



CECIC HKC GANSU CHANGMA WIND FARM PROJECT

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Project ID	717
Monitoring period	01-January-2022 to 30-April-2023
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Prepared by	Smart Carbon Environment & Energy Limited

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PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

CECIC HKC Gansu Changma Wind Power project (hereinafter referred as “the Project”) is located in Yumen Town, Yumen City, Gansu Province, People's Republic of China. The purpose of the Project is to generate electricity using wind power resources in the project region and to deliver to the Northwest China Power Grid (NWPG) which is predominated by connected fossil fuel fired power plants, especially coal fired plants. So, the Project can reduce GHG emissions by replacing the electricity generated by fossil fuel fired power plants in NWPG.

The Project involves the installation of 134 wind turbines with 1.5MW capacity per unit, with a total installed capacity of 201MW, and is expected to generate 431,949 MWh of clean electricity annually. This generated electricity will partially displace electricity currently generated from grid connected conventional fossil fuel based thermal power plants, while reducing emissions of 336,628 tCO₂ annually.

The Project has been registered as a VCS project (No. 717).

The Project started construction on 16-June-2008. The first wind turbine of the Project started commissioning on 21-November-2009. The Project was put into full operation on 15-December-2011. This monitoring period is from 01-January-2022 to 30-April-2023, which is included in the second VCS crediting period that is from 21-November-2019 to 20-November-2029. The emission reductions in this monitoring period is 439,912 tCO₂e.

1.2 Audit History

Audit type	Period ¹	Program	Validation/verification body name	Number of years
Validation	31-May-2011	CDM	TÜV Rheinland (China) Ltd.	/
Validation (validation of changes in PDD)	23-August-2012	CDM	SGS United Kingdom Ltd	/
Validation (renewal of the crediting period)	20-January-2021	VCS	CTI Certification Co., Ltd.	/
Verification	21-November-2009 - 23-September-2011	VCS	LGAI Technological Center, S.A.	1.84

¹ In respect to “validation”, the completion date of the final validation report is provided here.

Verification	24-September-2011 – 28-April-2012	CDM	SGS United Kingdom Ltd	0.60
Verification	29-April-2012 – 28-September-2012	CDM	SGS United Kingdom Ltd	0.42
Verification	29-September-2012 – 31-December-2012	CDM	SGS United Kingdom Ltd	0.26
Verification	01-January-2013 – 31-December-2014	CDM	CTI Certification Co., Ltd.	2.00
Verification	01-January-2015 – 31-December-2015	CDM	CTI Certification Co., Ltd.	1.00
Verification	01-January-2016 – 23-September-2018	VCS	LGAI Technological Center, S.A.	2.73
Verification	24-September-2018 – 28-September-2019	VCS	LGAI Technological Center, S.A.	1.01
Verification	29-September-2019 – 31-December-2020	VCS	LGAI Technological Center, S.A.	1.26
Verification	01-January-2021 – 31-December-2021	VCS	CTI Certification Co., Ltd.	1.00
Verification	01-January-2022 – 30-April-2023	VCS	CTI Certification Co., Ltd.	1.33
Total	21-November-2009 – 30-April-2023	CDM& VCS	/	13.45

1.3 Sectoral Scope and Project Type

Sectoral scope ²	Sectoral scope 1: energy industries (renewable - / non-renewable sources).
Project activity type	Renewable energy Project. Grid connected wind power project
Sectoral scope	Not applicable as this is not an AFOLU project
AFOLU project category ³	Not applicable as this is not an AFOLU project

² Projects, activities, or methodologies may be developed under any of the 16 VCS sectoral scopes: <https://verra.org/programs/verified-carbon-standard/vcs-program-details/#sectoral-scopes>

³ See Appendix 1 of the VCS Standard

Project activity type	Not applicable as this is not an AFOLU project
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1.4 Project Proponent

Organization name	CECIC HKC Gansu Wind Power Co., Ltd.
Contact person	Lv Xin
Title	Office manager
Address	12F, A Building Jieneng Mansion, No.42 Xizhimen North Street, Haidian District, Beijing, 100082
Telephone	+86/10/62248705
Email	lvxin@cecwpc.cn

1.5 Other Entities Involved in the Project

Organization name	Smart Carbon Environment & Energy Limited
Role in the Project	Consultancy
Contact person	Li Jing
Title	Manager
Address	No.145 Chaoyang North Road, Chaoyang District, Beijing, P. R. China.
Telephone	86-13810160876
Email	carbon@bjsmartcarbon.com

1.6 Project Start Date

Project start date	21-November- 2009
Justification	It is the date when the first turbine was commissioned, which is also the first date that generates GHG emission reductions.

1.7 Project Crediting Period

Crediting period	☐ Seven years, twice renewable ☐ Ten years, fixed ☒ Other
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	There is a deviation on the project crediting period. For the first monitoring period under the VCS program, the requested project crediting period was 21-November-2009 to 23-September-2011. However, since the project was registered as a VCS project under VCS 3, and completed validation before 19-March-2020, thus it remains eligible to apply the crediting period requirements under VCS Version 3, according to which the crediting period is applicable to a maximum of 10 years which may be renewed at most two times. So, the first renewable crediting period was updated from 21-November-2009-23-September-2011 to 21-November-2009 to 20-November-2019 which covers 10 years. The project is also a registered CDM project (Ref.3670) 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 21-November-2009 and the lifetime of the project is about 20 years. The total VCS crediting period was determined from 21-November-2009 to 20-November-2029, of which the first VCS crediting period is from 21-November-2009-20 to November-2019 and the second VCS crediting period is from 21-November-2019 to 20-November-2029 (10 years).
Start and end date of first or fixed crediting period	21-November-2009 to 20-November-2019

1.8 Project Location

The Project is located 7-10 km southwest of Yumen Town, Yumen City, Gansu Province in the People's Republic of China. It is located at Latitude between 40.1417° N and 40.2572° N, Longitude between 96.8583° E and 96.9575° E.



Figure 1. Project location

1.9 Title and Reference of Methodology

Type (methodology, tool or module).	Reference ID, if applicable	Title	Version
Methodology	ACM0002	Grid-connected electricity generation from renewable sources	Version 20.0
Tool	TOOL07	Tool to calculate the emission factor for an electricity system	Version 07.0
Tool	TOOL11	TOOL11: Assessment of the validity of the original/current baseline and update of	Version 03.0.1

		the baseline at the renewal of the crediting period	
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1.10 Double Counting and Participation under Other GHG Programs

1.10.1 No Double Issuance

Is the project receiving or seeking credit for reductions and removals from a project activity under another GHG program?

☐ Yes ☒ No

1.10.2 Registration in Other GHG Programs

Is the project registered or seeking registration under any other GHG programs?

