



HEBEI CHENGDE WEICHANG YUDAOKOU PASTURE 150MW WIND FARM PROJECT

Document Prepared by Demeter Venture Uk Limited

Project Title	Hebei Chengde Weichang Yudaokou Pasture 150MW Wind Farm Project
Version	2.0
Report ID	NA
Date of Issue	31/08/2023
Project ID	VCS 892
Monitoring Period	01/06/2022 to 31/05/2023
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1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

Hebei Chengde Weichang Yudaokou Pasture 150MW Wind Farm Project (hereinafter referred to as “the project”) is a new grid-connected renewable power generation project, which is located in Weichang Manchu & Mongolia Autonomous County, Chengde City, Hebei province, China. The project is constructed and operated by Hebei Construction Investment New Energy Co., Ltd.

The project involves in installation and operation of 100 sets of wind turbines with a unit capacity of 1.5MW. The total installed capacity of the project is 150MW, and the power generated by the project is transmitted to the North China Power Grid (hereinafter referred to as “NCPG”).

The project transmits renewable wind power to the NCPG, and substitutes for relevant power generation by fossil fuel power plants of the NCPG. Therefore, the project could reduce emission reductions. The estimated net power supplied to the grid is 312,700MWh per year. The estimated annual GHG emission reductions are 258,571 tCO₂e/yr during the second crediting period.

The project began to construct on 11/05/2009 and was put into commercial operation on 27/11/2010 (i.e. the project starts date).

The second crediting period is from 27/11/2020 to 26/11/2030. This monitoring period is from 01/06/2022 to 31/05/2023 (365 days), belongs to the second crediting period.

During the monitoring period from 01/06/2022 to 31/05/2023 (365 days), the project has supplied electricity of 330,217.007 MWh and achieved 273,055 tCO₂e emission reductions by replacing electricity generated by fossil fuel fired power plants connected to NCPG.

Audit Type	Period	Program	VVB Name	Number of years
Validation	17/01/2011	CDM	BUREAU VERITAS CERTIFICATION	/
Validation (Crediting Period Renewal)	01/11/2021	VCS	LGAI Technological Center, S.A. (Applus+ Certification)	/
1 st Verification	27/11/2010-16/01/2011	VCS	SGS UNITED KINGDOM LTD	0.14 (i.e. 51 days)
2 nd Verification	17/01/2011-31/08/2011	CDM	SGS UNITED KINGDOM LTD	0.62 (i.e. 227 days)

3 rd Verification	01/09/2011-31/12/2012	CDM	Awaiting issuance request	1.34 (i.e. 488 days)
4 th Verification	01/01/2013-30/09/2015	CDM	CTI Certification Co., Ltd (CTI)	2.75 (i.e. 1,003 days)
5 th Verification	01/10/2015-29/02/2020	VCS	LGAI Technological Center, S.A. (Applus+ Certification)	4.42 (i.e. 1,613 days)
6 th Verification	01/03/2020 - 30/11/2021	VCS	CTI Certification Co., Ltd (CTI)	1.75 (i.e. 640 days)
7 th Verification	01/12/2021 - 31/05/2022	VCS	LGAI Technological Center, S.A. (Applus+ Certification)	0.50 (i.e. 182 days)
8 th Verification(In requesting for VCUs)	01/06/2022 - 31/05/2023	VCS	CTI Certification Co., Ltd (CTI)	1.00 (i.e. 365 days)
Total	27/11/2010 to 31/05/2023	CDM VCS	-	12.52 (i.e. 4,569 days)

1.2 Sectoral Scope and Project Type

This category would fall within sectoral scope 1: energy industries (Renewable sources).

Project type: wind power project.

This project is not grouped project.

1.3 Project Proponent

Organization name	Hebei Construction Investment New Energy Co., Ltd.
Contact person	Zhang Ling
Title	Manager
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1.4 Other Entities Involved in the Project

Organization name	Demeter Venture Uk Limited
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Role in the Project	Project participant
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1.5 Project Start Date

27/11/2010 (operation date, which means the date that started to generate GHG emission reductions).

1.6 Project Crediting Period

According to renewed VCS PD, as this project started commission on 27/11/2010 (which means the date started to generate GHG emission reductions), as per the VCS rules, the first crediting period under VCS is from 27/11/2010 to 26/11/2020 (10 years, renewable). Therefore, the total crediting period under VCS would have been from 27/11/2010 to 26/11/2040 (30 years). However, the project was registered under CDM on 17/01/2011. And the total crediting period under CDM is from 17/01/2011 to 16/01/2032 (21years).

As per VCS scheme under which the project was registered, the project crediting period is allowable for 10 years and could be renewed twice. Considering 3*7 years CDM crediting period, it is reasonable that the total VCS crediting period was determined from 27/11/2010 to 26/11/2031.

Furthermore, given that the lifetime of the project is about 20 years, thus, the VCS crediting period will end on 26/11/2030.

This monitoring period is from 01/06/2022 to 31/05/2023 (365 days), belongs to the second crediting period.

1.7 Project Location

The project is located in Weichang Manchu & Mongolia Autonomous County, Chengde City, Hebei province, P.R. China. The central geographical coordinates of the project is longitude 116°57'05"E and latitude 42°11'21"N. The location of the project is provided in Figure 1.

