied	The net electricity supplied to the grid by the project can also be monitored and recorded at the central control room. The project operator is responsible for recording such data. Receipts for electricity sales are kept for verification. The data will be archived for 2 years following the end of the last crediting period by means of electronic and paper backup.						
Purpose of the data	Calculation of baseline emissions						
Calculation method	Quantity of net electricity generation supplied to the grid by the Project is calculated as electricity exports ($EG_{export,y}$) minus electricity imports ($EG_{import,y}$ and $EG_{im-backup,y}$). $EG_{export,y}$, $EG_{import,y}$ and $EG_{im-backup,y}$ are measured by electricity meters as the following table shows.						
Comments	-						

Data/Parameter	$EG_{export,y}$
Data unit	MWh
Description	Electricity supplied to the grid by the project in year y.
Source of data	Electricity meter reading (M1 as main meter, M2 as backup meter) at

	the on-site substation. In this monitoring period, the data of M1 is applied.						
Description of measurement methods and procedures to be applied	Electricity meters M1 and M2 are installed at the project site of the on-site substation to measure the electricity supplied to the grid. The readings of the electricity meter(s) are continuously measured. The accuracy of electricity meters is 0.2s.						
Frequency of monitoring/recording	Continuously measurement, daily recorded and monthly aggregated						
Value monitored	<table> <tr> <th>Period</th><th>Value</th></tr> <tr> <td>01/01/2021 to 18/03/2021</td><td>26835.600</td></tr> <tr> <td>Total</td><td>26835.600</td></tr> </table>	Period	Value	01/01/2021 to 18/03/2021	26835.600	Total	26835.600
Period	Value						
01/01/2021 to 18/03/2021	26835.600						
Total	26835.600						
Monitoring equipment	Electricity meter reading (M1 as main meter, M2 as backup meter) at the on-site substation. The detailed information of the meter please refer to the below table 1.						
QA/QC procedures to be applied	The electricity exported to the grid by the Project is monitored and recorded at the central control room. The project operator is responsible for recording such data. Receipts for electricity sales are kept for verification. The data will be archived for 2 years following the end of the last crediting period by means of electronic and paper backup.						
Purpose of the data	Calculation of baseline emissions						
Calculation method	-						
Comments	-						

Data / Parameter	EG _{import,y}		
Data unit	MWh		
Description	Electricity purchased from the grid by the project in year y.		
Source of data	Electricity meter reading (M1 as main meter, M2 as backup meter) at the on-site substation. In this monitoring period, the data of M1 is applied.		
Description of measurement methods and procedures to be applied	Electricity meters M1 and M2 are installed at the project site of the on-site substation to measure the electricity supplied to the grid. The readings of the electricity meter(s) are continuously measured. The accuracy of electricity meters is 0.2s.		
Frequency of monitoring/recording	Continuously measurement, daily recorded and monthly aggregated		
Value monitored	<table> <tr> <th>Period</th><th>Value</th></tr> </table>	Period	Value
Period	Value		

	01/01/2021 to 18/03/2021	55.880
	Total	55.880
Monitoring equipment	Electricity meter reading (M1 as main meter, M2 as backup meter) at the on-site substation. The detailed information of the meter please refer to the below table 1.	
QA/QC procedures to be applied	The electricity imported from the grid by the Project is monitored and recorded at the central control room. The project operator is responsible for recording such data. Receipts for electricity sales are kept for verification. The data will be archived for 2 years following the end of the last crediting period by means of electronic and paper backup.	
Purpose of the data	Calculation of baseline emissions	
Calculation method	-	
Comments	-	

Data / Parameter	EG _{im-backup,y}	
Data unit	MWh	
Description	Electricity imported from the grid by the Project through the backup power line in the year y.	
Source of data	Electricity meter reading (M3) at the project site.	
Description of measurement methods and procedures to be applied	Electricity meter M3 with accuracy of 0.5S is installed at the project site to measure the electricity imported from the grid by the Project through the backup power line. The readings of the electricity meter(s) are continuously measured.	
Frequency of monitoring/recording	Continuously measurement ,daily recorded and monthly aggregated	
Value monitored	Period	Value ²
	01/01/2021 to 18/03/2021	0
	Total	0
Monitoring equipment	Electricity meter reading (M3) at the project site. The detailed information of the meter please refer to the below table 1.	
QA/QC procedures to be	Electricity imported from the grid through the backup line is double	