☒ Yes ☐ No

This project has been registered as a CDM project on 24-September-2011, the UNFCCC reference number is 3670, and the emission reductions during 24-September-2011 to 31-December-2015 were issued as CERs. All emission reductions during this monitoring period have not and will not seek issuance under other kind of GHG programs. Emission reductions during this monitoring period will only seek issuance under VCS program

1.11 Double Claiming, Other Forms of Credit, and Scope 3 Emissions

1.11.1 No Double Claiming with Emissions Trading Programs or Binding Emission Limits

Are project reductions and removals or project activities also included in an emissions trading program or binding emission limit? See the VCS Program Definitions for definitions of emissions trading program and binding emission limit.

☐ Yes ☒ No

1.11.2 No Double Claiming with Other Forms of Environmental Credit

Has the project activity sought, received, or is planning to receive credit from another GHG-related environmental credit system? See the VCS Program Definitions for definition of GHG-related environmental credit system.

☐ Yes ☒ No

1.11.3 Supply Chain (Scope 3) Emissions

Do the project activities affect the emissions footprint of any product(s) (goods or services) that are part of a supply chain?

The proposed project is a wind power project to generate electricity using wind power resources in the project region and to deliver to the Northwest China Power Grid (NWPG). The project does not use any products in the supply chain other than wind sources. Therefore, the project activities does not affect the emissions footprint of any products.

☐ Yes

☒ No

1.12 Sustainable Development Contributions

The project utilizes wind resources for electricity generation, located in Yumen Town, Yumen City, Gansu Province in the People's Republic of China. In this monitoring period, The project supplied 564,508.851 MWh renewable electricity to NWPG during this monitoring period, which contributes to SDG 7.

27 local people have been employed as long-term job opportunities by the end of this monitoring period, which has a positive effect on the local economy and contributes to SDG 8.

The project achieved 439,912 tCO₂e emission reductions during this monitoring period which contributes to SDG 13.

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

Table 1: Sustainable Development Contributions

Row number	SDG target	SDG indicator ⁴	Net impact on SDG indicator	Current project contributions	Contributions over project lifetime
1)	7.2	Quantity of renewable energy supplied to the power grid	Implemented activities to increase	During this monitoring period, 564,508.851 MWh of electricity from renewable sources has been exported to the power grid.	From the operation start date of this project activity to the end of this monitoring period 5,226,124.374 MWh of electricity from renewable sources has been exported to the power grid.
2)	8.5	The number of long-term jobs by the implementation of the project.	Implemented activities to increase	No further changes this monitoring period	27 people have been employed by the project as long-term employee by end of the reporting period.
3)	13.0	Tonnes of greenhouse gas emissions avoided or removed	Implemented activities to increase	During this monitoring period, the project has achieved GHG emission reductions of 439,912 tCO ₂ e.	From the operation start date of this project activity to the end of this monitoring period, the project has achieved GHG emission reductions of 5,269,777 tCO ₂ e.

⁴ According to the requirement of the VCS MR template v4.4: "Where a project's self-defined measure for tracking a benefit does not align with an official SDG indicator, do not provide an indicator number. Instead, write a project-specific indicator that relates to the most appropriate SDG target", the project uses self-defined project level indicator to measure the contribution to the SDGs.

1.13 Commercially Sensitive Information

No commercially sensitive information has been excluded from the public version of the monitoring report.

2 SAFEGUARDS AND STAKEHOLDER ENGAGEMENT

2.1 Stakeholder Engagement and Consultation

2.1.1 Stakeholder Identification

Stakeholder Identification	The stakeholders have been identified as individuals who will be directly or indirectly impacted due to the project activity. Direct stakeholders are those who deemed to either have a direct influence on the project or be directly influenced by the project, including but not limit to staff of the wind power project and local residents..		
	Stakeholder Category	Direct/Indirect Affected Direct	Relevance to the Project Activity
	The staff of the wind power project	Direct	The project provided jobs for them.
	Local residents around the project site	Direct	The project can provide them with new jobs and renewable energy.
	Local government including development and reform commission, ecological environment bureau	Direct	Approval for construction and operation of the project. Daily supervision of normal operation of the project.

Legal or customary tenure/access rights	The project is located in Gobi desert areas, which is owned by the state as stipulated by law. Before the construction of the project, local Development and Reform Commission and Ecological Environment Bureau approved the land use and project construction on behalf of the local government. There is no uncertainty or change in land tenure arrangements, resource access rights, community-based property rights and customary rights, access rights or land ownership.
Stakeholder diversity and changes over time	Stakeholder diversity: The staff of the project, the local residents around the project site, and the local government are affected by the project activity directly. Part of employees are mainly from the project area, and they have different levels of education and skills, and income levels may vary. The farmers around the project live in different villages, and they may have different social networks and ways of interacting. Workers in government departments may come from different backgrounds and have different expertise and experience. Government authorities are responsible for regulating and approving the operation of the project, and different government authorities may have different policies and regulations. Over time, the members of each group will adjust, but their groups does not change much in terms of society, economy, culture, etc.
Expected changes in well-being	The implementation of the project is expected to have a positive impact on the well-being and other characteristics of stakeholders. Relative to the baseline scenario of electricity delivered to NWPG by the project that would otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid, the project bring about the following changes:

	Local people's well-being: The construction and operation of the project provide employment opportunities for the local people, 27 persons have been employed by the project as long-term employee period. Social welfare: The implementation of the project promoted the local economic development, and provided employment opportunities. Climate change Impact: The Project generates electricity from renewable source to displace equal electricity generated from NWPG, which is dominated by fossil fuel fired power plants. Collectively, these changes have a positive impact on villagers' livelihoods and living environment around the project site.
Location of stakeholders	This project is a wind power project, which is located in Gobi desert areas, not towns or urban residential areas. It is expected to be affected by the project in the villages near the project. That is Yumen Town, Yumen City, Gansu Province, P. R. China. The project is geographically located in Gobi desert areas, which is over 5km from the local people live area. The stakeholders Local Communities in Yumen Town can use the electricity generated by this renewable power plant and have chances to be employed by the project. The areas outside the project area that are predicted to be impacted by the project is the other counties near Yumen Town, Yumen City, Gansu Province, P. R. China, the peoples live in the area can also use the electricity generated by this renewable power plant. The project has no negative impacts on these peoples.
Location of resources	The location of territories and resources which stakeholders own or to which they have customary access are located in Yumen Town, Yumen City, Gansu Province, P. R. China.

