HEBEI CHONGLI COUNTY QINGSANYING SECOND PHASE 49.3MW WIND POWER PROJECT

Document Prepared by Beijing Ruifang Technology Co., Ltd.

Project Title	**Hebei Chongli County Qingsanying Second Phase 49.3MW Wind Power Project**
Version	02
Report ID	/
Date of Issue	15/12/2022
Project ID	807
Monitoring Period	01/12/2021 to 31/05/2022 (182 days)
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CONTENTS

1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

Hebei Chongli County Qingsanying Second Phase 49.3 MW Wind Power Project (hereinafter referred to as the project) is developed by Chongli Construction Investment Huashi Wind Energy Co., Ltd. It is located at the east of Chongli County, Hebei Province, P.R. China. It involves the installation of 58 turbines, each of which has a rated output of 850 kW, providing a total capacity of 49.3 MW. The annual output of the proposed project is estimated to be 109.002 GWh and the electricity will be exported to the North China Power Grid (NCPG).

The scenario existing prior to the start of the implementation of the project is: The same electricity output by the proposed project activity would have otherwise been generated by the operation of NCPG connected power plants and by the addition of new generation sources. That is the same as the baseline scenario.

When the proposed project is operated, the electricity generated will displace part of the electricity from fossil fuel-fired plants connected to the NCPG, and thus greenhouse gas (GHG) generated by coal-fired power plants could be reduced. The estimated annual GHG emission reductions in the second crediting period (from 08/01/2019 to 07/01/2029) are 91,610 tCO_2e/yr.

The construction of the project began on 10/08/2008, and the first turbine was put into operation on 08/01/2009. And the project was put into full commercial operation on 28/02/2009.

The second crediting period is from 08/01/2019 to 07/01/2029. This monitoring period is from 01/12/2021 to 31/05/2022 (182 days), belongs to the second crediting period. The emission reductions in this monitoring period is 48,321 tCO_2.

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	Chongli Construction Investment Huashi Wind Energy Co., Ltd.
Contact person	Zhang Ling

Title	Manager
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1.4 Other Entities Involved in the Project

Organization name	**Beijing Ruifang Information Technology Co., Ltd.**
Role in the Project	Project participant
Contact person	Teng Haipeng
Title	Manager
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1.5 Project Start Date

08/01/2009 (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 08/01/2009 (which means the date started to generate GHG emission reductions), as per the VCS rules, the first crediting period under VCS is from 08/01/2009 to 07/01/2019 (10 years, renewable). Therefore, the total crediting period under VCS would have been from 08/01/2009 to 07/01/2039 (30 years). However, the project was registered under CDM on 07/07/2011. And the total crediting period under CDM is from 07/07/2011 to 06/07/2032 (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 08/01/2009 to 07/01/2030.

Furthermore, given that the lifetime of the project is about 20 years, thus, the VCS crediting period will end on 07/01/2029.

This monitoring period is from 01/12/2021 to 31/05/2022 (182 days), belongs to the second crediting period.

1.7 Project Location

The project site is located at the east of Chongli County, Zhangjiakou City of Hebei Province. It is about 27 km from Chongli County and 65 km from Zhangjiakou city. The geographical coordinates of the project are 115°16′29″E ～ 115°23′01″E, 41°8′55″N ～ 41°13′51″N, and the central geographical coordinates of the project are 115°20.101′E, 41°12.027′N. Figure 1 shows the location of the project.