² Based on the statement issued by the grid company, it is confirmed that during this monitoring period from 01/01/2021 to 18/03/2021, no electricity was imported via the 35KV backup line, thus the value of EG_{im-backup,y} is 0.

applied	checked according to electricity sales receipts. The receipts are kept for verification.
Purpose of the data	Calculation of baseline emissions
Calculation method	-
Comments	-

Table 1 Detailed information of the meters

Meters	Type	Accuracy Class	Serial number	Date of calibration	Validity
Main meter M1	DTSD718	0.2S	800000287822	30/05/2020	29/05/2021
Backup meter M2	DTSD718	0.2S	800000287824	30/05/2020	29/05/2021
Meter M3	DSZ188	0.5S	01000002217676	15/10/2020	14/10/2021

4.3 Monitoring Plan

This Monitoring plan sets out a number of monitoring tasks in order to ensure the complete, consistent, clear and accurate monitoring and the accurate calculation of the emission reduction in the crediting period. This plan is mainly implemented by the project owner with the cooperation of the grid company.

1. Monitoring Object

The main objective data is the net electricity, which is calculated according to the generated electricity and the purchased electricity and supplied to the grid, thus to calculate the emission reduction of the project.

2. Monitoring Implementers

The General Manager of the project entity appoint a VCS project manager or a chief officer. The operational and monitoring manager of the plant, the Financial Chief, and the Technical Chief are responsible for the collection of the data and information required in the monitoring plan. The collected information is documented and sent to the VCS manager or responsible staff of the project entity monthly. The VCS manager is in charge of the implementation of the Monitoring Plan and report to the General Manager of the company. The General Manager of the company makes the confirmations on monitoring, calculation data and reports.

The organization of the monitoring implementers is illustrated in the table below:

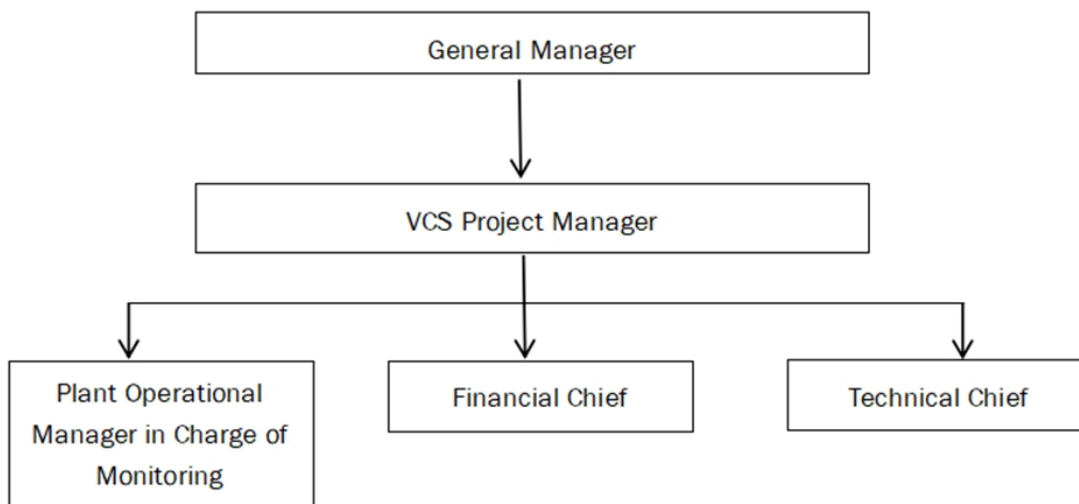


Figure 3. Operations and Monitoring Procedure of the Project

3. Monitoring Program, Monitoring Equipments and Recording

The power connection and monitoring system is shown as below.

