

المجلس العالمي للبصمة الكربونية
GLOBAL CARBON COUNCIL



Project Submission Form

V3.2 - 2020

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COVER PAGE- Project Submission Form (PSF)	
<i>Complete this form in accordance with the instructions attached at the end of this form.</i>	
BASIC INFORMATION	
Title of the Project Activity	Guangxi Fuchuan Changguang 40MW Wind Power Project
PSF version number	1.0
Date of completion of this form	24/06/2022
Project Owner(s) <small>(Shall be consistent with De-registered CDM Type B Projects)</small>	VCARBON (Guangzhou) Low-carbon Technology Co., Ltd.
Country where the Project Activity is located	P.R. China
GPS coordinates of the project site(s)	25.0625°N~25.1100°N (25°03'45"N ~ 25°06'36"N) 111.3236°E~111.3806°E (111°19'25"E ~ 111°22'50"E)
Eligible GCC Project Type as per the Project Standard <small>(Tick applicable project type)</small>	<input checked="" type="checkbox"/> Type A: <input type="checkbox"/> Type A1 <input checked="" type="checkbox"/> Type A2 <input type="checkbox"/> Type B – De-registered CDM Projects:¹ <input type="checkbox"/> Type B1 <input type="checkbox"/> Type B2
Minimum compliance requirements	<input checked="" type="checkbox"/> Real and Measurable GHG Reductions <input checked="" type="checkbox"/> National Sustainable Development Criteria (if any) <input checked="" type="checkbox"/> Apply credible baseline and monitoring methodologies <input checked="" type="checkbox"/> Additionality

¹ Owners of Type B projects shall fill in the form provided in Appendix 7.

Project Submission Form

	<input checked="" type="checkbox"/> Local Stakeholder Consultation Process <input checked="" type="checkbox"/> Global Stakeholder Consultation Process <input checked="" type="checkbox"/> No GHG Double Counting <input checked="" type="checkbox"/> Contributes to United Nations Sustainable Development Goal 13 (Climate Action)																																						
Choose optional and additional requirements (Tick applicable label categories)	<input checked="" type="checkbox"/> Do-no-net-harm Safeguards to address Environmental Impacts <input checked="" type="checkbox"/> Do-no-net-harm Safeguards to address Social Impacts <input checked="" type="checkbox"/> Contributes to United Nations Sustainable Development Goals (in addition to Goal 13)																																						
Applied methodologies (Shall be approved by the GCC or the CDM)	ACM0002: "Grid-connected electricity generation from renewable sources" (Version 20.0)																																						
GHG Sectoral scope(s) linked to the applied methodology(ies)	GHG-SS#1: Energy Industries (renewable / non-renewable sources)																																						
Applicable Rules and Requirements for Project Owners (Tick applicable Rules and Requirements)	<table border="1"> <thead> <tr> <th colspan="2">Rules and Requirements</th> <th>Reference</th> <th>Version</th> </tr> </thead> <tbody> <tr> <td colspan="2"><input checked="" type="checkbox"/> ISO 14064-2</td> <td></td> <td></td> </tr> <tr> <td colspan="2"><input checked="" type="checkbox"/> Applicable host country legal requirements /rules</td> <td></td> <td></td> </tr> <tr> <td rowspan="7"><input checked="" type="checkbox"/> GCC Rules and Requirements²</td> <td><input checked="" type="checkbox"/> Project Standard</td> <td></td> <td>V3.1</td> </tr> <tr> <td><input type="checkbox"/> Approved GCC Methodology (XXXXX)</td> <td></td> <td></td> </tr> <tr> <td><input checked="" type="checkbox"/> Program Definitions</td> <td></td> <td>V3.1</td> </tr> <tr> <td><input checked="" type="checkbox"/> Environment and Social Safeguards Standard</td> <td></td> <td>V2.0</td> </tr> <tr> <td><input checked="" type="checkbox"/> Project Sustainability Standard</td> <td></td> <td>V2.1</td> </tr> <tr> <td><input checked="" type="checkbox"/> Instructions in Project Submission Form (PSF)-template</td> <td></td> <td>V3.2</td> </tr> <tr> <td><input type="checkbox"/> Add rows if required</td> <td></td> <td></td> </tr> <tr> <td></td> <td><input checked="" type="checkbox"/> Approved CDM Methodology (XXXXX)</td> <td>ACM0002</td> <td>V20.0</td> </tr> </tbody> </table>	Rules and Requirements		Reference	Version	<input checked="" type="checkbox"/> ISO 14064-2				<input checked="" type="checkbox"/> Applicable host country legal requirements /rules				<input checked="" type="checkbox"/> GCC Rules and Requirements ²	<input checked="" type="checkbox"/> Project Standard		V3.1	<input type="checkbox"/> Approved GCC Methodology (XXXXX)			<input checked="" type="checkbox"/> Program Definitions		V3.1	<input checked="" type="checkbox"/> Environment and Social Safeguards Standard		V2.0	<input checked="" type="checkbox"/> Project Sustainability Standard		V2.1	<input checked="" type="checkbox"/> Instructions in Project Submission Form (PSF)-template		V3.2	<input type="checkbox"/> Add rows if required				<input checked="" type="checkbox"/> Approved CDM Methodology (XXXXX)	ACM0002	V20.0
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² GCC Program rules and requirements: <https://www.globalcarboncouncil.com/resource-centre.html>