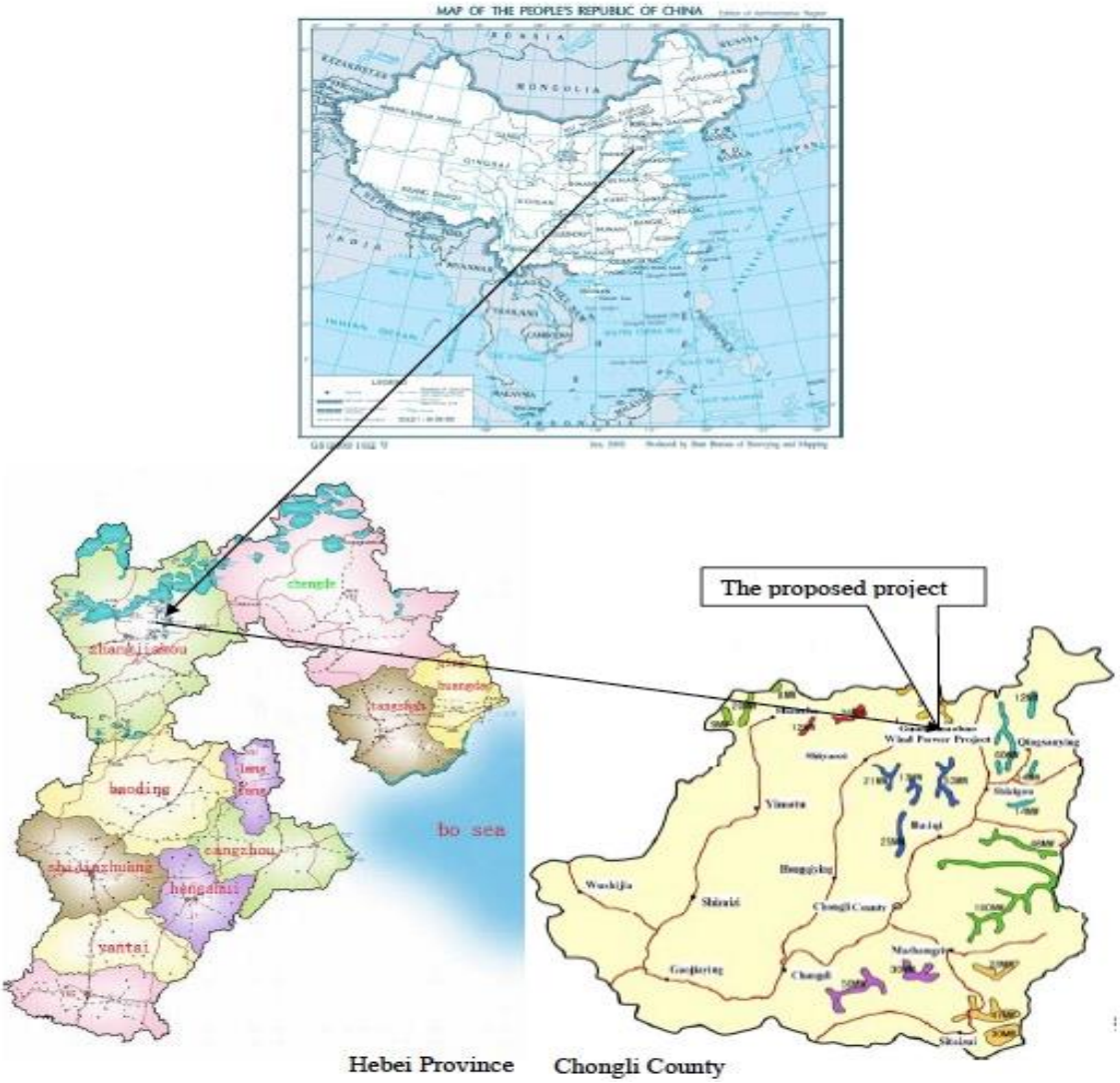


Figure 1. The location of the project

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).

1.9 Participation under other GHG Programs

The Project has been registered as a CDM project on 07/07/2011 with registration number of 4123. The credits from 07/07/2011 to 31/10/2012 and from 01/01/2013 to 31/10/2016 have been issued under CDM mechanism. The credits from 01/11/2012 to 31/12/2012 are waiting for issuance under CDM.

The credits in this monitoring period (01/12/2021 to 31/05/2022) has not been counted and will not be counted under other kind of GHG programs.

1.10 Other Forms of Credit

Emission Trading Programs and Other Binding Limits

The project proponent Chongli Construction Investment Huashi Wind Energy Co., Ltd., as an enterprise for renewable energy investment, is not included in the compliance entity list by China national Emission Trading Scheme (ETS). Also, the project has not been registered as a CCER (Chinese Certified Emission Reductions) project in China, thus it is not eligible for emission reductions transaction under the China's ETS. Therefore, the project is not involved in an emission trading program or any other mechanism that includes GHG allowance trading. Furthermore, as a voluntary emission reduction project, the GHG emission reductions and removals generated by the project will not be enforced to be used for compliance in China.

Other Forms of Environmental Credit

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

1.11 Sustainable Development Contributions

The project makes contribution to the sustainable development as follows:

The project located in Chongli County, Zhangjiakou City, Hebei Province, P.R.China, involves employing 300 temporary employment during the construction phase and 40 permanent

[1] https://cdm.unfccc.int/methodologies/DB/XP2LKUSA61DKUQC0PIWPGWDN8ED5PG

employment including 16 females during the operation phase, and operate 49.3MW(58*850kW) wind turbine units to generate power from clean renewable wind power in Hebei Province.

• The project has supplied 57,497.289MWh in this monitoring period that otherwise have been produced by thermal power generation projects, and contributes to Chinese renewable energy target[2].

• During the current monitoring period, the total number of employees is 40(including 16 females, 10 of whom are residents of the villages surrounding the project. And local employees account for about 25% of the total staff.

• The emission reduction of the project is 48,321 tCO_2e in this monitoring period, and contributes to Chinese Climate change target[3].

2 Nationally Determined Contribution Goals of renewable energy
https://www.ccchina.org.cn/Detail.aspx?newsId=73916&TId=60
3 Nationally Determined Contribution Goals of carbon peak in 2030 and carbon neutral in 2060
https://www.ccchina.org.cn/Detail.aspx?newsId=73916&TId=60

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 01/12/2021 to 31/05/2022 the electricity supplied from the project is 57,497.289MWh.	The credits from 01/11/2012-31/12/2012 are waiting for issuance under CDM, so from the operation start date of the project to 31/05/2022, the verified electricity generated by this project is 1,184,616.755MWh (refer to table below for further details).
2)	8.5	Total number of job opportunities	Implemented activities to increase	During the current monitoring period, the total number of employees is 40(including 16 females, 10 of whom are residents of the villages surrounding the project. And local employees account for about 25% of the total staff.	During the operation time, the project provides about 40 stable work opportunities to local people, including 16 females, 10 of whom are residents of the villages surrounding the project. And local employees account for about 25% 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 01/12/2021 to 31/05/2022 the emission reduction from the project is around 48,321tCO_2e	The credits from 01/11/2012-31/12/2012 are waiting for issuance under CDM, so from the operation start date of the project to 31/05/2022, the verified emission reduction generated by this project is 1,115,464tCO_2e (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_y (MWh)	Emission Reductions (tCO_2e)	Status
07/07/2011-31/03/2012	60,830.929	60,328	Issued
01/04/2012-23/09/2012	43,227.099	42,870	Issued
24/09/2012-31/10/2012	12,008.564	11,909	Issued
01/11/2012-31/12/2012	17,823.210	17,675	Awaiting issuance under CDM
01/01/2013 -31/10/2016	396,310.723	393,037	Issued
01/11/2016-30/11/2021	596,918.941	541,324	Issued
01/12/2021-31/05/2022	57,497.289	48,321	During this period
Total	**1,184,616.755**	**1,115,464**	

2 SAFEGUARDS

2.1 No Net Harm

The Environmental Impact Assessment of the proposed project was completed by the Institute of Hydrogeology and Environmental Geology, CAGS and approved by the Environment Protection Bureau of Hebei Province on 27/09/2007. Main contents of the Environmental Impact Assessment are summarized as follows:

Ecological impact

Construction Phase

1) Impact on Foliage

The area of the buildings stated above will be all the shrub-grassland. There will be some impacts on the local vegetation during the construction period. The main impact will be eradication of local sward and the stack of earth on the lawn. But after the construction period, new trees and grass will be planted again on the site. The vegetation condition of the earth surface will recover very soon. The original ecological system will be recovery from the third year after the construction period.