2.1.2 Stakeholder Consultation and Ongoing Communication

Ongoing consultation	For continuous communication with local stakeholders, the project owner public its office telephone to local people and put a grievance notebook in the office of the company. Anyone who have comments on the project could write on the book or leave messages by phone
Date(s) of stakeholder consultation	01-January-2022 to 30-April-2023 (this monitoring period)
Communication of monitored results	This project is a wind power project, according to the requirements of methodology, the parameters that need to be monitored are the electricity supplied to the grid and imported from grid. The monitoring data during a monitoring period compiled into a monitoring report and published on the VCS website, anyone who concerns about this project can know the monitoring results in time. At the same time, comments and suggestions from stakeholders regarding the project also will be recorded, and the handling results will be notified to stakeholders via phone or other contact information left by the stakeholders.
Consultation records	For the comments and suggestions from stakeholders on the grievance notebook, the project manager will handle these suggestions, They will communicate with the stakeholders through phone or other contact information left by the stakeholders, and notify them of the final handling results. All the comments and suggestions, the communication process, and the final results will be recorded as a report, which will be saved in the company's management documents. During this monitoring period, the project has not received any complaints, comments or suggestions from stakeholders, therefore, no records on the process or methods to document the outcomes of the stakeholder consultation.
Stakeholder input	During this monitoring period, the project has not received any complaints by telephone or in the grievance notebook from stakeholders.

2.1.3 Free, Prior, and Informed Consent

Consent

In order to obtain the consent and reach a transparent agreement from the stakeholders involved in the implementation of the project activities, , consultations were carried out in the Yumen Town by the project owner on 06-March-2008.

The consultations included two parts. One is questionnaire survey, and the another is the meeting among local people with the developer.

Conclusions of the questionnaire:

On 06-March-2008, 44 participants attended the local stakeholder's meeting including local residents, builders and members of the local authorities. The survey had a 100% response rate with all questionnaires returned. The key findings of the survey and the summary of the consultation are as following:

- 100% of respondents agree with the development and construction of the project.
- 100% of the respondents believe that the proposed project will have no negative impact on their living, studying and working environments.
- 100% of the respondents believe that the project implementation will have a positive impact on their lives.

The stakeholder meeting and the survey showed that the project receives strong support from the local community. They all believe the proposed project will promote local economic development and agree with the project development and construction.

Conclusions of the meeting discussions:

Every stakeholder expressed their comments for the proposed project. To date, no negative comments have been received. The summary of stakeholder meeting's comments is as following:

- Promote the local economic development

	The local government strongly supports the development and construction of the proposed Project. It increased local financial income and promote technological progress of local building materials, tower tube manufacturing, and other related industries. •Local environment protection According to the project EIA report, the noise level of the installed turbines is below the national standard. The proposed Project site is located in the Gobi desert area. Moreover, there are no residents or industrial firms near the project site. Furthermore, there are no issues related to noise and communications signal interference, or to bird migration. •Improve the living condition of local residents the project created employment opportunities through the project construction and operation. the project also purchase the raw materials for construction and other supplies from the local market. Therefore, the local people benefited from the project.
Outcome of FPIC	The project land is Gobi desert area land, does not occupy the villagers' house land, permanent basic farmland, is not in the range of prohibited cultivation area, has obtained the approval from local Development and Reform Commission and Ecological Environment Bureau. Therefore, the project does not involve land encroachment, non-consensual resettlement of residents and forced relocation. Prior to the commencement of the project, adequate communication was conducted with the local peoples, including the key project schedule, Project details, environmental protection, carbon development, risks, benefits, etc. have been disclosed and fully communicated in advance. All relevant arrangements are made with the free, prior and informed consent of stakeholders. All stakeholders expressed full support for the project.

2.1.4 Grievance Redress Procedure

Grievances received	Resolution and outcome
In order to resolve complaints related to the project, PP has developed a complaint resolution process with stakeholders to ensure fair, transparent and timely processing. Here are the grievance resolution steps we have developed in partnership with our stakeholders: 1. Receiving Complaints: Any complaints related to the project will be received and recorded. The project owner has placed a comment book in the front office of the company and posted the contact person and contact information for stakeholders to submit complaints, either in writing, orally or through a designated contact person. 2. Hearing: Once a complaint is received, PP will schedule a hearing or meeting so that stakeholders can express their views and concerns. This will provide an open platform to ensure that all relevant information is fully considered. 3. Response: Following the hearing or meeting, PP will provide a written response confirming that they have understood and documented the stakeholder's complaint and explaining the actions they will take. This will ensure transparency and continuity of communication. 4. Resolution of Complaints: PP will use our best efforts to resolve complaints within a reasonable period of time. This may include adopting appropriate conflict resolution methods, such as mediation, negotiation or other appropriate solutions. They will work with stakeholders to ensure they are satisfied with the solution. These complaint resolution steps will ensure that we are able to address any project-related complaints in a timely and fair manner, while respecting the rights and concerns of the stakeholders. No complaints were received during the monitoring period	N/A

2.1.5 Public Comments

Summary of comments received	Actions taken
The Project has not received any complaints or comments during or outside the public comment period.	N/A

2.2 Risks to Stakeholders and the Environment

	Risk identified	Mitigation or preventative measure taken
Risks to stakeholder participation	No risk identified	The project is located in stated owned Gobi desert area, is not in the farmland, forbidden zone, restricted zone. According to the approval from local Development and Reform Commission and Ecological Environment Bureau, the project conforms to the local environmental protection and economy development policy. Therefore, the project has no impact on land loss, yield loss, livelihoods of the local population and climate change.
Working conditions	No risk identified	The project has strictly implemented national and industry regulations and standards on labor safety and health, as well as Chinese labor law and local requirements, mitigation measures have been undertook as per the approved EIA and carry out regular occupational health and safety testing every year to ensure the safety and healthy working environment.
Safety of women and girls	No risk identified	This program does not admit underage girls. In the design phase of the project, the safety of

		women was taken into account and corresponding preventive measures were taken. For example, establish safe sanitation facilities to ensure that women are not subjected to gender discrimination or gender-based violence in the management of their faces. During the implementation of the project, all personnel involved in the project are regularly trained in gender sensitivity, including awareness of gender discrimination and gender-based violence, and how to prevent and respond to these issues. The project has established effective monitoring and reporting mechanisms so that women can report any safety issues or acts of gender discrimination, ensuring that their voices are adequately addressed and protected.
Safety of minority and marginalized groups, including children	No risk identified	Project activities provided equal job opportunities, does not discriminate against marginalized groups, and provided some social support and assistance for local marginalized groups; The project does not recruit child workers. Therefore, the project does not pose a risk to marginalized groups, including children.
Pollutants (air, noise, discharges to water, generation of waste, release of hazardous materials)	The pollutants of dust, noise, solid waste and waste water during the construction, few living wastes, noise and waste water during operation are identified.	Air pollution and Dust: The air pollution during construction mainly comes from flying dust produced by excavating land, as well as some exhaust discharge from transportation vehicles and construction machinery. Since the