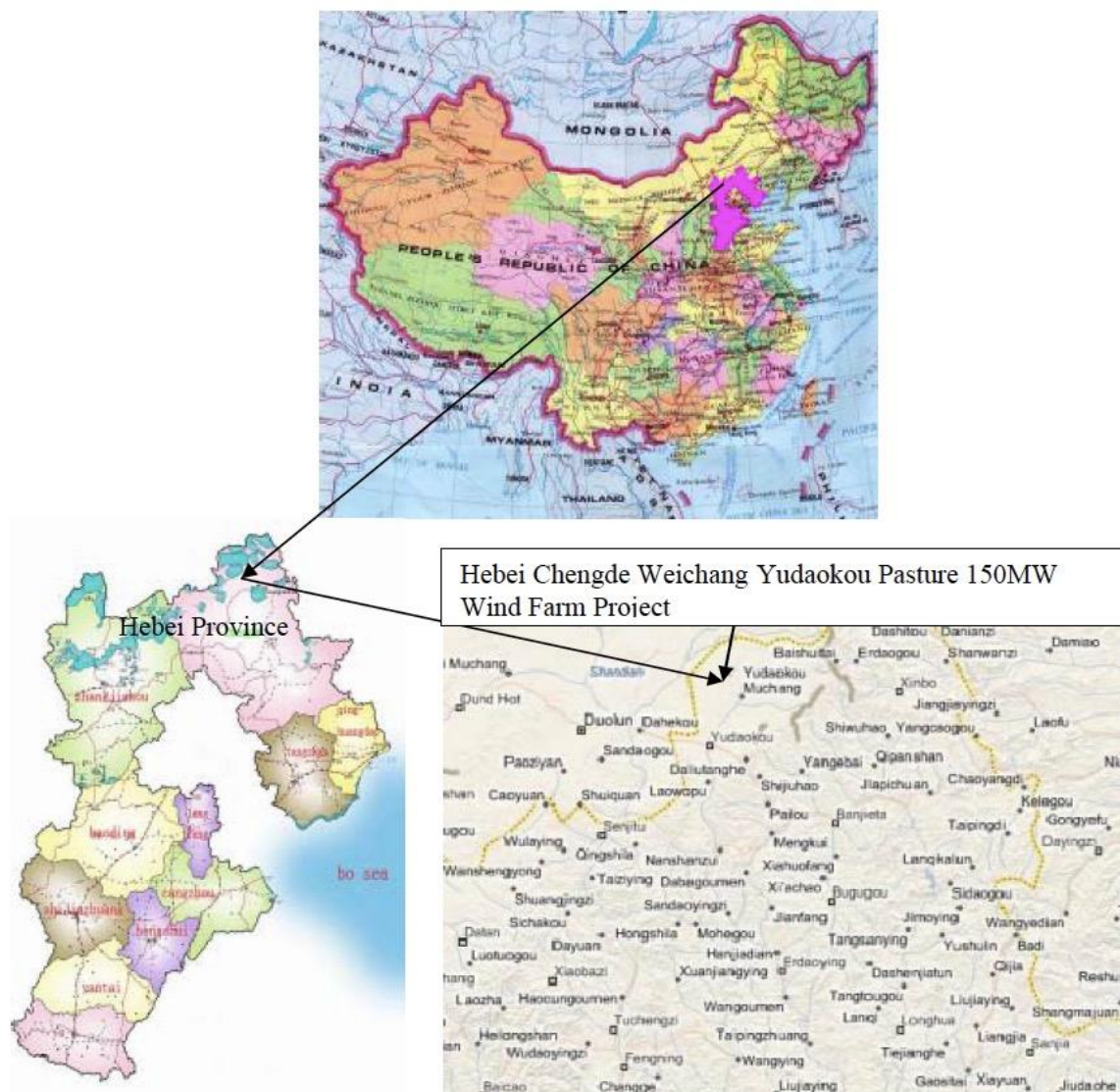


Figure 1. The location of the project

1.8 Title and Reference of Methodology

The approved methodology applied in the project activity is ACM0002 – Consolidated methodology for grid-connected electricity generation from renewable sources” (version 20.0)¹.

Related tools are:

- Tool to calculate the emission factor for an electricity system (version 07.0)
- Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation (version 03.0).

¹ <https://cdm.unfccc.int/methodologies/DB/XP2LKUSA61DKUQC0PIWPGWDN8ED5PG>

1.9 Participation under other GHG Programs

The Project has been registered as a CDM project on 17/01/2011 with registration number of 3476. It has been issued two times under CDM mechanism, with monitoring period from 17/01/2011 to 31/08/2011 and from 01/01/2013 to 30/09/2015. GHG emission reductions from 30/11/2011 - 31/12/2012 were awaiting issuance request under CDM scheme².

The credits in this monitoring period (01/06/2022- 31/05/2023) has not been counted and will not be counted under other kind of GHG programs.

Please refer to the following link for details:

<https://cdm.unfccc.int/Projects/DB/BVQI1268203473.52/view>

Except for CDM, the project did not register under any other GHG program.

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

Emission Trading Programs and Other Binding Limits:

China has a national Emission Trading Scheme (ETS) 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 project³. The project proponent Hebei Construction Investment New Energy Co., Ltd., as an enterprise for renewable energy investment, thus, the project activity is not included the mandatory emission control scheme and there is no emission cap enforced for the project owner according to the enforced company list⁴ in public information. Hence, it is confirmed that the emission reductions will not be double counted.

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.

Supply Chain (Scope 3) Emissions:

² GHG emission reductions from 01/09/2011-31/12/2012 has been issued under VCS scheme, and this part will not be counted under other kind of GHG programs.

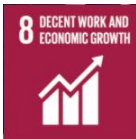
³ http://www.mee.gov.cn/xxgk2018/xxgk/xxgk05/202103/t20210330_826728.html

⁴ <http://mee.gov.cn/xxgk2018/xxgk/xxgk03/202012/W020201230736907682380.pdf>

The Project generated electricity by utilization of renewable wind sources, replacing the electricity generated by fossil fuel fired power plants of the power grid. For wind power projects, the GHG emission reductions come from avoiding CO₂ emissions from those fossil fuel-based power plants connected to the grid, which does not happen in a supply chain. Therefore, it is confirmed that the Supply Chain (Scope 3) Emissions are not applicable for the project activity.

1.11 Sustainable Development Contributions

The project located in Weichang Manchu & Mongolia Autonomous County, Chengde City, Hebei Province, P.R.China, which generated electricity from clean renewable wind sources and feeds it into NCPG, replacing energy that would otherwise be generated by fossil fuels. In this monitoring period the project contributes to the following SDGs:

SDG	SDG indicators	Chinese Sustainable Development Progress	Project activity contribution
	SDG 7.2 By 2030, increase substantially the share of renewable energy in the global energy mix	By the end of 2015, China had fully solved the problem of providing electricity to all people without electricity and reached the goal of the Sustainable Development Agenda 15 years ahead of schedule. From 2015 to 2020, the share of non-fossil energy increased from 14.5% to 19.6%, while the share of raw coal decreased from 72.2% to 67.6%.	From the operation start date of the project to 31/05/2023, the project supplied 4,003,922.959 MWh renewable clean energy to NCPG, which contributes to achieve China's stated sustainable development priorities "By 2030, the proportion of non-fossil energy consumption will reach about 25%".
	SDG 8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	China has deeply implemented the innovation-driven development strategy. Small, medium and micro enterprises have developed rapidly. Adhering to the policy of giving priority to employment, the unemployment rate has remained at a low level. By coordinating epidemic prevention and control with economic and social development, China has become the only major	The project provides 55 long-term job opportunities for local people, which has a positive effect on the local economy and contributes to SDG 8. This contributes to one of China's actions for promoting sustainable developing: "by 2030, achieve full and productive employment and decent work for all

		economy to achieve positive growth in 2020 and has made positive contributions to global economic recovery.	women and men, including for young people and persons with disabilities, and equal pay for work of equal value".
	SDG 13 Take urgent action to combat climate change and its impacts	In 2020, China's energy consumption per unit of GDP was reduced by 24.4% compared with 2012; carbon dioxide emissions per unit of GDP was reduced by 18.8% compared with 2015 and 48.4% compared with 2005, all of which have already fulfilled China's commitment to the international community in 2020 ahead of schedule.	From the operation start date of the project to 31/05/2023, the project achieved 4,032,701CO₂e emission reductions which contributes to SDG 13. This contributes to achieve China's stated sustainable development priorities " China's carbon dioxide emissions would strive to peak by 2030 and strive to achieve carbon neutrality by 2060 ".