2) Impact on other animals

No big mammal has been found in the local area. There are only small mammals just like hare and mice.

The small animals disturbed by the construction (like the snail, the angleworm, the ant) will migrate the similar habitat conditions nearby due to their strong ability of migration. So, the species diversity and population size in the area will not be obviously influenced by the proposed project during the construction phase.

3) Impact on the residents

The main air pollution sources during the construction period include dust from excavation, blasting and transportation. Since the local residential area is 500m away from the temporary construction site and local atmosphere environment capacity is very large, the impact of construction dust on the local region is light. Some measures will be taken to reduce impact of dust on the construction staff, such as sprinkling, covering and so on.

Noise will be generated by machine equipment during construction. Measures will be taken to reduce the environmental impacts of noise: choosing low-noise machines and technologies, arranging reasonable construction time, and enhancing construction management. In addition, the nearest residential area is 1000m away from the wind farm, the neighbor residents will not

be influenced by the noise. So, the dust and the noise generated by construction activities will have less impact on local residents.

Operation Phase

1) Impact on the local biogeocenose

There is no waste gas, waste water and solid waste in the process of wind energy. Thus, the project will not obviously affect the local biogeocenose.

2) Visual Impact

The wind turbines installed in the grassland will enhance the visual value of the grassland and demonstrate the harmonious relation between human and nature. So, the proposed project has little impact on the local scene.

3) Impact on the animals

No big mammal has been found in the local area. There are only small mammals just like hare and mice.

They may migrate back to the former sites after the completion of the project. Therefore, the project will have less impact on other propagation during the operation phase.

Environmental Impact

Construction phase

The max impact range of dust generated by construction activities is about in the downwind 150 m and the noise pollution generated by construction machine will occur in the range of 300 m. The shortest distance between the project site and the village is 1,000 m. So the dust and the noise generated by construction activities will have less impact on local residents.

The main solid waste generated from the site will be construction waste as well as the household waste from the personnel at the site. The solid waste will be carried to the landfill. And both domestic sewage and the sewage from the worksite will be treated up to the standards before being discharged. So, the waste and waste water generated by construction activities will have less impact on local residents.

Operation Phase

1) Sewage

The waste water from the proposed project during operation phase will only be sewage. The sewage processed by the biological septic tank will in compliance with the second level standards <Integrated Wastewater discharge Standard > and will be discharged into the collecting pond. The processed sewage will be utilized to irrigate plant in the project site without discharge. Therefore, the sewage from the project during the operation phase will have less impact on the environment.

2) Noise

The operating noise level of the 1,500 kW turbine is 103 dB at the height of 10m from the ground.

However, at a distance of 400 m no serious noise impacts are caused, and noise levels at this distance drop down to the national standard 43 dB (A). Furthermore, the resident regions are 1,000 m away from the wind farm, and with the background noise in the area being high, so the noise does not influence the residential districts nearest to the site.

3) Solid waste

The solid waste will be mainly composed of the household garbage generated from the workers in the 110kV booster station. The solid waste will be carried termly to the landfill nearby. Therefore, impact of solid waste on the environment is considered to be insignificant.

4) socio-economic

The construction of the projects will establish huge wind power equipment manufacturing, research and development and related supporting enterprises in the local area, drive the development of manufacturing, construction, transportation, electronic and electrical industries, management services and other related industries, and improve the local economic and social benefits.

Conclusion

The project does not have any major adverse impacts on the environment and socio-economic during its construction and operation phase. Therefore, this project does not do harm to local environment and socio-economic.

2.2 Local Stakeholder Consultation

The project owner invited the comments of local stakeholders by issuing questionnaires. Chongli Construction Investment Huashi Wind Energy Co., Ltd carried out the survey on the local villagers and residents, the representative of governmental officials and so on during November, 2007. The survey was conducted through distributing and collecting responses to a questionnaire which was designed by project owner.

Questionnaire were designed to be easily filled in the following sections:

1) Project introduction

2) Respondent's basic information and education level

3) Questions on:

- What level do you know about the proposed project?

- Do you know about the Clean Development Mechanism?

- Impacts of the project to local environment;

- Do you think which impact on the environment may be caused by the project?

- Impacts of the project to local economic development;

- Whether to support the construction of the project?

4) Space for the respondents' signature and date.

Questionnaires have been distributed according to the principle of both representation and randomness in order to reflect the public opinions and comments in a fair and real manner.

The investigated stakeholders include the individuals from the construction site and the nearby Chongli County. The stakeholders also include the group from the government and association. The investigation has taken full account into the public advice of different ages, education levels and occupations.

In addition, public comments were invited by a poster on 08/10/2007 in all the villages within 5-kilometer of the project site, including No. 5 Village, No. 6 Village. Besides the content mentioned above, the following question was added in the Notice.

- What other comments and suggestions do the respondents have for the company regarding the Project?

- What impacts on your life may be caused by the project?

Survey results:

86 valid responses from 86 questionnaires were collected and the following is a summary of the key findings:

Comments from the questionnaires show that 100% of the investigated stakeholders agree with the project construction, and none of them objects.

72.09% of the investigated stakeholders know something about the project while 27.91% of the investigated stakeholders know very well about the project; 29.07% of them know about CDM; 97.67% of them don't think it impacting their livelihoods environment while 2.33% of them think it takes little impact of the local environment; The fields of environmental protection the public concerned mainly include noise of the construction(13.95%) , noise of the operation (3.49%), impact of dust on air quality (6.98%), use of land (19.77%), soil and water conservation(17.44%), construction waste(4.65%), impact on traffic (5.81%); 100% of them think it will promote the local economy; And the stakeholders are all supportive of this project.