		project site is far away from the nearest local residential area (over 5km), there is no impact on local residents from dust and air pollution. The main impact is on the construction staff and appropriate measures such as watering and converting has been taken to reduce any negative impact and ensure staff safety. Noise: The noise mainly comes from the drilling machines and cement mixers during the construction period, and aerodynamic interaction between the wind and turbine blades during operation. Although the operating level of these turbines is around 100dB, at a range of 150 meters from the turbines the noise weakens to 33dB, which is below the national standard of 45dB. As the proposed project is far away from any residential area, effects of noise pollution on the surrounding environment are not significant. Solid waste: Solid waste mainly comes from construction and living waste. During the construction period, construction waste was properly disposed to avoid water and soil erosion problems. the project generated living wastes of 87 kg per day during construction, and reduced to 15 kg per day during operation. The waste during the construction period and operation period was
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		properly collected and delivered to the local county for disposal. Waste water: The waste water generated during the construction includes washing water from machines and waste water from the project office. Since the project site is located in the Gobi desert area, the waste water was reused on the construction site or as fertilizer. During operation, the waste water and sewage was treated by using a septic tank and all-in-one biochemical process equipment to recycle and reuse water on the project site. The treated waste water was used for on-site greening and road spreading. The treated waste water quality met the requirement of the Fields Irrigation Water Standard (GB 5084-1992), therefore, it has no negative impact on the surrounding environment.
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2.3 Respect for Human Rights and Equity

2.3.1 Labor and Work

Discrimination and sexual harassment	The project does not involve or engage in any form of discrimination based on gender, race, religion, sexual orientation or any other grounds. The program respects all rights granted to women by the Constitution of the People's Republic of China, the Labor Law of the People's Republic of China, and the Special Provisions on Labor Protection for Women Workers. There have been no complaints of sexual harassment since the project began. And the project has established a monitoring mechanism for complaints about sexual harassment to ensure that sexual harassment will not happen in the future.
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Management experience	The PP's management team has the experience and expertise to effectively implement similar project activities. The team members have many years of working experience in the field of wind power plant with relevant skills and expertise in project planning, implementation and supervision to effectively manage and drive the implementation of the project. In addition, the PP have developed a recruitment strategy to fill gaps in skills and experience that may exist in the team. They will be looking for people with relevant experience and expertise to join the team to ensure that the project is supported and guided.
Gender equity in labor and work	The project has male and female employees of different genders, and there are female employees in management positions. There is no significant gender difference between female employees and male employees in terms of salary, promotion opportunities and welfare benefits, and employees of different genders have equal opportunities to obtain training and development resources. In regular employee satisfaction surveys, all employees feel that the project is treated equally in terms of gender and pay.
Human trafficking, forced labor, and child labor	The project adopts a compliant recruitment and employment policy to ensure that the recruitment and employment policies comply with relevant ILO standards and do not involve any form of human trafficking, forced Labour and child Labour. PP conducted comprehensive background checks and comply with local labor laws and regulations to ensure that employees are not exploited and abused. The project has put in place monitoring mechanisms to ensure that all employees and partners involved in the project are not involved in human trafficking, forced Labour and child Labour. PP conducts regular on-site inspections and audits to ensure that there are no violations of labor rights during the implementation of the project. The PPs work with partners who share the same commitment to labor rights to ensure that the entire supply chain is free from human trafficking, forced labor and child labor. The project provides training to employees and partners on human trafficking, forced Labour and child Labour to increase their awareness of these issues and how to avoid and report possible violations.

2.3.2 Human Rights

The project is geographically located in Gobi desert areas, which is over 5km from the local people live area, no IPs, LCs, or customary rights holders identified. The project provides training and employment opportunities for local people in the town nearby. In accordance with applicable laws such as International Human Rights Law, and relevant Chinese laws such as the Constitution of the People's Republic of China, the Labor Law of the People's Republic of China, , the Law of the People's Republic of China on the Protection of Women's Rights and Interests, the Law of the People's Republic of China on the Protection of Minors etc., the right for the employee was fully considered.

2.3.3 Indigenous Peoples and Cultural Heritage

communities to upgrade their skills and participate in project implementation.

The project is geographically located in Gobi desert areas, which is over 5km from the local people live area, there is no cultural heritage to be protected in or around the project site.

2.3.4 Property Rights

Disputes over rights to territories and resources	The project is located in stated owned Gobi desert area, is not in the farmland, forbidden zone, restricted zone. The project got the approval from government about the land use, does not involve any possible conflicts of rights.
Respect for property rights	The project was designed, installed and performed by the project owner, does not involve any possible conflicts of the property rights of stakeholders.

2.3.5 Benefit Sharing

The proposed project is a wind power project to generate electricity using wind power resources in the project region and to deliver to the Northwest China Power Grid (NWPG). The project is located in the state owned Gobi Desert region. Before the project construction, the project owner obtained the land use right, and the local Development and Reform Commission, Land and Resources Bureau, and Ecological Environment Bureau approved the land use and project construction on behalf of the local government. Moreover, the project was designed, installed and performed by the project owner, does not involve any possible conflicts of the property rights of stakeholders. Therefore, the project has no benefit sharing occurred during the whole crediting period.

Summary of the benefit sharing plan	N/A
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Benefit sharing during the monitoring period	N/A
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2.4 Ecosystem Health

	Risk identified	Mitigation or preventative measure taken during the monitoring period
Impacts on biodiversity and ecosystems	No risk identified	According to the EIA and it's approval there was not risk identified on biodiversity and ecosystems
Soil degradation and soil erosion	No risk identified	This project is a wind power project that occupies land during construction and has been approved. No land will be used during operation, there was not risk identified on Soil degradation and soil erosion
Water consumption and stress	No risk identified	This project is a wind power project and does not use water resources, there was not risk identified on Water consumption and stress.
Usage of fertilizers	No risk identified	This project is a wind power project, do not use any fertilizers.

2.4.1 Rare, Threatened, and Endangered species

The project is not located in or near the habitat of rare, threatened or endangered animals, according to the official websites of national and local environmental authorities and nature conservation agencies and the approved EIA.

2.4.2 Introduction of species

N/A. This table is not required for projects with no planting or species introduction.

2.4.3 Ecosystem conversion

Not applicable. The project is not an ARR, ALM, WRC or ACoGS project.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The project installed 134 sets of wind turbine, each of which has a rated installed capacity of 1,500kW, providing a total installed capacity of 201MW. The estimated electricity delivered to NWPG by the project is 431,949MWh per year and the average annual operating hours is 2,149h with a power load factor of 24.53%.

The project employs turbines manufactured by China's Dongfang Steam Turbine Manufacture.

Key technical parameters of main equipment in the project are shown in the following table 2.

Table 2. Key technical parameters of main equipment in the project.