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	<input checked="" type="checkbox"/> CDM Rules ³	<input checked="" type="checkbox"/> Tool for the demonstration and assessment of additionality	TOOL 01	V07.0.0
		<input type="checkbox"/> Combined tool to identify the baseline scenario and demonstrate additionality	TOOL 02	
		<input checked="" type="checkbox"/> Tool to calculate the emission factor for an electricity system	TOOL 07	V07.0
		<input type="checkbox"/> Demonstration of additionality of microscale project activities	TOOL 19	
		<input type="checkbox"/> Demonstration of additionality of small-scale project activities	TOOL 21	
		<input type="checkbox"/> Additionality of first-of-its-kind project activities	TOOL 23	
		<input checked="" type="checkbox"/> Common practice	TOOL 24	V03.1
		<input checked="" type="checkbox"/> Investment analysis	TOOL 27	V11.0
		<input type="checkbox"/> Positive lists of technologies	TOOL 32	
		<input type="checkbox"/> Guidelines for objective demonstration and assessment of barriers		
		<input type="checkbox"/> Add rows if required		
<p>Choose Third Party External Project Verification by approved GCC Verifiers⁴</p> <p>(Tick applicable verification categories)</p>	<input checked="" type="checkbox"/> GHG emission reductions (i.e., Approved Carbon Credits (ACCs)) <input checked="" type="checkbox"/> Environmental No-net-harm Label (E⁺) <input checked="" type="checkbox"/> Social No-net-harm Label (S⁺) <input checked="" type="checkbox"/> United Nations Sustainable Development Goals (SDG⁺) <input type="checkbox"/> Bronze SDG Label <input type="checkbox"/> Silver SDG Label <input checked="" type="checkbox"/> Gold SDG Label			

³ CDM Program rules: <https://cdm.unfccc.int/Reference/index.html>

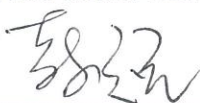

⁴ **Note:** GCC Verifiers under the Individual Track are not eligible to conduct verifications for GCC Project Activities whose owners intend to supply carbon credits (ACCs) for use within CORSIA.

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	<input type="checkbox"/> Platinum SDG Label <input type="checkbox"/> Diamond SDG Label <input checked="" type="checkbox"/> CORSIA requirements (C+) <input type="checkbox"/> Host Country Attestation on Double counting
<p>Declaration to be made by the Project Owner(s)⁵ (Tick all applicable statements)</p>	<p>The Project Owner(s) declares that:</p> <p><input checked="" type="checkbox"/> The Project Activity complies with the eligibility of the applicable project type (A1, A2, B1 or B2) as stipulated by the Project Standard.</p> <p><input checked="" type="checkbox"/> The Project Activity shall start operations, and start generating emission reductions, on or after 1 January 2016.</p> <p><input checked="" type="checkbox"/> The Project Activity is eligible to be registered under the GCC program.</p> <p><input checked="" type="checkbox"/> No carbon credits generated by the proposed Project Activity will be claimed as carbon credits in any other GHG program anywhere in the world, either for compliance or voluntary purposes, for the entire 10-year GCC crediting period.</p> <p><input checked="" type="checkbox"/> The proposed Project Activity, if Type A, is NOT registered as a GHG Project Activity in any other GHG program or any other voluntary program anywhere in the world.</p> <p><input checked="" type="checkbox"/> The proposed Project Activity is NOT included as a component Project Activity (CPA) in a registered GHG Programme of Activities (PoA) under any GHG program (such as the CDM or any other voluntary program) anywhere in the world.</p> <p><input checked="" type="checkbox"/> The proposed Project Activity is NOT a CPA that has been excluded from a registered PoA under any GHG program (such as the CDM or any other voluntary program) anywhere in the world.</p> <p>Provide details (if any) below for the boxes ticked above.</p> <p><input checked="" type="checkbox"/> If a GCC project chooses to apply to use ACCs under CORSIA, the Project Owner(s) is required to declare that they are aware that they must obtain and provide to the GCC and its Registry (operated by IHS Markit) a written attestation from the host country's national focal point (e.g., Ministry of Environment or Civil Aviation Authority) or focal point's designee, as required by CORSIA Emissions Unit Eligibility Criteria, which:</p> <p style="padding-left: 40px;"><input checked="" type="checkbox"/> Confirms the avoidance of double counting as required by CORSIA;</p>