No comments of the villagers who had seen the Notice have been received from October 8th, 2007 to November 8th, 2007.

In conclusion, the stakeholders are supportive of this project.

In order for on-going communicate with local stakeholders, the project owner put a grievance notebook in the company office. Anyone can put their comments on the book. Since this project has been operated for several years, all local stakeholders know the telephone of the office. When people have comments on the project, he or she can phone the project owner directly and leave message.

2.3 AFOLU-Specific Safeguards

This project is not an AFOLU project. Therefore, this section is not applicable.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

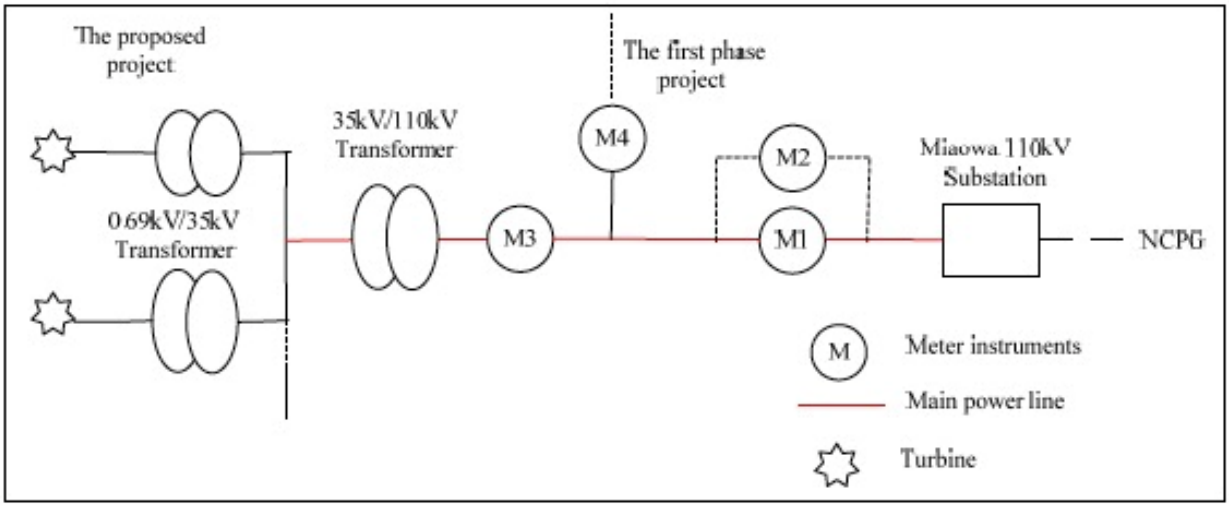
The project belongs to the East Asian continental monsoon climate in the sub-temperate dry regions where the wind resource is plentiful, and the average wind speed is relatively high.
The project involves the installation of 58 wind turbines with each capacity of 850 kW, and totals up an installed capacity of 49.3 MW. All of 58 wind turbines were supplied by Vestas Wind Technology (China) Co., Ltd. On average, the project activity is expected to operate 2,211 hours per year, which corresponds to output power of 109.002 GWh to NCPG annually. The plant load factor (PLF) is 25.24% which is consistent with the officially approved FSR compiled by an independent engineering company with national first-level qualification certification. The main technical parameters are shown in the following table 1.

Table 1. Parameters of equipment

Parameters Name	Unit	Value
Type of Turbine	/	V52-850
Nominal output	kW	850
Diameter	m	52
Hub height	m	55
Rated voltage	V	690
Nominal wind speed	m/s	16
The year of Production	/	2007

Lifetime	years	20
Lifetime	years	20

Each turbine will have a 0.69 kV/35 kV transformer. The electricity output will be transmitted by 35 kV transmission lines to the 35 kV/110 kV transformer station which is in wind farm site, and then to NCPG by 110 kV transmission lines. According to the Feasibility Study Report and the Environmental Impact Assessment Report of the project, the technology employed by the proposed project has been widely used in China and is environmentally safe. The simplified flow diagram is shown in the following figure 2.



The construction of the project began on 10/08/2008, and the first turbine was put into operation on 08/01/2009. And the project was put into full commercial operation on 28/02/2009.The project monitoring activities were implemented in line with the monitoring plan.

There are no any other changes related to project proponent or other entities. The project is developed and operated by Chongli Construction Investment Huashi Wind Energy Co., Ltd.

The wind farm operated normally. No equipment is overhauled or replaced in this monitoring period. No emergencies which may impact the methodology application and monitoring occurred during this monitoring period.

3.2 Deviations

3.2.1 Methodology Deviations

There is no methodology deviation 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 08/01/2009. As per UNFCCC

website, it was confirmed that the project activity was registered as CDM project activity on 07/07/2011. Therefore, the VCS crediting period was determined as 08/01/2009 to 06/07/2011. 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 08/01/2009 to 07/01/2039, of which the first crediting period is from 08/01/2009 to 07/01/2019, while the second crediting period is from 08/01/2019 to 07/01/2029. 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 08/01/2009 and the lifetime of the project is about 20 years, thus, the VCS crediting period will end on the 07/01/2029.

In summary, the deviation is mainly about the crediting period of the project, it will not impacts the applicability of the methodology, additionality or the appropriateness of the baseline scenario.