Item	FD77A/1500
1. Data for Unit	
Rated capacity (kW)	1500
Number of unit	134
Capacity control method	Pitch-controlled
Turbine diameter (m)	77
Hub height (m)	70
Cut in wind speed (m/s)	3.0
Rated wind speed (m/s)	12.5
Cut out wind speed (m/s)	20
Wind speed limit (m/s)	53.3
Technical lifetime (y)	20
Material of blade	GRP
Blade tip speed (m/s)	69.6
2. Generator	
Type of generator	Double-fed induction generator
Rated capacity (kW)	1500
Output Voltage (V)	690
Rated speed (rpm)	1000-1800 (+10.0%)

The electricity generated by the project is exported to the NWPG, via a 35kV/110kV transformer substation located within the project site. The technical process in the project can be shown as following diagram:

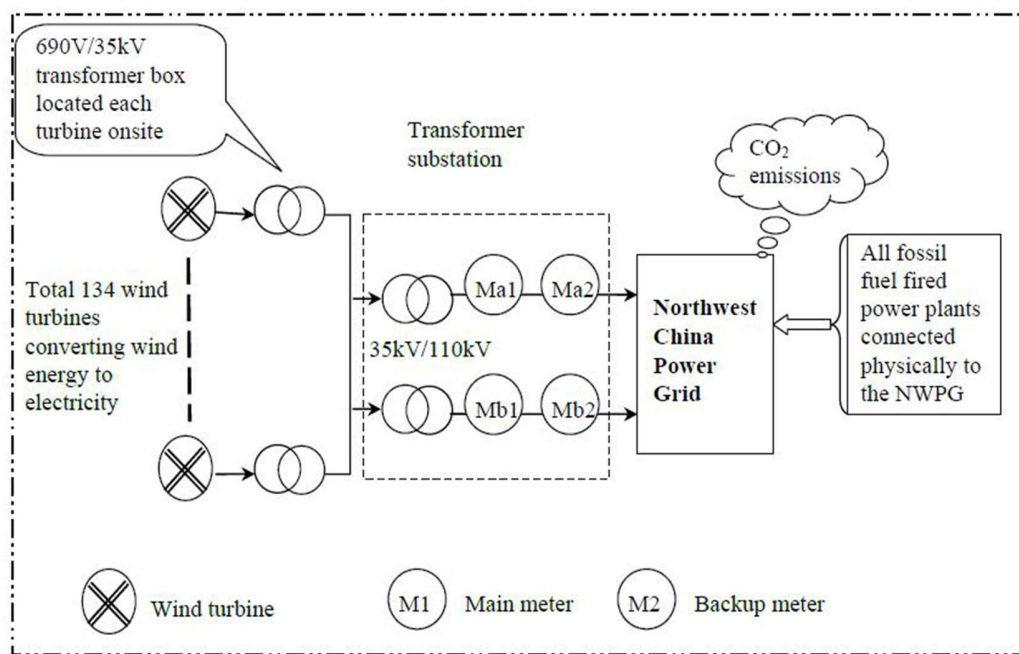


Figure 2. The technology flow diagram of the Project

The Project began to construct on 16/06/2008. The first wind turbine of the Project started commissioning on 21-November-2009. The Project was put into full operation on 15-February-2011. During this monitoring period (01-January-2022-30-April-2023), the Project monitoring activities were implemented in line with the monitoring plan.

The wind farm operated normally. No equipment is overhauled in this monitoring period. The main meter Ma1 (SN. 51000040) was replaced by the new meter Ma1 (SN. 217504317), the backup meter Ma2 (SN. 51000042) was replaced by the new Ma2 (SN. 217504318), the main meter Mb1 (SN. 51000044) was replaced by the new Mb1 (SN. 217504315) and the backup meter Mb2 (SN. 51000043) was replaced by the new Mb2 (SN. 217504316) at 24:00 on 31/12/2021 according to the agreement of the project owner and the grid company. The new meters accuracy is 0.2S which is the same as the old ones and will not negatively impact the preciseness of the measurement.

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 project description deviation in relation with type of wind turbines and electricity metering system of the project activity.

1. In the registered CDM PDD, the type of wind turbine is FD77/1500 while in the revised CDM PDD, the same has been revised to FD77A/1500.

2. In the registered CDM PDD, the project boundary involves electricity meter M1 and M2 and the electricity was delivered to the grid via one 35kV/110kV transformer, while in the revised CDM PDD, the project boundary involves 4 electricity meters Ma1, Ma2, Mb1 and Mb2 and the electricity was delivered to the grid via two 35kV/110kV transformers. Please refer to figure 3 and 4 below for detail.

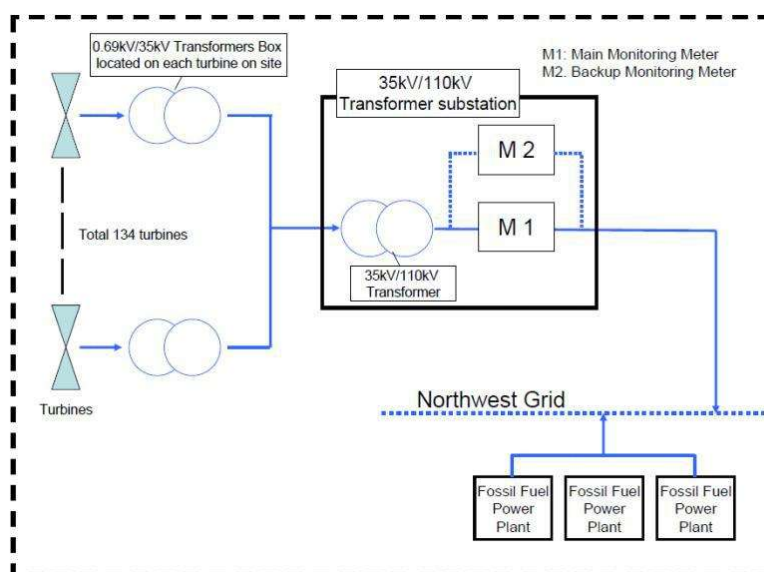


Figure 3 Project boundary of the registered CDM PDD

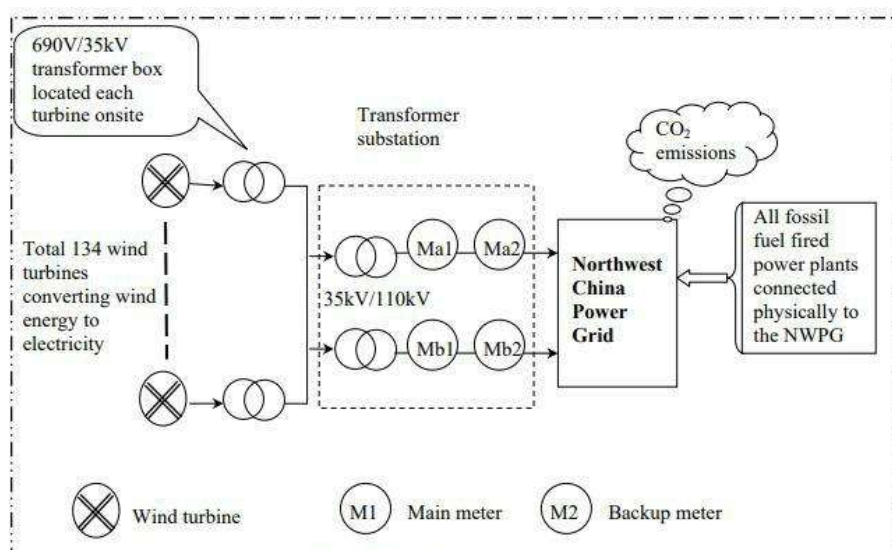


Figure 4 Project boundary of the revised CDM PDD

The deviation is applicable to this crediting period and also this monitoring period.