These contribute to achieve China's stated sustainable development priorities, included strengthening resistance capacity to climate risks, increasing labour 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)	7.2	7.2.1 Renewable energy share in the total final energy	Implemented activities to increase	The project utilizes wind energy for electricity generation, which could increase the ratio of renewable energy in total energy consumption of China. From 01/06/2022 to 31/05/2023 the electricity supplied from the project is 330,217.007MWh.	From the operation start date of the project to 31/05/2023, the verified electricity generated by this project is 4,003,922.959 MWh.
2)	8.5	Total number of job opportunities	Implemented activities to decrease	During the current monitoring period, the total number of employees is 55 (including 18 females, 12 of whom are residents of the villages surrounding the project. And local employees account for about 21.82% of the total staff.	During the operation time, the project provides about 55 stable work opportunities to local people, including 18 females, 12 of whom are residents of the villages surrounding the project. And local employees account for about 21.82% of the total staff. The project will provide more employment opportunities for surrounding residents in the future.
3)	13.0	Tonnes of greenhouse gas emissions avoided or removed	Implemented activities to increase	By utilizing wind for power generation and replaced it from thermal power generation projects from 01/06/2022 to 31/05/2023 the emission reduction from the project is around 273,055tCO ₂ e	The credits from the operation start date of the project to 31/05/2023, the verified emission reduction generated by this project is 4,032,701CO ₂ e (refer to table below for further details).

The electricity and emission reduction that has been verified during the previous monitoring period are as follows:

Monitoring period	EG _{facility,y} (MWh)	Emission Reductions (tCO _{2e})	Status
27/11/2010-16/01/2011	61,154.280	64,507	Issued
17/01/2011-31/08/2011	162,410.160	171,318	Issued
01/09/2011-31/12/2012	428,448.000	451,948	Awaiting issuance under CDM
01/01/2013-30/09/2015	779,668.000	822,432	Issued
01/10/2015-29/02/2020	1,485,339.240	1,566,806	Issued
01/03/2020 -30/11/2021	591,807.035	546,298	Issued
01/12/2021 -31/05/2022	164,879.237	136,337	Issued
01/06/2022 -31/05/2023	330,217.007	273,055	In requesting for VCUs
Total	4,003,922.959	4,032,701	

2 SAFEGUARDS

2.1 No Net Harm

According to the relevant environmental law and regulations, an environmental impact assessment has been carried out, and the assessment report has been approved by the Hebei Environmental Bureau. The main assessment conclusions are as follows:

- Noise Impact on the Environment

Noise will be generated by machine equipment and vehicle during the construction period. Measures will be taken to reduce the environmental impacts of noise: choosing low-noise machines and technologies, strengthening the management and maintenance on equipment, allocate reasonable selection and layout on the plant construction site, and enhancing construction management etc. Low-noise turbine units will be employed and installed far away from the surrounding villages. Noise level will be controlled within the Class 1 requirement of Standard of Environmental Noise of Urban Area (GB 3096-93). In addition, during the operation period the nearest residential area is far away from the construction site, and there is no enterprises, schools or hospitals nearby. So, the neighborhood residents will not be influenced by the noise.

- Impact of solid waste on environment

During the construction period, the discharged waste slag will be reduced by refilling the excavated earth as much as possible, and the wastes will be piled up in designated waste disposal sites.

During the operation period, the domestic waste produced by operational workers will be collected and discharged by existing garbage disposal facilities.

- Impact on the water environment

The main water pollution includes industrial wastewater and domestic wastewater. During the construction period, the domestic wastewater will be discharged through local sewage treatment facilities. For the applied mechanical equipment is relative less, so the industrial wastewater will be also less, in addition, the industrial wastewater can be used to irrigate plant.

During the operation period, domestic wastewater will be treated by a septic tank, so the wastewater after treatment could well satisfy the requirement of Chinese Environmental Standard, which will be collected into a water collection basin for greening and so on. After those appropriate treatment measures has been taken, such wastewater will not cause negative impacts on the environment.

- Impact on the Air quality

The main air pollution sources during the construction period include excavation, blasting and transportation, and the main air pollutant is dust. Some measures will be taken to reduce impact of dust, such as watering, covering and the construction material will be pile up centralized. Therefore, the construction has little negative impact on the local air environment.

- Impact on ecological environment

The construction will cause some negative impacts on the ecological environment, such as vegetation trampled by workers and machine and covered by the dust, excavating. In order to reduce the negative impacts, the following measures will be taken: controlling construction activity within occupied land to reduce negative impacts, and, carrying away all waste slag and cleaning up the construction site to recover the original vegetation when the construction is over.

There is no rare plant and wild animal living around the project site, nor the inhabitant of birds. Therefore, the project activity has little negative influence on birds and ecological environment.

Therefore, the project does not bring negative environmental and socio-economic impacts.

2.2 Local Stakeholder Consultation

Before the start of the construction of the proposed project, the project owner has given out questionnaires to local residents to ask their opinions. The aim of these questionnaires is to collect opinions concerning the influence the project would have on the local society, environment, economy, daily life etc.

A special stakeholder consultation meeting of the project was hold from 10:00 to 11:00 AM on 02/11/2008 at the meeting room of the project site, Chengde City. In order to make the potential stakeholders receive notification and information of the meeting, the project owner published a bulletin for the stakeholders meeting on the nearby residents' areas, from October 28, 2008. In the bulletin, the companies notified all the potential stakeholders that they could have detailed information on the proposed project.

During the meeting, the project owner invited the participants to express their comments and concerns about the project and CDM.

Main questions of the meeting and questionnaires are as follows:

- What is the main fuel that local residents used for heating and cooking?
- Will the project have a negative impact on the local residents?
- Will the construction of the project cause any pollution? Do the residents think that the noise unendurable? Does the noise have any impact on the lives of the local residents?
- Will the project have any negative impact on the habitat of birds? Is the project site the main flight way of migratory birds?
- Will the project have any negative impact on local ecological environment?
- Will the construction improve the communicating condition?
- Will the project bring any benefit for the local residents?
- Do the local residents support CDM project?
- Do local residents agree with the construction of the project?