3.3 Grouped Projects

Not applicable because this 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	"2017 Baseline Emission Factors for Regional Power Grids in China" issued by China DNA[4]
Value applied	0.9680
Justification of choice of data or description of measurement methods and procedures applied	Official public data from NDRC
Purpose of Data	Calculation of baseline emissions
Comments	/

[4] http://www.mee.gov.cn/ywgz/ydqhbh/wsqtkz/202012/W020201229610353816665.pdf

Data / Parameter	$EF_{grid,BM,y}$
Data unit	tCO_2/MWh
Description	Simple build margin CO_2 emission factor in year y
Source of data	"2017 Baseline Emission Factors for Regional Power Grids in China" issued by China DNA[5]
Value applied	0.4578
Justification of choice of data or description of measurement methods and procedures applied	Official public data from NDRC
Purpose of Data	Calculation of baseline emissions
Comments	/

Data / Parameter	W_{OM}
Data unit	%
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	W_{BM}
Data unit	%
Description	Weighting of build margin emissions factor

[5] http://www.mee.gov.cn/ywgz/ydqhbh/wsqtkz/202012/W020201229610354442145.pdf

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	/

4.2 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	Measured by electricity meter and it is calculated as the difference of exported electricity to the grid ($EG_{export,y}$); and the imported electricity from the grid ($EG_{import,y}$). $EG_{export,y}=EG_{export,y,1}\times(EG_{export,y,3} / (EG_{export,y,3}+EG_{export,y,4}))$; $EG_{import,y}=EG_{import,y,1}\times(EG_{import,y,3} / (EG_{import,y,3}+EG_{import,y,4}))$;
Description of measurement methods and procedures to be applied	It is continuously measured by the bi-directional meters (M1, M2, M3 and M4). M1 is the main meter and M2 is the backup meter, which are both managed, operated and maintained by the NCPG. M3 is installed for the project and M4 is installed for the first phase project. The project owner will monitor M3, M4 and will read and record them monthly. The accuracy of the meters is 0.2S. The cut-off time of recording of all meters is at 24:00 on the end of each month.
Frequency of monitoring/recording	Measured continuously and recorded monthly.
Value applied	57,497.289
Monitoring equipment	The electricity is monitored by electricity meter with national standards.

	<table><tr><th>Name</th><th>Type</th><th>Serial No.</th><th>Accuracy</th><th>Calibration Date and valid date</th></tr><tr><td>M1</td><td>DTSD546</td><td>070813147254</td><td>0.2S</td><td>13/07/2021-12/07/2022</td></tr><tr><td>M2</td><td>DTSD546</td><td>070813147253</td><td>0.2S</td><td>13/07/2021-12/07/2022</td></tr><tr><td>M3</td><td>DTSD341</td><td>2008106104003</td><td>0.2S</td><td>13/07/2021-12/07/2022</td></tr><tr><td>M4</td><td>DTSD341</td><td>2008106104002</td><td>0.2S</td><td>13/07/2021-12/07/2022</td></tr></table>
QA/QC procedures to be applied	The meter will be annually calibrated according to national standard. The electricity record will be cross checked with sales receipts.
Purpose of data	Calculation of baseline emissions
Calculation method	$EG_{facility,y} = EG_{export,y} - EG_{import,y}$ $EG_{export,y} = EG_{export,y,1} \times (EG_{export,y,3} / (EG_{export,y,3} + EG_{export,y,4}))$; $EG_{import,y} = EG_{import,y,1} \times (EG_{import,y,3} / (EG_{import,y,3} + EG_{import,y,4}))$;
Comments	/

Data / Parameter	$EG_{export,y,1}$; $EG_{export,y,3}$; $EG_{export,y,4}$
Data unit	MWh
Description	Annual Electricity exported to the grid.
Source of data	Measured by electricity meter (M1, M3, M4). M1 is the main meter and M2 is the backup meter, which are both managed, operated and maintained by the NCPG. M3 and M4 are the monitoring meters, which are respectively managed, operated and maintained by the project owner and NCPG. The project owner will read and record the main (M3) and backup (M4) instruments monthly. The accuracy of the meters is 0.2S. The cut-off time of recording of all meters is at 24:00 on the end of each month.
Description of measurement methods and procedures to be applied	Measured continuously and recorded monthly. $EG_{export,y} = EG_{export,y,1} \times (EG_{export,y,3} / (EG_{export,y,3} + EG_{export,y,4}))$ $EG_{export,y,1}$, $EG_{export,y,3}$, $EG_{export,y,4}$ are the electricity exported to the grid through the main power line metered by M1, M3, M4. $EG_{export,y,1}$: Annual electricity exported to the grid by the project and the first phase project which measured by meter M1; $EG_{export,y,3}$: Annual electricity exported to the grid by the project which measured by meter M3; $EG_{export,y,4}$: Annual electricity exported to the grid by the first phase project which measured by meter M4.

Frequency of monitoring/recording	Measured continuously and recorded monthly.
Value applied	116,631.025 (M1), 58,614.320 (M4), 57,088.908 (M3)
Monitoring equipment	The electricity is monitored by electricity meter with national standard.
QA/QC procedures to be applied	The meter will be annually calibrated according to national standard. the electricity record will be cross checked with sales receipts. M2 is the backup meter of M1 with accuracy of 0.2S.
Purpose of data	Calculation of baseline emissions
Calculation method	/
Comments	/

Name	Type	Serial No.	Accuracy	Calibration Date and valid date
M1	DTSD546	070813147254	0.2S	13/07/2021-12/07/2022
M2	DTSD546	070813147253	0.2S	13/07/2021-12/07/2022
M3	DTSD341	2008106104003	0.2S	13/07/2021-12/07/2022
M4	DTSD341	2008106104002	0.2S	13/07/2021-12/07/2022

Data / Parameter	$EG_{import,y,1}$; $EG_{import,y,3}$; $EG_{import,y,4}$
Data unit	MWh
Description	Annual Electricity exported to the grid.
Source of data	Measured by electricity meter (M1, M3, M4). M1 is the main meter and M2 is the backup meter, which are both managed, operated and maintained by the NCPG. M3 and M4 are the monitoring meters, which are respectively managed, operated and maintained by the project owner and NCPG. The project owner will read and record the main (M3) and backup (M4) instruments monthly. The accuracy of the meters is 0.2S. The cut-off time of recording of all meters is at 24:00 on the end of each month.
Description of measurement methods and procedures to be applied	Measured continuously and recorded monthly. $EG_{import,y}=EG_{import,y,1}\times(EG_{import,y,3}/(EG_{import,y,3}+EG_{import,y,4}))$ $EG_{import,y,1}$, $EG_{import,y,3}$, $EG_{import,y,4}$ are the electricity imported from the grid through the main power line metered by M1, M3, M4.