This deviation from the registered monitoring plan does not impact the applicability of the methodology, additionality, or the appropriateness of the baseline scenario. The deviation also does not lower the accuracy and conservativeness of the monitoring system and the project remains in compliance with VCS Program rules.

3.3 Grouped Projects

Not applicable as this is not a grouped project.

3.4 Baseline Reassessment

Did the project undergo baseline reassessment during the monitoring period?

☐ Yes

☒ No

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	$EF_{grid,OM,y}$
Data unit	tCO ₂ e/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
Value applied	0.8922
Justification of choice of data or description of measurement methods and procedures applied	Notification on 2019 baseline emission factors for regional power grids in China, issued by MEE http://www.mee.gov.cn/ywgz/xdqhbh/wsqtz/202012/t20201229_815386.shtml
Purpose of Data	Baseline emission calculation
Comments	/

Data / Parameter	$EF_{grid,BM,y}$
Data unit	tCO _{2e} /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
Value applied	0.4407
Justification of choice of data or description of measurement methods and procedures applied	Notification on 2019 baseline emission factors for regional power grids in China, issued by MEE. http://www.mee.gov.cn/ywgz/xdqhbh/wsqtz/202012/t20201229_815386.shtml
Purpose of Data	Baseline emission calculation
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	Baseline emission calculation

Comments	/
Data / Parameter	W_{BM}
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	Baseline emission calculation
Comments	/

Data / Parameter	$EF_{grid,CM,y}$
Data unit	tCO ₂ e/MWh
Description	Baseline emission factor: the combined emission factor of the project grid system.
Source of data	Calculated based on ex-ante parameters: $EF_{grid,OM,y}$, $EF_{grid,OM,y}$, W_{OM} and w_{OM} in VCS PD for crediting period renewal
Value applied	0.7793
Justification of choice of data or description of measurement methods and procedures applied	Notification on 2019 baseline emission factors for regional power grids in China, issued by China DNA and the renewed PD. http://www.mee.gov.cn/ywgz/ymqhbh/wsqtz/202012/t20201229_815386.shtml
Purpose of Data	Baseline emission calculation
Comments	The emission factor of the project was ex-ante determined and is fixed during the second crediting period.

4.2 Data and Parameters Monitored

Data / Parameter	$EG_{facility,y}$
Data unit	MWh

Description	Quantity of net electricity generation supplied by the project plants/units to the grid in year y				
Source of data	Direct measurement				
Description of measurement methods and procedures to be applied	Both the main meters and backup meters have been installed at high voltage side of 35kV/110kV substation, located within the site. The main meter(s) were used to monitor electricity exchanged between the Project and the grid continuously and reported monthly. The cut-off time is 24:00 of last day of each month. The data from the electricity meters can be cross-checked with the sales receipts for the electricity.				
Frequency of monitoring/recording	Continuously measured and monthly recorded				
Value monitored	EG _{facility,y} is 564,508.851 MWh. EG _{export,y} is 565,892.211 MWh, and EG _{import,y} is 1,383.360 MWh. EG _{export,y} : Quantity of electricity exported to the grid by the project. EG _{import,y} : Quantity of electricity imported from the grid by the project.				
Monitoring equipment	Serial No.	Accuracy	Calibration date	Validity of the Calibration	Calibration frequency
	217504317	0.2s	27/11/2021	26/11/2022	Annually
	Main meter Ma1 ⁵		18/09/2022	17/09/2023	
			26/12/2022	25/12/2023	
	217504318	0.2s	27/11/2021	26/11/2022	Annually
	Backup meter Ma2		18/09/2022	17/09/2023	
			26/12/2022	25/12/2023	
217504315	0.2s	27/11/2021	26/11/2022	Annually	
Main meter Mb1		18/09/2022	17/09/2023		
		26/12/2022	25/12/2023		
217504316	0.2s	27/11/2021	26/11/2022	Annually	
Backup meter Mb2		18/09/2022	17/09/2023		
		26/12/2022	25/12/2023		
QA/QC procedures to be applied	Monitoring data are counter-checked against the ETNs. The main meters and backup meters are calibrated by certified third party according to national standard annually.				

⁵ The meters Ma1, Ma2 Mb1 and Mb2 were changed at 24:00 31 December 2021, and the meters were calibrated by certified third party according to national standard.

Purpose of the data	Calculation of baseline emissions
Calculation method	$EG_{\text{facility},y} = EG_{\text{export},y} - EG_{\text{import},y}$ $EG_{\text{export},y}$: Quantity of electricity exported to the grid by the Project. $EG_{\text{import},y}$: Quantity of electricity imported from the grid by the project
Comments	/

4.3 Monitoring Plan

The implementation of monitoring system and Management organization for the Project are fully in consistent with the description in the PD Monitoring Plan.

Purpose

The monitoring methodology clearly describes how to identify and collect the necessary data. The following is a summary list of the main items to be monitored:

The operational and management structure to be adopted by CECIC in implementing the monitoring plan for the project activity is outlined in the Figure 3 below.

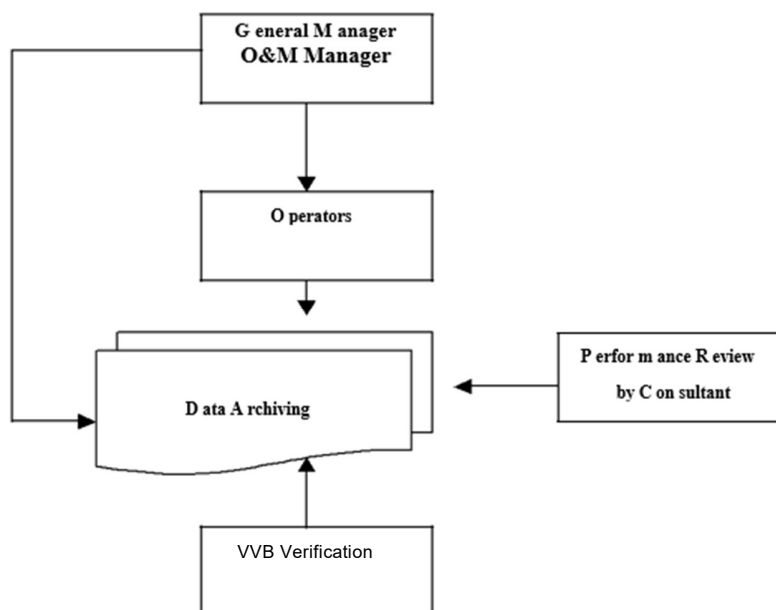


Figure 3. Operational and management structure for monitoring the project activity

The performance of the Project was reviewed and analyzed by the consultant on a regular basis.