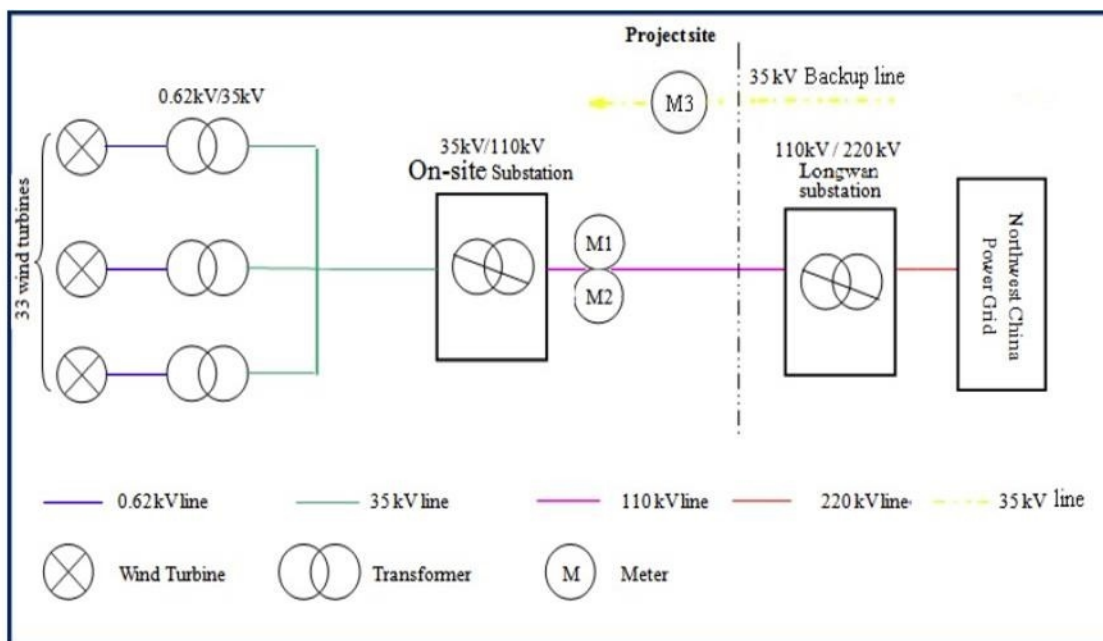


Figure 4. The location of meters

Monitoring equipments include three meters, the main meter (M1), the backup meter (M2) and the meter (M3) at the 35kV back up line. All the meters are the multifunctional electricity meters (accuracy degree of M1 and M2 is 0.2s, accuracy degree of M3 is 0.5s). M1 as the main meter is used to monitor the electricity supplied to the grid by the Project and the

electricity purchased from the Grid. M2 is used to monitor the electricity supplied to the grid and imported from the grid by the Project in case M1 is damaged. The main meter (M1) and backup meter (M2) are equipped at the high pressure site (110kV) of the 110kV on-site substation of the Project and the project owner is responsible for conducting the meters monitoring. PP records the meters' readings at 24:00 daily and the monthly settlement time of the meters' readings is at 24:00 on the last day of every month.

A backup power line is used for importing electricity in emergent case. The meter (M3) is installed to measure the electricity imported via this line. This meter is owned, maintained and monitored by the local grid company. Based on the statement issued by the grid company, it is confirmed that no electricity was imported via the 35KV backup line during this monitoring period from 01/01/2021 to 18/03/2021.

The receipts of the electricity supplied to the power grid by the Project and the electricity purchased from the grid is issued based on the power purchase agreement (PPA) signed between the project owner and the grid company based on the readings from the main meter (M1).

The net electricity supplied by the Project is calculated as electricity supplied to the grid by the Project minus electricity imports.

Baseline Emissions are calculated by multiplying the ex-ante Baseline Emission factor by annual power generation.

$$EG_{facility,y} = EG_{export,y} - EG_{import,y} - EG_{im-backup,y}. \quad (1)$$

Where:

$EG_{facility,y}$	=	Quantity of net electricity generation supplied to the grid by the Project in year y.
$EG_{export,y}$	=	Electricity supplied to the grid by the project in year y.
$EG_{import,y}$	=	Electricity purchased from the grid by the project in year y.
$EG_{im-backup,y}$	=	Electricity imported from the grid by the Project through the backup power line in the year y.

4. QA/QC, Internal Audit and Emergency Procedure

The quality assurance and quality control procedures for recording, maintaining and archiving data are developed as part of this VCS project activity. This is an on-going process which is ensured through the CDM activity in terms of the need for verification of the emissions on an annual basis according to the registered CDM PDD Version 3 dated 19/08/2011 and the CDM manual.

Monthly data of electricity supply and import will be approved and signed by the Manager before it is accepted and stored. This audit will check 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 staff will also attend a training session organized by the CDM consultant. The purpose of training is to assure those staff are competent to conduct the monitoring plan, thus to make the monitored data accurate. Sales receipts will be used and kept for checking consistency of the recorded data.