	$EG_{import,y,1}$: Annual electricity imported from the grid by the project and the first phase project which measured by meter M1; $EG_{import,y,3}$: Annual electricity imported from the grid by the project which measured by meter M3; $EG_{import,y,4}$: Annual electricity imported from the grid by the first phase project which measured by meter M4.
Frequency of monitoring/recording	Measured continuously and recorded monthly.
Value applied	104.367 (M1), 54.015 (M4), 48.201 (M3)
Monitoring equipment	The electricity is monitored by electricity meter with national standard.
QA/QC procedures to be applied	The meter will be annually calibrated according to national standard. the electricity record will be cross checked with sales receipts. M2 is the backup meter of M1 with accuracy of 0.2S.
Purpose of data	Calculation of baseline emissions
Calculation method	/
Comments	/

Name	Type	Serial No.	Accuracy	Calibration Date and valid date
M1	DTSD546	070813147254	0.2S	13/07/2021-12/07/2022
M2	DTSD546	070813147253	0.2S	13/07/2021-12/07/2022
M3	DTSD341	2008106104003	0.2S	13/07/2021-12/07/2022
M4	DTSD341	2008106104002	0.2S	13/07/2021-12/07/2022

4.3 Monitoring Plan

1. Monitoring data

The following parameters were measured directly by the onsite meters while the net electricity ($EG_{facility,y}$) supplied to the grid by the project will be calculated from the following parameters.

$$EG_{facility,y} = EG_{export,y} - EG_{import,y}$$

Where

$$EG_{export,y} = EG_{export,y,1} \times (EG_{export,y,3} / (EG_{export,y,3} + EG_{export,y,4}));$$

$$EG_{import,y} = EG_{import,y,1} \times (EG_{import,y,3} / (EG_{import,y,3} + EG_{import,y,4}));$$

$EG_{expor,y,1}$, $EG_{expor,y,3}$, $EG_{expor,y,4}$ are the electricity exported to the grid through the main power line metered by M1, M3, M4;
$EG_{import,y,1}$, $EG_{import,y,3}$, $EG_{import,y,4}$ are the electricity imported from the grid through the main power line metered by M1,M3,M4.

2. Organization Chart

This monitoring plan will be implemented by Chongli Construction Investment Huashi Wind Energy Co., Ltd, the project owner, and consultant appointed by the project owner. The project manager is responsible for the implementation and monitoring of the monitoring activity. There are 2 departments organized for data report, quality control. There is 1 manager responsible for data report and quality control department by 1 of each. The manager will take charge of the employment administration, as well as the operation implementation and monitoring; staffs will carry on the concrete assignment based on the guide of their manager. The monitoring system flowchart of this project is shown in following figure.

The relevant training will be implemented by the project owner and the equipment manufacturer before operation of the project.

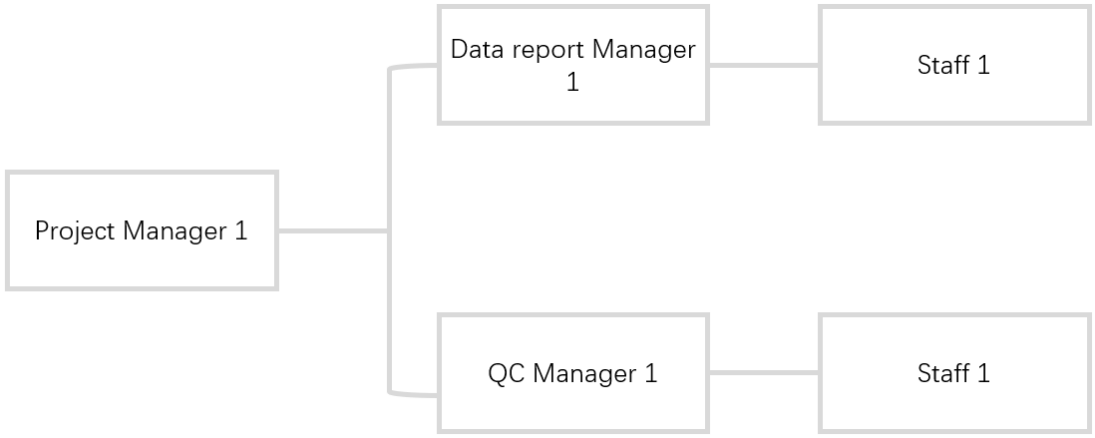


Figure 3. Monitoring structure

3. Metering System

The electricity generated by the project and the third phase project will be transmitted to an on-site 35kV/110kV transformer station that increase the voltage to 110kV, and then be delivered to Laiyuan Substation by main transmission line. The simplified electrical grid connection diagram is shown in the following figure 4:

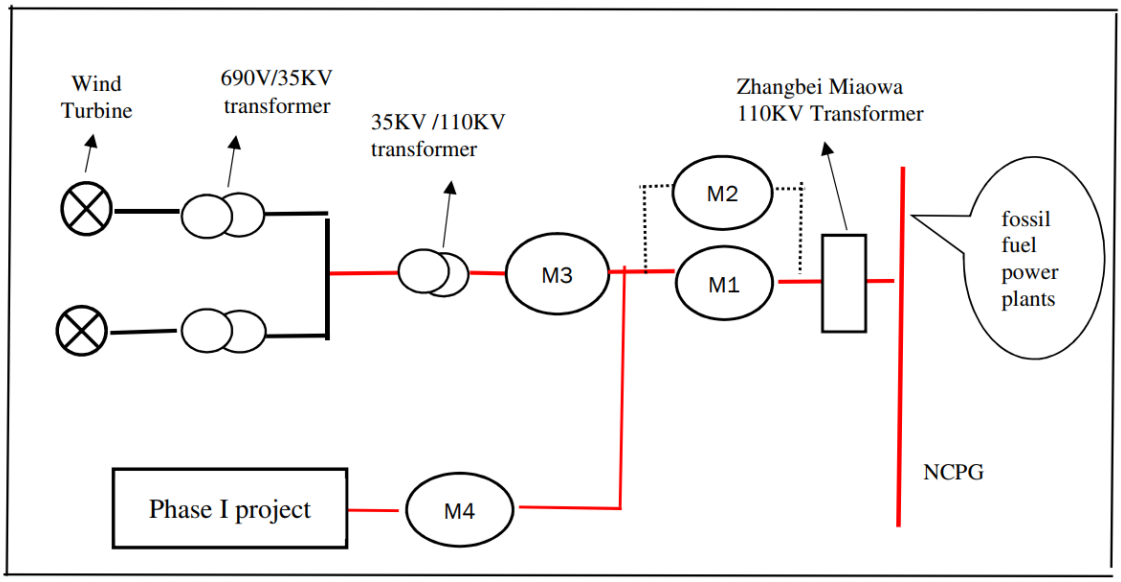


Figure 4. Simplified electrical grid connection diagram

The power line could not only supply electric power to the grid, but also could deliver power from the grid to the wind farm in case of emergencies. The metering equipment runs in two directions and will record two readings, i.e. electricity exported to the grid ($EG_{export,y}$) and electricity imported from the grid ($EG_{import,y}$).

In Figure 4, M1 is the main meter and M2 is the backup meter, which are both managed, operated and maintained by the NCPG. M3 and M4 are the monitoring meters, which are respectively managed, operated and maintained by the project owner and NCPG. The project owner will read and record the main (M3) and backup (M4) instruments monthly.

Net electricity supplied to the grid by the project is calculated on a monthly basis as:

$$EG_{facility,y}=EG_{export,y}-EG_{import,y}$$

Where

$$EG_{export,y}=EG_{export,y,1}\times(EG_{export,y,3}/(EG_{export,y,3}+EG_{export,y,4}));$$

$$EG_{import,y}=EG_{import,y,1}\times(EG_{import,y,3}/(EG_{import,y,3}+EG_{import,y,4}));$$

$EG_{expor,y,1}$, $EG_{expor,y,3}$, $EG_{expor,y,4}$ are the electricity exported to the grid through the main power line metered by M1, M3, M4;

$EG_{import,y,1}$, $EG_{import,y,3}$, $EG_{import,y,4}$ are the electricity imported from the grid through the main power line metered by M1,M3,M4.

4. Internal audit and QA/QC

The metering equipments will be properly calibrated and checked annually by an independent third party according to relevant national standard to ensure its accuracy.

The measurement of the whole production data is conducted by the monitoring plan and reviewed by the project manager. The project manager would check and make sure that all the staff would conduct monitoring activities according to the monitoring plan. All the data are recorded correctly. The meter records would be crosschecked with the sales receipts.

All physical documents including the readings in electronic and manual form of the Meters will be stored by the project owner and kept one copy in order to facilitate the verification of DOE.

The monthly records of power supplied to the grid and received from the grid, relevant accounting documents, the results of calibration shall be collected by the project owner. All data collected as part of monitoring will be kept at least for 2 years after the end of the last crediting period by the project owner.

5. Procedure in case of damaged metering equipment

Damages to metering equipment:

In case metering equipment is damaged and no reliable readings can be recorded, the project owner will estimate net supply by the project activity according to the following procedure:

1) In case the main meter is damaged:

By reading the backup meter.

2) In case both the main meter and the backup are damaged:

- The project owner and the grid company will jointly 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 project entity will furthermore document all efforts taken to restore normal monitoring procedures.

6. Procedures for handling non-conformances with the validated monitoring plan.

In case of emergencies, the project entity will not claim emission reductions due to the project activity for the duration of the emergency. The project entity will follow the following procedure for declaring the emergency period to be over:

1) The project entity will ensure that all requirements for monitoring of emission reductions have been re-established.

2) The monitoring officer and the head of operations of the wind farm will both sign a statement declaring the emergency situation to have ended and normal operations to have resumed.

7. Monitoring Report

The Project owner will annually prepare a monitoring report which includes a summary of operations, values of power supplied to and received from the grid, and calculation of emission reductions.

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

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

Where:

BE_y is the baseline emissions (tCO_2e)

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

$EF_{grid,CM,y}$ is the CO_2 emission factor of the NCPG, which is fixed in the first and second crediting period (tCO_2e/MWh)

On the basis of these weights for the second crediting period, the combined margin emission factor ($EF_{CM,y}$) is calculated, and are fixed as 0.84045 tCO_2/MWh.