Metering

The power generated by the project and supplied to the grid are monitored at the following points using electricity meters:

Both the main meters and backup meters have been installed at high voltage side of 35kV/110kV substation, located within the site. The main meters are used to monitor electricity exchanged between the project and the grid continuously and reported monthly. The cut-off time is 24:00 of last day of each month.

The data from the electricity meters can be cross-checked with the Electricity Transaction notes (ETN) or sales receipts for the electricity.

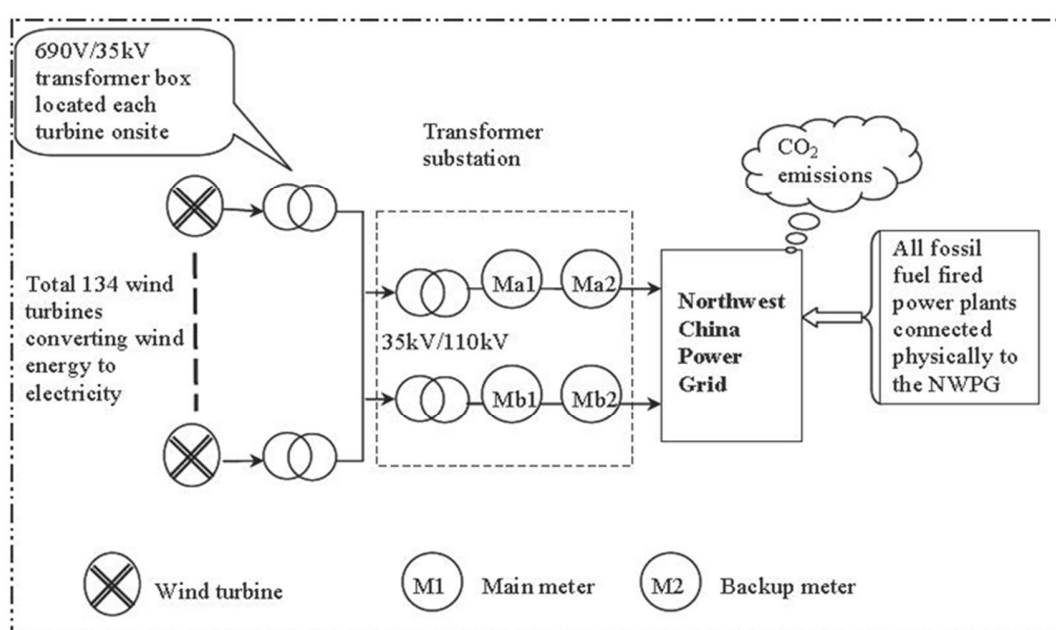


Figure 4. Flow diagram of the metering

Calibration

The metering equipments were calibrated and checked at least once a year by a qualified third party according to an appropriate industry standard or the manufacturer's specifications. The calibration records were maintained and made available for review by the VVB.

Accuracy

The metering equipments were calibrated and checked for accuracy according to local industry standards to make sure that any error resulting from such equipment does not exceed 0.5% of full-scale rating. Both meters were jointly inspected and sealed on behalf of the parties concerned and shall be only checked in the presence of the other party or its accredited representatives. It also complied with the national standards Technical Administrative Code of Electric Energy Metering (DL/T 448-2016).

Procedure

When reading error of either meter exceeds the allowable range or any inconsistency occurs, the meter should be repaired and followed by calibration by a third part in accordance with the standard, within 10 days. The grid company must be informed before the calibration and all the record should be kept by the CECIC.

When the main meter detects the error beyond the allowable range or inconsistency, the backup meter, located within the site, will be used. In case that both meters detect errors, CECIC shall repair the meter, re-calibrate, or replace, while giving the grid company sufficient notice to allow their representative to attend during any corrective activities. When this happen, the net power generated is calculated by read the backup meter. In case where both meters fail, CECIC and the grid company should formulate reasonable and conservative estimation based on historical or the nearest month power generation data. Also, CECIC should provide the evidence to testify the method is reasonable and conservative.

Data

All data collected as part of monitoring should be archived electronically and be kept for at least 2 years after the end of the last crediting period. 100% of data is to be monitored.

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

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

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

Where:

BE_y is the baseline emissions in year y (tCO_2/yr);

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

$EF_{\text{grid}, \text{CM},y}$ is the combined margin CO_2 emission factor for grid connected power generation in year y ($\text{tCO}_2\text{e}/\text{MWh}$);

$EG_{\text{export},y}$ is the quantity of electricity exported to the grid by the Project;

$EG_{\text{import},y}$ is the quantity of electricity imported from the grid by the Project.

The electricity volume and baseline emissions are listed in following table 3.

Table 3. Baseline emissions

Monitoring Period	EG _{export,y} (MWh)	EG _{import,y} (MWh)	EG _{facility,y} (MWh)	EF _{grid,CM,y} (tCO ₂ /MWh)	BE _y (tCO _{2e})
01-Jan-2022-31-Dec-2022	412,106.535	1,037.520	411,069.015	0.7793	320,339
01-Jan-2023 – 30-Apr-2023	153,785.6762	345.840	153,439.836	0.7793	119,573
Total	565,892.211	1,383.360	564,508.851	0.7793	439,912

The monthly data are shown in appendix 2

5.2 Project Emissions

According to the ACM0002, v20.0 and the renewed VCS PD, the emission of wind power project activity is zero, i.e., PE_y=0.

5.3 Leakage Emissions

According to ACM0002, v20.0 and the renewed VCS PD, the leakage of wind power project is not needed to be considered.

5.4 GHG Emission Reductions and Carbon Dioxide Removals

Vintage period	Baseline emissions (tCO _{2e})	Project emissions (tCO _{2e})	Leakage emissions (tCO _{2e})	Reduction VCU (tCO _{2e})	Removal VCU (tCO _{2e})	Total VCU (tCO _{2e})
01-Jan-2022-31-Dec-2022	320,339	0	0	320,339	320,339	320,339
01-Jan-2023-30-Apr-2023	119,573	0	0	119,573	119,573	119,573
Total	439,912	0	0	439,912	439,912	439,912

Vintage period	Ex-ante estimated reductions/removals	Achieved reductions/removals	Percent difference	Explanation for the difference
01-Jan-2022-31-Dec-2022	336,628	320,339	-4.84%	The actual achieved emission reductions during

01-Jan-2023- 30-Apr-2023	110,672 ⁶	119,573	8.04%	this monitoring period are 1.65% less than estimated values mainly due to that the fluctuation of the wind resource.
Total	447,300	439,912	-1.65%	

⁶ The estimated annual emission reductions in the renewed VCS PD are 336,628 tCO₂e, the period 01-Jan-2023 to 30-Apr-2023 covers 120 days, the corresponding estimated emission reductions are calculated as $336,628/365 \times 120 = 110,672$ tCO₂e.