The verification uses the main meter's data as long as the inaccuracy of the meter is within the permissible tolerance. The main procedures are as follows:

- I. According to the requirements of power purchase/sales agreement, the project owner and the grid company should collect the two meters data periodically, and check them at the same time.
- II. The project owner supplied the electricity to the grid company, and provided an electricity sales receipt to the Grid Company. A copy of the receipts is stored by the project owner, together with a record of the payment by the grid company.
- III. When the electricity generated by this project cannot meet the electricity self-use requirement of the power plant, the grid company supplies the electricity to the project owner. The Grid Company provides an electricity sales receipt to the project owner and the receipts is stored by the project owner.
- IV. The project owner records the power supplied to and purchased from the grid, and hence calculate the net electricity supplied to the grid.
- V. The records of the main meter's data readings are provided by the Grid company to the project owner monthly and for verification by the DOE.

If the fault of the main meter exceeds the allowable tolerance or its malfunction occurs, the grid connected electricity generated by the project will be resolved by following measures:

- I. Adopting the backup meter's data, unless a test by either party reveals it is inaccuracy.
- II. If the inaccuracy of the backup meter is not within the acceptable limits or it cannot work properly, the project owner and the grid company will discuss and calculate a conservative estimate of power supplied to the grid. A statement will be prepared indicating

- ▶ the background to the damage to metering equipment
- ▶ the assumptions used to estimate net electricity generation supplied to the grid for the days when no record was available
- ▶ the estimation of electricity supplied to the grid. The statement will be signed by representatives from the project owner and the grid company.

If any error is detected, the party owning the meter shall repair, recalibrate or replace the meter and give the other party sufficient notice to allow a representative to attend during any corrective activity.

The project entity furthermore documented all efforts taken to restore normal monitoring procedures.

5. Calibration of Meters & Metering

The metering equipment is properly calibrated and checked annually for accuracy. The project owner prepares backup procedures to deal with any errors occurred to the meters. The calibration records carried out by the grid company should be provided to the project owner, and these records are maintained.

Meters should be tested by a qualified organization co-agreed by the project owner and the grid company within 10 days after:

I. The detection of the reading difference between the main meter and the backup meter that exceeds the allowable tolerance.

II. The equipments malfunction caused by improper operation All the calibration test records should be maintained safely for the verification.

6.Data Management System

To keep safely the record of the data collected during monitoring, this project sets up a complete data management system. The project perfects the whole monitoring procedure by developing the VCS manual, tracking information from the primary source to the end-data calculations in paper document format. Physical documentation such as paper-based maps, diagrams and environmental assessment were collated in a central place, together with this monitoring plan. All paper-based information was stored by the project owner and kept at least one copy.

At the end of each month, the monitoring data was filed in a spreadsheet and stored electronically and the paper-based printout is also archived. Furthermore, the project owner collects the sales receipts for the electricity supplied to the grid as a cross-check, and compiled the monitoring report including the monitoring data and relevant evidence at the end of each crediting year.

All the data were kept for two years following the end of the last crediting period

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

Baseline Emissions are calculated by multiplying the ex-ante Baseline Emission factor by annual power generation.

$$EG_{facility,y} = EG_{export,y} - EG_{import,y} - EG_{im-backup,y}. \quad (1)$$

$$BE_y = EG_{Facility,y} \times EF_{grid,CM,y} \quad (2)$$

Where:

BE_y	=	Baseline emission in year y (tCO ₂ /yr).
$EG_{facility,y}$	=	Quantity of net electricity generation supplied to the grid by the Project in year y.
$EF_{grid,CM,y}$	=	Combined margin CO ₂ emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system” (tCO ₂ e/MWh).
$EG_{export,y}$	=	Electricity supplied to the grid by the project in year y.
$EG_{import,y}$	=	Electricity purchased from the grid by the project in year y.
$EG_{im-backup,y}$	=	Electricity imported from the grid by the Project through the backup power line in the year y.