	CO_2 emission factor (tCO_2/MWh)	Weighting
Simple operating Margin Emissions Factor ($EF_{grid,OM\ simple,y}$)	0.9680	0.75
Build Margin Emissions Factor ($EF_{grid,\ BM,y}$)	0.4578	0.25
Baseline Emissions Factor ($EF_{grid,CM,y}$)	0.84045	

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

Table 2. Baseline emissions

Period	$EG_{export,y}$ (MWh)	$EG_{import,y}$ (MWh)	$EG_{facility,y}$ (MWh)	$EF_{grid,CM,y}$ (tCO_2/yr)	Baseline Emissions (tCO_2e)
01/12/2021-31/12/2021	10,946.684	3.386	10,943.298	0.84045	9,197
Total in 2021	**10,946.684**	**3.386**	**10,943.298**	**0.84045**	**9,197**
01/01/2022-31/01/2022	10,968.656	10.230	10,958.426	0.84045	9,210
01/02/2022-28/02/2022	10,153.346	8.254	10,145.092	0.84045	8,526
01/03/2022-31/03/2022	9,974.814	9.178	9,965.636	0.84045	8,375
01/04/2022-30/04/2022	7,437.651	8.957	7,428.693	0.84045	6,243
01/05/2022-31/05/2022	8,065.286	9.143	8,056.144	0.84045	6,770
Total in 2022	**46,599.752**	**45.761**	**46,553.991**	**0.84045**	**39,124**
Total in this monitoring period	**57,546.437**	**49.147**	**57,497.289**	**0.84045**	**48,321**

The monthly data are shown in appendix 1.

5.2 Project Emissions

According to the ACM0002, the emission of wind power project activity is zero, i.e. PEy=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 renewal VCS PD, $ER_y=BE_y - PE_y$

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)
01/12/2021 to 31/12/2021	9,197	0	0	9,197
01/01/2022 to 31/05/2022	39,124	0	0	39,124
Total	**48,321**	**0**	**0**	**48,321**

This monitoring period is from 01/12/2021 to 31/05/2022 (182 days). The estimated annual GHG emission reductions during the second crediting period (from 08/01/2019 to 07/01/2029) are 91,610 tCO_2e/yr.

The emission reductions claimed are 48,321 tCO_2e in this monitoring period (i.e. 182 days). Compared with expected emission reductions 45,680tCO_2e (calculated as 91,610/365*182) in the renewal VCS PD, the reported emission reductions in this monitoring period are 5.78% larger than the expected, which 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 19.1% 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.

APPENDIX 1: < MONTHLY AND YEARLY ELECTRICTY SUPPLY >

Period	EGexport,y,1			EGexport,y,4	EGexport,y,3	EGexport,y	EGimport,y,1			EGimport,y,4	EGexport,y,3	EGimport,y	EGfacility,y
	Electricity from meter readings (MWh)	Values from receipts (MWh)	Conservative value (MWh)	Electricity from meter readings (MWh)		Calculated data for ER calculation (MWh)	Electricity from meter reading (MWh)	Values from receipt (MWh)	Conservative value (MWh)	Electricity from meter readings (MWh)		Calculated data for ER calculation (MWh)	Amount of net electricity delivered by the project to the grid (MWh)
	A	B	C=min(A,B)	D	E	F=C×E/(D+E)	A	B	C=max(A,B)	B1	C1	D1=A1×C1/(B1+C1)	
2021/12/01~2021/12/31	22,710.224	22,710.224	22,710.224	11683.291	10872.008	10,946.684	11.790	11.790	11.790	8.012	3.228	3.386	10,943.298
2021Total	**22,710.224**	**22,710.224**	**22,710.224**	**11683.291**	**10872.008**	**10,946.684**	**11.790**	**11.790**	**11.790**	**8.012**	**3.228**	**3.386**	**10,943.298**
2022/01/01~2022/01/31	21,804.335	21,804.335	21,804.335	10800.283	10932.825	10,968.656	20.683	20.683	20.683	10.221	10.003	10.230	10,958.426
2022/02/01~2022/02/29	21,287.905	21,287.905	21,287.905	10991.807	10023.173	10,153.346	17.622	17.622	17.622	9.117	8.032	8.254	10,145.092
2022/03/01~2022/03/31	19,255.716	19,255.716	19,255.716	9213.446	9902.315	9,974.814	20.003	20.003	20.003	10.719	9.088	9.178	9,965.636
2022/04/01~2022/04/30	14,635.043	14,635.043	14,635.043	7092.268	7329.017	7,437.651	16.715	16.715	16.715	7.651	8.834	8.957	7,428.693
2022/05/01~2022/05/31	16,937.802	16,937.802	16,937.802	8833.225	8029.570	8,065.286	17.554	17.554	17.554	8.295	9.016	9.143	8,056.144
2022Total	**93,920.801**	**93,920.801**	**93,920.801**	**46,931.029**	**46,216.900**	**46,599.752**	**92.577**	**92.577**	**92.577**	**46.003**	**44.973**	**45.761**	**46,553.991**
Total	**116,631.025**	**116,631.025**	**116,631.025**	**58,614.320**	**57,088.908**	**57,546.437**	**104.367**	**104.367**	**104.367**	**54.015**	**48.201**	**49.147**	**57,497.289**

APPENDIX 2: < DESCRIPTION OF EMPLOYMENT AND SALARY>

Evidence for SDG7.2, 8.5 and 13.0

The electricity supplied during this monitoring period between 01/12/2021 to 31/05/2022 is 57,497.289 MWh. The emission reduction generated from the project during this monitoring period is 48,321 tCO_2e as mentioned in section 5.4 above, which is calculated from meter(s) readings and Sales receipts provided by the project owner, which will be verified by VVB.

The list of employees of the project activity is shown as below.

说 明

河北崇礼清三营二期 49.3MW 风电项目，建设阶段为当地提供了超过 300 个工作岗位，并在项目运营期间提供 40 个永久工作岗位。截至目前，员工人数共计 40 人，女员工 16 人，其中 10 名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 年人均税后工资为 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！

崇礼建投华实风能有限公司

2022 年 11 月 10 日

Hebei Chongli County Qingsanying Second Phase 49.3 MW Wind Power Project has provided more than 300 local jobs during the construction phase and 40 permanent jobs during the project operation. Up to now, the total number of employees is 40, including 16 female employees, 10 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. In 2022, the per capita after-tax salary is 5,000 Yuan RMB/month. In the next step, the project company will add more jobs to help villagers find jobs nearby.

Chongli Construction Investment Huashi Wind Energy Co., Ltd.

Nov 10, 2022