40 questionnaires were distributed, and all were recollected, of which, 30% is from women, 40% is from people graduated from senior high school or lower school, 100% is from people elder than twenty years old, and the investigation results show the following:

- 60% of the investigated residents use firewood for heating and cooking, and the rest 40% use gas or coal for heating and cooking.
- 85% of investigated residents think the wind farm will bring benefit to their lives; other investigated residents think the wind farm will not influent their lives.
- 100% of the investigated residents think the construction of wind farm will not cause negative impact on their lives.
- 100% of investigated residents think the wind farm will not cause negative impact on the environment.

- 100% of investigated residents think the wind farm will not cause noise pollution.
- 100% of the investigated residents think the project site is not the main flight way of migratory birds.
- 100% of the investigated residents agree the proposed project to apply as CDM project.
- 100% of investigated residents agree with the construction of the project.

20 representatives (which is different from the people who give the questionnaires) of local residents, the representatives of local government and consultants attended this meeting, and the project owner has done the record of the meeting.

Through the investigation and stake-holder meeting, it was learned that all stakeholders, having considered that wind power is a renewable energy and will not cause negative impacts on the environment, agree to the construction of the wind farm. There are no residents living around the project. So the wind farm will not cause negative impacts on local residents. The wind farm site is located off the main flight path of migratory birds and only a few migratory birds stay around the wind farm, there will be no negative influence on birds. The project will provide sufficient electric power for social life and manufacture, increase the employment ratio and incomes of the local residents, improve life quality of local residents, and accelerate the development of social economy. Overall, the project will cause little negative impact on local residents and environment. All stakeholders support the construction of the project and the application as CDM project.

In addition, for continuous communication with local stakeholders, the project owner public its office telephone to local people and put a grievance book in the office of the company. Anyone who have comments on the project could write on the book or leave message by phone. And after these years' operation, no negative comments were received from local people.

2.3 AFOLU-Specific Safeguards

Not applicable due to the project is not an AFOLU project.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The project installed 100 sets of wind turbines with a unit capacity of 1,500 kW and total capacity of 150MW. Electricity generated by the Project is delivered to NCPG via a 220kV transmission line.

The wind power generation process of the project is showed in Figure 2.

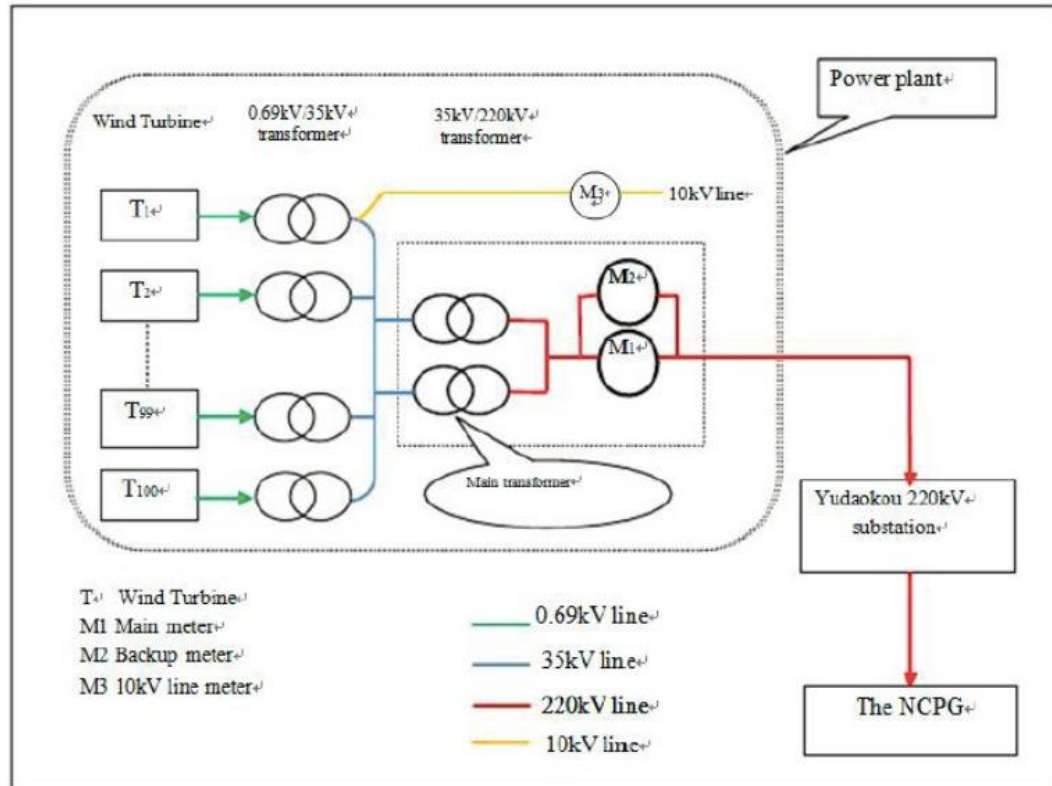


Figure 2. Flow chart of the project

The technical parameters of the installed wind turbines are shown in the table below

Table 1. Main technical parameters of key equipment in the Project

	Technical parameters	Value
Wind turbine	Type	SL1500/77
	Manufacturer	Huarui Windpower Technology Co., Ltd
	Rotate Speed of Wheel Hub	9.7 -19r/min
	Number of Blades	3
	Fan diameter	77.4m
	Swept area	4,657m ²
	Cut in Wind Speed	3m/s
	Rated Wind Speed	12 m/s
	Cut out Wind Speed	20 m/s
Generator	Type	Asynchronous bidirectional
	Rated Capacity	1.50MW
	Rated Voltage	690V
	Rated Frequency	50Hz
Main Transformer	Type	SFZ10-100000/220
	Rated Frequency	50Hz
	Rated Voltage	High side: 242kV

		Low side: 38.5kV
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The project began to construct on 11/05/2009 and was put into commercial operation on 27/11/2010. During this monitoring period (01/06/2022-31/05/2023), the project operated normally. No equipment is overhauled or replaced in this monitoring period. No emergencies which may impact the methodology application and monitoring occurred during the monitoring period.

3.2 Deviations

3.2.1 Methodology Deviations

No methodology deviations in this monitoring period.

3.2.2 Project Description Deviations

There is a crediting period deviation in this monitoring period.

The project was registered under VCS version 3. In the Verification Report of initial VCS monitoring period, it was mentioned that the project started operation since 27/11/2010. As per UNFCCC website, it was confirmed that the project activity was registered as CDM project activity on 17/01/2011. Therefore, the VCS crediting period was determined as 27/11/2010 to 16/01/2011. As per VCS scheme under which the project was registered, the project crediting period is allowable for 10 years and could be renewed twice. Therefore, the total VCS crediting period was determined from 27/11/2010 to 26/11/2031, of which the first crediting period is from 27/11/2010 to 26/11/2020, while the second crediting period is from 27/11/2020 to 26/11/2030. The same has been described in the renewed VCS PD.