Quantity of net electricity generation supplied by the project to the grid in year y ($EG_{facility,y}$) in this monitoring period (01/01/2021 - 18/03/2021) as in the table below:

Table 2 Quantity of net electricity supplied to the grid during the Monitoring Period

Period		Electricity supplied to the grid by the project (EG _{export,y}) (MWh)			Electricity purchased from the grid by the (EG _{import,y}) project (MWh)			Electricity imported from the grid by the project through the backup power line(MWh)	Quantity of net electricity generation supplied to the grid by the project (MWh)
		Metered by M1	Evidenced by Receipts	Conservative values	Metered by M1	Evidenced by Receipts	Conservative values	EG _{im-backup,y} ²	EG _{facility,y} = EG _{export,y} - EG _{import,y} -EG _{im- backup,y}
START	END	A	B	C=MIN(A, B)	D	E	F=MAX(D, E)	G	H=F-C-G
2021/1/1	2021/1/31	10,256.400	10,256.400	10,256.400	18.920	18.920	18.920	0.000	10,237.480
2021/2/1	2021/2/28	9,143.200	9,143.200	9,143.200	24.640	24.640	24.640	0.000	9,118.560
2021/3/1	2021/3/18 ¹	7,436.000	7,436.000	7,436.000	12.320	12.320	12.320	0.000	7,423.680
Total		-	-	26835.600	-	-	55.880	0.000	26779.720

*Note:

1: EG_{export,y} and EG_{import,y} during 01/03/2021 – 18/03/2021 are sourced from the daily reading records and are confirmed by the grid company.

2:Based on the statement issued by the grid company, it is confirmed that during this monitoring period from 01/01/2021 to 18/03/2021, no electricity was imported via the 35kV backup line, thus the value of EG_{im-backup,y} is 0.

Among which, $EF_{grid,CM,y}$ is 0.9180 tCO₂/MWh in this crediting period: the baseline emissions are calculated as follows:

Table 3 Calculation of baseline emissions

Period		$EG_{facility,y}(MWh)$	$EF_{grid,CM,y}$ (tCO ₂ e/MWh)	$BE_y(tCO_2e)$
01/01/2021	18/03/2021	26,779.720	0.9180	24,582
Total		26,779.720	-	24,582

Therefore, the baseline emissions $BE_y = 24,582$ tCO₂e

5.2 Project Emissions

According to registered CDM PDD Version 3 dated 19/08/2011 and applied methodology, the project is a GHG zero-emission electricity generating activity; therefore, no project emissions from the project activity were identified $PE_y = 0$.

5.3 Leakage

According to registered CDM PDD Version 3 dated 19/08/2011 and applied methodology, the project need not consider leakage, i.e., $LE_y = 0$.

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)
01/01/2021-18/03/2021	24,582	0	0	24,582
Total	24,582	0	0	24,582

Comparison of the actual emission reductions with the estimated values

This monitoring period started from 01/01/2021 to 18/03/2021, with totally 77 days. The annual average emission reductions estimated in the registered CDM PDD is 107,695 tCO₂e, so the estimated amount of emission reductions for this monitoring period would be 107,695 tCO₂e/365 days × 77 days = 22,719 tCO₂e. The actual emission reductions in this monitoring period (77 days) are 24,582 tCO₂e, which is 8.20% higher than the estimation in the registered CDM PDD. Justification for the difference is described in the table below.

<u>Ex-ante emissions reductions /removals</u>	<u>Achieved emissions reductions /removals</u>	<u>Percent difference</u>	<u>Justification for the difference</u>
22,719 tCO ₂ e	24,582 tCO ₂ e	+8.20%	The difference is due to the fluctuation of the wind resources and is considered to be reasonable. According to the FSR of the project, the monthly average wind speed of the wind farm area from January to March is higher than the annual average value. Furthermore, according to the registered CDM PDD, only when the annual power supply increases by 10.45% does the project IRR (post tax) reach the benchmark of additionality (8%). In this monitoring period, the actual power supply is 26,779.720 MWh which is 8.20% higher than the estimation in the PDD (117,315 MWh/365 days×77 days = 24,748 MWh), which is lower than 10.45% and would not make impact on the project's additionality.

APPENDIX 1: <EVIDENCE FOR SDGS>

Evidence for SDG 7 and SDG 13:

The net electricity supplied to the grid is 26,779.720 MWh and the emission reductions generated are 24,582 tCO₂e during this monitoring period and the detailed calculation process have been displayed in Section 5 of the MR.

Evidence for SDG 8:

The evidence for SDG 8 will be submitted as a separate document to Verra if required due to confidentiality requirement of the project proponent.

This is the first time to report sustainable development contributions of the project. Therefore, the information for the project lifetime and the current monitoring period are the same as per VCS requirement.