APPENDIX 1: COMMERCIALY SENSITIVE INFORMATION

No commercially sensitive information has been excluded from the public version of the monitoring report.

APPENDIX 2: < MONTHLY AND YEARLY ELECTRICITY>

Period	EG _{export,y} (MWh)					EG _{import,y} (MWh)					EG _{facility,y} (MWh)	EF _{grid,CM,y} (tCO _{2e} /MWh)	BE _y (tCO _{2e})
	Data from meter Ma1 readings	Data from meter Mb1 readings	Total electricity exported	Data on ETNs	Data for ER calculation	Data from meter Ma1 readings	Data from meter Mb1 readings	Total electricity Imported	Data on ETNs	Data for ER calculation			
	A	B	C=A+B	D	E=Min(C,D)	F	G	H=F+G	I	J=Max(H,I)			
01/01/2022-31/01/2022	9,704.640	9,699.360	19,404.000	19,609.234	19,404.000	66.000	73.920	139.920	145.200	145.200	19,258.800	0.7793	15,008
01/02/2022-28/02/2022	14,596.560	14,607.120	29,203.680	29,206.716	29,203.680	31.680	36.960	68.640	71.280	71.280	29,132.400	0.7793	22,702
01/03/2022-31/03/2022	21,196.560	21,193.920	42,390.480	42,388.606	42,388.606	34.320	39.600	73.920	68.640	73.920	42,314.686	0.7793	32,975
01/04/2022-30/04/2022	19,063.440	19,031.760	38,095.200	38,092.850	38,092.850	15.840	26.400	42.240	42.240	42.240	38,050.610	0.7793	29,652
01/05/2022-31/05/2022	24,852.960	24,808.080	49,661.040	49,665.608	49,661.040	15.840	21.120	36.960	34.320	36.960	49,624.080	0.7793	38,672
01/06/2022-30/06/2022	16,280.880	16,220.160	32,501.040	32,498.638	32,498.638	18.480	26.400	44.880	42.240	44.880	32,453.758	0.7793	25,291
01/07/2022-31/07/2022	15,084.960	15,021.600	30,106.560	30,103.208	30,103.208	26.400	39.600	66.000	66.000	66.000	30,037.208	0.7793	23,407
01/08/2022-31/08/2022	18,081.360	18,039.120	36,120.480	36,121.219	36,120.480	29.040	42.240	71.280	71.280	71.280	36,049.200	0.7793	28,093
01/09/2022-30/09/2022	11,539.440	11,470.800	23,010.240	23,014.570	23,010.240	26.400	39.600	66.000	66.000	66.000	22,944.240	0.7793	17,880
01/10/2022-31/10/2022	14,987.280	14,934.480	29,921.760	29,920.096	29,920.096	55.440	84.480	139.920	134.640	139.920	29,780.176	0.7793	23,207

01/11/2022-30/11/2022	19,121.520	19,137.360	38,258.880	38,258.828	38,258.828	47.520	58.080	105.600	105.600	105.600	38,153.228	0.7793	29,732
01/12/2022-31/12/2022	21,698.160	21,748.320	43,446.480	43,444.869	43,444.869	84.480	89.760	174.240	168.960	174.240	43,270.629	0.7793	33,720
Subtotal of 2022	-	-	-	-	412,106.535	-	-	-	-	1,037.520	411,069.015	-	320,339
01/01/2023-31/01/2023	27,294.960	27,334.560	54,629.520	54,631.764	54,629.520	47.520	52.800	100.320	102.960	102.960	54,526.560	0.7793	42,492
01/02/2023-28/02/2023	7,555.680	7,550.400	15,106.080	15,104.470	15,104.470	68.640	73.920	142.560	139.920	142.560	14,961.910	0.7793	11,659
01/03/2023-31/03/2023	16,703.254	16,700.614	33,403.867	33,407.404	33,403.867	26.400	31.680	58.080	55.440	58.080	33,345.787	0.7793	25,986
01/04/2023-30/04/2023	25,328.186	25,322.906	50,651.093	50,647.819	50,647.819	18.480	23.760	42.240	42.240	42.240	50,605.579	0.7793	39,436
Subtotal of 2023	-	-	-	-	153,785.676	-	-	-	-	345.840	153,439.836	-	119,573
Total	-	-	-	-	565,892.211	-	-	-	-	1,383.360	564,508.851	-	439,912

APPENDIX 3: < SDG EVIDENCE >

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

<https://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1272607295.17/view>
<https://registry.terra.org/app/projectDetail/VCS/717>

Period	EG _{facility,y} MWh	ERRs tCO _{2e}
21/11/2009 to 23/09/2011	266,494.800	663,650
24/09/2011 - 28/04/2012	155,878.800	155,387
29/04/2012 - 28/09/2012	122,546.160	122,160
29/09/2012 - 31/12/2012	130,598.160	130,186
01/01/2013 - 31/12/2014	769,266.925	766,843
01/01/2015 - 31/12/2015	497,683.295	496,115
01/01/2016 to 23/09/2018	1,246,919.710	1,242,991
24/09/2018 to 28/09/2019	415,264.348	413,955
29/09/2019 to 31/12/2020	595,205.973	478,737
01/01/2021 to 31/12/2021	461,757.352	359,841
01/01/2022 to 30/04/2023 (this monitoring period)	564,508.851	439,912
Cumulative impacts (21/11/2009 ~ 30/04/2023)	5,226,124.374	5,269,777

Evidence for SDG 8: Staff roster

序号	单位	部门	姓名	性别
		department	name	gender
1	昌马	班子		男 male
2	昌马	班子		男
3	昌马	总助		男
4	昌马	综合部		男
5	昌马	综合部		女 female
6	昌马	综合部		男
7	昌马	综合部		男
8	昌马	综合部		女
9	昌马	财务部		女
10	昌马	财务部		女
11	昌马	财务部		女
12	昌马	财务部		女
13	昌马	生产部		男
14	昌马	生产部		男
15	昌马	生产部		男
16	昌马	生产部		男
17	昌马	生产部		男
18	昌马	生产部		男
19	昌马	生产部		男
20	昌马	生产部		男
21	昌马	生产部		男
22	昌马	生产部		男
23	昌马	生产部		男
24	昌马	生产部		男
25	昌马	生产部		男
26	昌马	生产部		女
27	昌马	生产部		女