As a CDM project with a 7*3 renewable project crediting period, the VCS issuance is not eligible for beyond the end of those 21 years. Furthermore, given that the VCS crediting period started on 27/11/2010 and the lifetime of the project is about 20 years, thus, the VCS crediting period will end on the 26/11/2030.

There are no 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,OM,y}
Data unit	tCO ₂ /MWh
Description	Simple operating margin CO ₂ emission factor in year y
Source of data	"2019 Baseline Emission Factors for Regional Power Grids in China" issued by China DNA ⁵
Value applied	0.9419
Justification of choice of data or description of measurement methods and procedures applied	Official public data from MEE
Purpose of Data	Calculation of baseline emissions
Comments	/

Data / Parameter	EF_{grid,BM,y}
Data unit	tCO ₂ /MWh
Description	Build margin CO ₂ emission factor in year y
Source of data	"2019 Baseline Emission Factors for Regional Power Grids in China" issued by China DNA ⁶
Value applied	0.4819
Justification of choice of data or description of measurement methods and procedures applied	Official public data from MEE
Purpose of Data	Calculation of baseline emissions
Comments	/

Data / Parameter	Wom
Data unit	%

⁵ <http://www.mee.gov.cn/ywgz/ydqhbh/wsqtz/202012/W020201229610353816665.pdf>

⁶ <http://www.mee.gov.cn/ywgz/ydqhbh/wsqtz/202012/W020201229610354442145.pdf>

Description	Weighting of operating margin emissions factor
Source of data	"Tool to calculate the emission factor for an electricity system" (Version 07.0)
Value applied	75
Justification of choice of data or description of measurement methods and procedures applied	Based on the requirements of "Tool to calculate the emission factor for an electricity system" (Version 07.0)
Purpose of Data	Calculation of baseline emissions
Comments	/

Data / Parameter	WBM
Data unit	%
Description	Weighting of build margin emissions factor
Source of data	"Tool to calculate the emission factor for an electricity system" (Version 07.0)
Value applied	25
Justification of choice of data or description of measurement methods and procedures applied	Based on the requirements of "Tool to calculate the emission factor for an electricity system" (Version 07.0)
Purpose of Data	Calculation of baseline emissions
Comments	/

1.1 Data and Parameters Monitored

Data / Parameter	EG_{facility,y}
Data unit	MWh
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y
Source of data	This parameter is calculated monthly with on-site monitored data of EG _{s,y} , PR _{g,y} and PR _{10kV,y} .
Description of measurement methods and procedures to be	$EG_{facility,y} = EG_{s,y} - PR_{g,y} - PR_{10kV,y}$

applied	Where:						
	<table> <tr> <td>$EG_{s,y}$</td><td>The electricity delivered by the Project to the grid in year y</td></tr> <tr> <td>$PR_{g,y}$</td><td>The electricity imported by the Project from the grid in year y</td></tr> <tr> <td>$PR_{10kV,y}$</td><td>The electricity imported by the Project from the grid via 10kV line in year y</td></tr> </table>	$EG_{s,y}$	The electricity delivered by the Project to the grid in year y	$PR_{g,y}$	The electricity imported by the Project from the grid in year y	$PR_{10kV,y}$	The electricity imported by the Project from the grid via 10kV line in year y
$EG_{s,y}$	The electricity delivered by the Project to the grid in year y						
$PR_{g,y}$	The electricity imported by the Project from the grid in year y						
$PR_{10kV,y}$	The electricity imported by the Project from the grid via 10kV line in year y						
Frequency of monitoring/recording	Continuously measured and monthly recording						
Value monitored	330,217.007						
Monitoring equipment	The information of the electricity meter is in the following table.						
QA/QC procedures to be applied	The electricity meter is calibrated by qualified entity according to national standards. The electricity records are crosschecked with electricity receipts.						
Purpose of the data	Calculation of baseline emissions						
Calculation method	$EG_{facility,y} = EG_{s,y} - PR_{g,y} - PR_{10kV,y}$						
Comments	/						

Data / Parameter	$EG_{s,y}$
Data unit	MWh
Description	The electricity delivered by the Project to the grid in year y
Source of data	Measured by M1 located at the output of the on-site 220kV transformer substation.
Description of measurement methods and procedures to be applied	It is continuously measured by main meter M1 and backup meter M2, and monthly recorded by the project owner. The meters are installed at the output of the on-site 220kV transformer substation. M2 works as backup meter for M1 when there is failures in M1. The meter readings are crosschecked with the electricity receipts. The conservative value is used for ER calculation. At 24:00 of the last day of each month, the meter reading were read and recorded by the project owner and grid company.
Frequency of monitoring/recording	Measured continuously and recorded monthly.

Value monitored	330,435.987					
Monitoring equipment	The information of the electricity meter is in the following table.					
QA/QC procedures to be applied	The electricity meter is calibrated by qualified entity according to national standards. The electricity records are crosschecked with electricity receipts. The main information is shown below:					
		Type	Serial No.	Accuracy	Calibration Date	Valid date
	M1 (main meter)	SL7000	36013942	0.2S	08/10/2021	07/10/2022
					08/10/2022	07/10/2023
	M2 (backup meter)	SL7000	36014056	0.2S	08/10/2021	07/10/2022
08/10/2022					07/10/2023	
Purpose of the data	Calculation of baseline emissions					
Calculation method	/					
Comments	/					

Data / Parameter	$PR_{g,y}$
Data unit	MWh
Description	The electricity imported by the Project from the grid in year y
Source of data	Measured by M1 located at the output of the on-site 220kV transformer substation.
Description of measurement methods and procedures to be applied	It is continuously measured by main meter M1 and backup meter M2, and monthly recorded by the project owner. The meters are installed at the output of the on-site 220kV transformer substation. M2 works as backup meter for M1 when there is failures in M1. The meter readings are crosschecked with the electricity receipts. The conservative value is used for ER calculation. At 24:00 of the last day of each month, the meter reading were read and recorded by the project owner and grid company.
Frequency of monitoring/recording	Measured continuously and recorded monthly.

Value monitored	218.980																						
Monitoring equipment	The information of the electricity meter is in the following table.																						
QA/QC procedures to be applied	The electricity meter is calibrated by qualified entity according to national standards. The electricity records are crosschecked with electricity receipts. The main information is shown below: <table><tr><td></td><td>Type</td><td>Serial No.</td><td>Accuracy</td><td>Calibration Date</td><td>Valid date</td></tr><tr><td rowspan="2">M1 (main meter)</td><td rowspan="2">SL7000</td><td rowspan="2">36013942</td><td rowspan="2">0.2S</td><td>08/10/2021</td><td>07/10/2022</td></tr><tr><td>08/10/2022</td><td>07/10/2023</td></tr><tr><td rowspan="2">M2 (backup meter)</td><td rowspan="2">SL7000</td><td rowspan="2">36014056</td><td rowspan="2">0.2S</td><td>08/10/2021</td><td>07/10/2022</td></tr><tr><td>08/10/2022</td><td>07/10/2023</td></tr></table>		Type	Serial No.	Accuracy	Calibration Date	Valid date	M1 (main meter)	SL7000	36013942	0.2S	08/10/2021	07/10/2022	08/10/2022	07/10/2023	M2 (backup meter)	SL7000	36014056	0.2S	08/10/2021	07/10/2022	08/10/2022	07/10/2023
	Type	Serial No.	Accuracy	Calibration Date	Valid date																		
M1 (main meter)	SL7000	36013942	0.2S	08/10/2021	07/10/2022																		
				08/10/2022	07/10/2023																		
M2 (backup meter)	SL7000	36014056	0.2S	08/10/2021	07/10/2022																		
				08/10/2022	07/10/2023																		
Purpose of the data	Calculation of baseline emissions																						
Calculation method	/																						
Comments	/																						

Data / Parameter	PR_{10 kV,y}
Data unit	MWh
Description	The electricity imported by the Project from the grid via 10kV line in year y
Source of data	Measured by M3 located at the 10kV line of the project.
Description of measurement methods and procedures to be applied	It is continuously measured by the bi-directional meter and monthly recorded by the project owner. The meter is installed on the 10kV line of the Project. The meter readings are crosschecked with the electricity receipts. The conservative value is used for ER calculation. At 24:00 of the last day of each month, the meter reading were read and recorded by the project owner and grid company.
Frequency of monitoring/recording	Continuously measured and monthly recorded

Value monitored	0												
Monitoring equipment	The information of the electricity meter is in the following table.												
QA/QC procedures to be applied	The electricity meter is calibrated by qualified entity according to national standards. The electricity records are crosschecked with electricity receipts. The main information of M3 is shown below: <table><tr><th>Type</th><th>Serial No.</th><th>Accuracy</th><th>Calibration Date</th><th>Valid date</th></tr><tr><td rowspan="2">DTS747 (M3)</td><td rowspan="2">2103348</td><td rowspan="2">1.0</td><td>08/10/2021</td><td>07/10/2022</td></tr><tr><td>08/10/2022</td><td>07/10/2023</td></tr></table>	Type	Serial No.	Accuracy	Calibration Date	Valid date	DTS747 (M3)	2103348	1.0	08/10/2021	07/10/2022	08/10/2022	07/10/2023
Type	Serial No.	Accuracy	Calibration Date	Valid date									
DTS747 (M3)	2103348	1.0	08/10/2021	07/10/2022									
			08/10/2022	07/10/2023									
Purpose of the data	Calculation of baseline emissions												
Calculation method	/												
Comments	/												

4.2 Monitoring Plan

1. Monitoring data

The main data to be monitored are:

The power supplied to the grid ($EG_{s,y}$),

The electricity use of power plant supplied by the grid ($PR_{g,y}$),

The electricity imported by the Project from the grid via the 10kV backup line in year y ($EG_{10kVtoPJ,y}$)

The monitoring point is in the following figure 3.

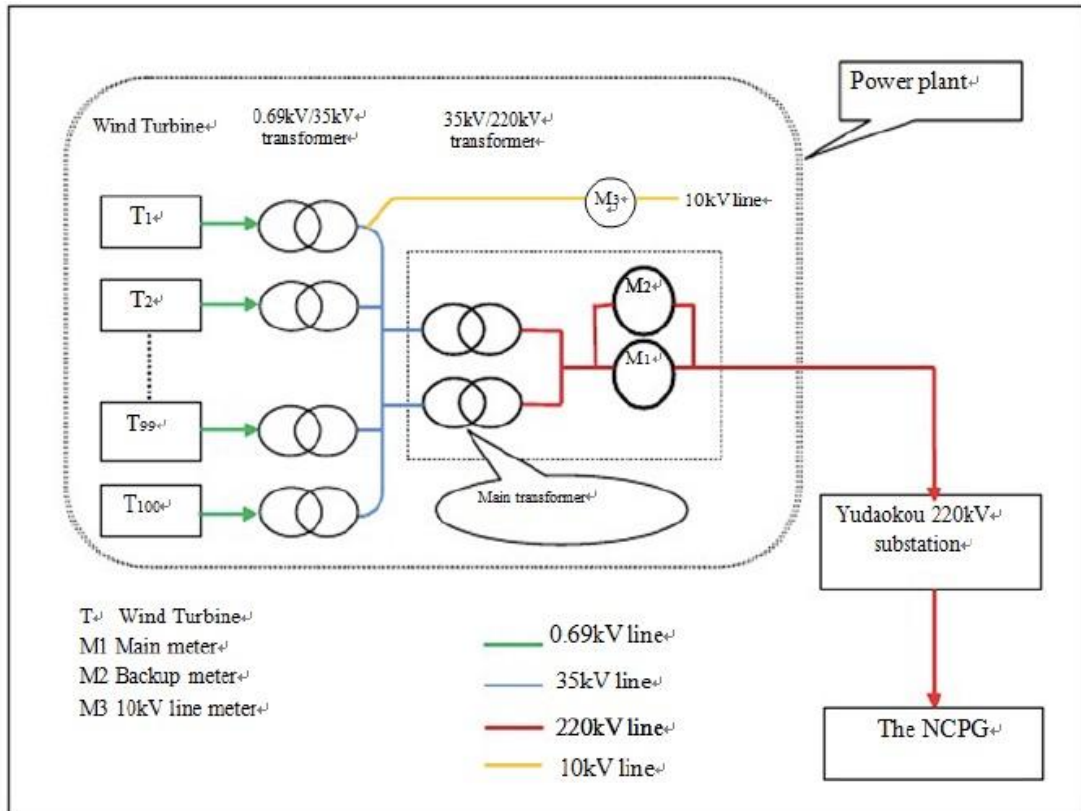


Figure 3. Monitoring point of the project

2. Monitoring System Organization Chart

The monitoring system is shown in Figure 4.

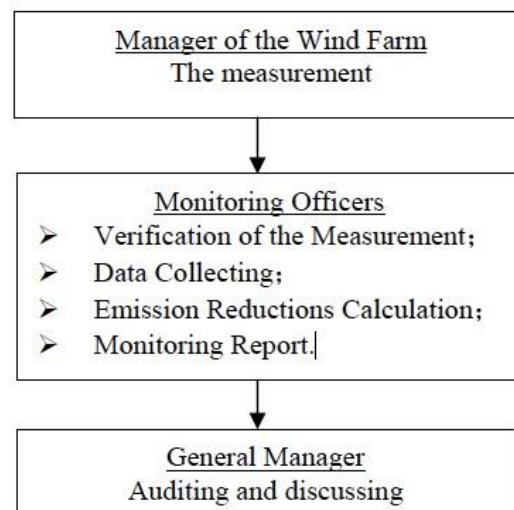


Figure 4. Monitoring structure

A chief monitoring officer will be appointed by the project owner, who will supervise and verify metering and recording, collect data (meter's data reading, sales/purchasing invoices), calculate emission reductions and prepare monitoring reports.

3. Data Collection and management

The exported and imported electricity are continuously monitored and monthly recorded by the working staff and reviewed by auditor. The project owner summarized and recorded readings of the electricity meter at 24:00 of the last day of each month in Monthly Production Report of the Project. After the data was confirmed by the grid company, the monthly Electricity receipts was issued by the grid company to the Project Owner. Electricity receipts issued by the grid company were used for crosscheck.

All paper documents are copied. All electrical files are backup by hard disk and kept after 2 years after the end of crediting period.

4. QA/QC procedures

All the electricity meters are calibrated annually by qualified third party according to national industry standard. And all the metering data is cross checked with the Electricity receipts and the conservative value will be used for emission reductions.

The accuracy of the M1 and M2 is 0.2S. The accuracy of the M3 is 1.0.

5. Emergency procedures

During this monitoring period, the Project was operated smoothly and no emergency happened.

If abnormal operation happens, on-site operators should immediately report to team manager. The team manager takes the responsibility to handle the erroneous measurement as follows:

- If the reason for erroneous measurement is the malfunction of the meter(s), use the data automatically obtained and saved by the computer system as backup.
- If the erroneous measurement is caused by employees in charge of recording, use the data automatically obtained and saved by the computer system as backup. At the same time, training courses shall be rearranged for relevant employees to ensure the correct implementation of the monitoring plan, so as to prevent error.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

According to ACM0002, the baseline emission during this verification period is calculated as

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

Where:

BE_y is the baseline emissions (tCO₂e)

$EG_{\text{facility},y}$ is Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh);

$EF_{\text{grid},\text{CM},y}$ is the CO₂ emission factor of the NCPG, which is fixed in the first and second crediting period (tCO₂e/MWh)

$$EG_{\text{facility},y} = EG_{s,y} - PR_{g,y} - PR_{10kV,y}$$

Where:

$EG_{s,y}$ is the electricity delivered by the Project to the grid in year y ;

$PR_{g,y}$ is the electricity imported by the Project from the grid in year y ;

$PR_{10kV,y}$ is the electricity imported by the Project from the grid via 10kV line in year y .

On the basis of these weights for the second crediting period, the combined margin emission factor ($EF_{\text{CM},y}$) is calculated, and are fixed as 0.8269 tCO₂/MWh.

	CO ₂ emission factor (tCO ₂ /MWh)	Weighting
Simple operating Margin Emissions Factor ($EF_{\text{grid},\text{OM simple},y}$)	0.9419	0.75
Build Margin Emissions Factor ($EF_{\text{grid}, \text{BM},y}$)	0.4819	0.25
Baseline Emissions Factor ($EF_{\text{grid},\text{CM},y}$)	0.8269	

The yearly electricity volume and baseline emissions during this monitoring period are listed in following table 2.

Table 2. Baseline emissions

Period	$EG_{s,y}$ (MWh)	$PR_{g,y}$ (MWh)	$PR_{10kV,y}$ (MWh)	$EG_{\text{facility},y}$ (MWh)	$EF_{\text{grid},\text{CM},y}$ (tCO ₂ /yr)	Baseline Emissions (tCO ₂ e)
01/06/2022~30/06/2022	25,109.224	13.270	0.000	25,095.954	0.82690	20,752

01/07/2022-31/07/2022	25,903.168	10.920	0.000	25,892.248	0.82690	21,410
01/08/2022-31/08/2022	26,162.187	8.860	0.000	26,153.327	0.82690	21,626
01/09/2022-30/09/2022	26,554.882	15.610	0.000	26,539.272	0.82690	21,945
01/10/2022-31/10/2022	27,632.055	12.150	0.000	27,619.905	0.82690	22,839
01/11/2022-30/11/2022	29,718.069	10.880	0.000	29,707.189	0.82690	24,565
01/12/2022-31/12/2022	28,223.576	8.030	0.000	28,215.546	0.82690	23,331
Total in 2022	189,303.161	79.720	0.000	189,223.441		156,468
01/01/2023-31/01/2023	29,712.033	28.930	0.000	29,683.103	0.82690	24,545
01/02/2023-28/02/2023	29,980.527	28.040	0.000	29,952.487	0.82690	24,768
01/03/2023-31/03/2023	28,011.364	22.180	0.000	27,989.184	0.82690	23,144
01/04/2023-30/04/2023	27,213.094	33.250	0.000	27,179.844	0.82690	22,475
01/05/2023-31/05/2023	26,215.808	26.860	0.000	26,188.948	0.82690	21,656
Total in 2023	141,132.826	139.260	0.000	140,993.566		116,587
Total in this monitoring period	330,435.987	218.980	-	330,217.007		273,055

The monthly data are shown in appendix 1.

In summary, the baseline emissions BE_y during this monitoring period is 273,055 tCO₂e.

5.2 Project Emissions

According to the ACM0002, the emission of wind power project activity is zero, i.e. $PE_y=0$.

5.3 Leakage

According to ACM0002, the leakage of wind power project is not needed to be considered.

5.4 Net GHG Emission Reductions and Removals

In according with the registered PD, $ER_y=BE_y - PE_y$

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)
01/06/2022-31/12/2022	156,468	0	0	156,468
01/01/2023-31/05/2023	116,587	0	0	116,587
Total	273,055	0	0	273,055

According to the renewal VCS PD, the estimated annual GHG emission reductions during the second crediting period (from 27/11/2020 to 26/11/2030) are 258,571 tCO₂e/yr.

Year	Net GHG emission reductions or	Ex-ante emissions reductions (tCO ₂ e)	Percent difference
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removals (tCO ₂ e)			
01/06/2022-31/12/2022	156,468	151,601	3.21%
01/01/2023-31/05/2023	116,587	106,970	8.99%
Total	273,055	258,571	5.60%

This monitoring period is from 01/06/2022 to 31/05/2023 (365 days). The emission reductions claimed are 273,055 tCO₂e in this monitoring period (i.e. 365 days). Compared with expected emission reductions 258,571 tCO₂e in the renewal VCS PD, the reported emission reductions in this monitoring period are 5.60% larger than the expected, which is considered to be in the reasonable variation range.

<u>Ex-ante emissions reductions</u>	<u>Achieved emissions reductions</u>	<u>Percent difference</u>	<u>Justification for the difference</u>
258,571	273,055	5.60%	The actual power generation was larger than expected, mainly due to the rich wind energy resources in the project area. According to Annual Bulletin of China's Wind and Solar Energy Resources in 2022, wind turbines commonly installed with a height of 70 meters have better wind energy resources, which is conducive to wind power generation. This project is located in Chengde City, Hebei Province, which is located in the Inner Mongolia Plateau and the northern Hebei mountain transition zone, with unique wind energy resources. According to the tests of authoritative institutions, the average annual effective wind speed time is more than 5475 hours, which is much higher than the average national wind power utilization hours of 3,412 hours in 2022 released by China Electricity Union. To summarize the above, the reported emission reductions in this monitoring period are 5.60% larger than the expected is considered to be in the reasonable variation range. This will not impact the additionally of the project activity as the sensitivity analysis of

			the project activity shows that the IRR will not exceeds benchmark until an 16% increase in Grid-connected electricity. The main reason for the electricity generation increase is that the wind flow in this monitoring period are larger than the designing value in the FSR, the management skills of the plant improves gradually and the wind power accommodation capacity of the grid is increasing.
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APPENDIX 1: < MONTHLY AND YEARLY ELECTRICITY SUPPLY >

Period	EG _{s,y}			PR _{g,y}			PR _{10kV,y}	EG _{facility,y}
	Data from monthly meter reading records (MWh)	Data from electricity receipts (MWh)	Conservative value (MWh)	Data from monthly meter reading records (MWh)	Data from electricity receipts (MWh)	Conservative value (MWh)		
	A	B	C=min(A,B)	D	E	F=max(D,E)		
01/06/2022-30/06/2022	25,109.224	25,109.224	25,109.224	13.270	13.270	13.270	0.00	25095.954
01/07/2022-31/07/2022	25,903.168	25,903.168	25,903.168	10.920	10.920	10.920	0.00	25892.248
01/08/2022-31/08/2022	26,162.187	26,162.187	26,162.187	8.860	8.860	8.860	0.00	26153.327
01/09/2022-30/09/2022	26,554.882	26,554.882	26,554.882	15.610	15.610	15.610	0.00	26539.272
01/10/2022-31/10/2022	27,632.055	27,632.055	27,632.055	12.150	12.150	12.150	0.00	27619.905
01/11/2022-30/11/2022	29,718.069	29,718.069	29,718.069	10.880	10.880	10.880	0.00	29707.189
01/12/2022-31/12/2022	28,223.576	28,223.576	28,223.576	8.030	8.030	8.030	0.00	28215.546
Total in 2022	189,303.161	189,303.161	189,303.161	79.720	79.720	79.720	0.000	189,223.441
01/01/2023-31/01/2023	29,712.033	29,712.033	29,712.033	28.930	28.930	28.930	0.00	29683.103
01/02/2023-28/02/2023	29,980.527	29,980.527	29,980.527	28.040	28.040	28.040	0.00	29952.487
01/03/2023-31/03/2023	28,011.364	28,011.364	28,011.364	22.180	22.180	22.180	0.00	27989.184
01/04/2023-30/04/2023	27,213.094	27,213.094	27,213.094	33.250	33.250	33.250	0.00	27179.844
01/05/2023-31/05/2023	26,215.808	26,215.808	26,215.808	26.860	26.860	26.860	0.00	26188.948
Total in 2023	141,132.826	141,132.826	141,132.826	139.260	139.260	139.260	0.000	140,993.566

Total in this monitoring period	330,435.987	330,435.987	330,435.987	218.980	218.980	218.980	0.000	330,217.007
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APPENDIX 2: < DESCRIPTION OF EMPLOYMENT AND SALARY>

Evidence for SDG 7 and 13: From project operation date onwards, the net electricity supplied to the grid and the emission reduction in every monitoring period have been listed in below table. Please refer to following links for details.

<https://registry.terra.org/app/projectDetail/VCS/892>

<https://cdm.unfccc.int/Projects/DB/BVQI1268203473.52/view>

Monitoring period	EG _{facility,y} (MWh)	Emission Reductions (tCO _{2e})	Status
27/11/2010-16/01/2011	61,154.280	64,507	Issued
17/01/2011-31/08/2011	162,410.160	171,318	Issued
01/09/2011-31/12/2012	428,448.000	451,948	Awaiting issuance under CDM
01/01/2013-30/09/2015	779,668.000	822,432	Issued
01/10/2015-29/02/2020	1,485,339.240	1,566,806	Issued
01/03/2020 -30/11/2021	591,807.035	546,298	Issued
01/12/2021 -31/05/2022	164,879.237	136,337	Issued
01/06/2022 -31/05/2023	330,217.007	273,055	In requesting for VCUs
Total	4,003,922.959	4,032,701	

Evidence for 8: The payroll of the project staff, including name, gender, wage, insurance and housing fund and other specific information has been submitted to VVB for verification. Thus, the payroll is not included as appendices to this report due to confidentiality requirement of the project proponent.

说 明

河北承德围场御道口牧场 150MW 风电项目，建设阶段为当地提供了超过 500 个工作岗位，并在项目运营期间提供 55 个永久工作岗位。截至目前，员工人数共计 55 人，女员工 18 人，其中 12 名女员工为项目周边村庄居民。

本项目严格遵守国家政策规定和公司薪资管理制度，2022-2023 年间，人均税后工资为 5000 元/月。下一步，项目公司还将增设更多岗位，帮助周边村民实现就近就地就业。

特此说明！

河北建投新能源有限公司

2023 年 6 月 7 日

Hebei Chengde Weichang Yudaokou Pasture 150MW Wind Farm Project has provided more than 500 local jobs during the construction phase and 55 permanent jobs during the project operation. Up to now, the total number of employees is 55, including 18 female employees, 12 of whom are residents of the villages surrounding the project.

The project company strictly complies with national policies and regulations and the company's salary management system. The per capita after-tax salary is 5,000 Yuan RMB/month between the year 2022-2023. In the next step, the project company will add more jobs to help villagers find jobs nearby.

Hebei Construction Investment New Energy Co., Ltd.

June 7, 2023