⁵ The "Project Owner" means the legal entity or organization that has overall control and responsibility for the Project Activity.

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	<p><input checked="" type="checkbox"/> Shall be made publicly available prior to the use of units from the host country under CORSIA; and</p> <p><input checked="" type="checkbox"/> Places all responsibility on the Project Owner(s) to replace any and all doubly claimed or counted ACCs by the host country, in the GCC registry operated by IHS Markit.</p> <p>Provide details below for the boxes ticked above</p>
	<p>The Project Owner(s) declares that:</p> <p><input checked="" type="checkbox"/> All of the information provided in this document, including any supporting documents submitted to the GCC or its registry operator IHS Markit at any time, is true and correct;</p> <p><input checked="" type="checkbox"/> They understand that a failure by them to provide accurate information or data, or concealing facts and information, can be considered as negligence, fraud or willful misconduct. Therefore, they are aware that they are fully responsible for any liability that arises as a result of such actions.</p> <p>Provide details below for the boxes ticked above</p>
<p>Appendixes 1-7</p>	<p>Details about the Project Activity are provided in Appendixes 1 through 7 to this document.</p>
<p>Name, designation, date and signature of the Project Owner(s)</p>	<p>On behalf of VCARBON (Guangzhou) Low-carbon Technology Co., Ltd.</p> <p>Ms. Chao Cai, Vice General Manager </p> <p></p> <p>24/06/2022</p>

1. PROJECT SUBMISSION FORM

Section A. Description of the Project Activity

A.1. Purpose and general description of the Project Activity

Guangxi Fuchuan Changguang 40MW Wind Power Project (hereafter referred to as “the project”) is a wind power project with total installed capacity of 40MW. The project is invested and operated by Fuchuan New Energy Wind Power Co., Ltd., which is wholly owned by CNNP Rich Energy Co., Ltd.⁶ The project locates in Mailing Town, Fuchuan County, Hezhou City, Guangxi Province in P.R. China.

The purpose of the project is to utilize the wind energy at the project site to generate and supply electricity to China Southern Power Grid (CSG).

The spatial extent of the project boundary includes the project power plant and all power plants connected physically to CSG that the project will be connected to.

Prior to the implementation of the project, the electricity delivered to the grid by the project activity would be generated by the operation of grid-connected power plants and by the addition of new generation sources into the CSG.

The project is a renewable energy project and is expected to supply an annual average of 79,538 MWh of zero-emission electricity to CSG during the fixed 10-year crediting period, which will replace power generation of those fossil fuel-fired power plants delivered to the CSG under the baseline scenario. The project is expected to achieve a green-house gas emission reduction of 52,217 tCO₂e annually. The total emission reductions during the fixed 10-year crediting period will be 522,170 tCO₂e.

The project is expected to contribute to 4 SDGs which are SDG 7, 8, 9 and 13.

SDG 7 Energy: The project contributes SDG Indicators 7.2 “By 2030, increase substantially the share of renewable energy in the global energy mix” by the utilization of wind power as a renewable energy source.

SDG 8 Economic Growth: The project creates direct and indirect employment opportunities during construction and operation phases. Therefore, it contributes to SDG Indicators 8.5 “By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities and equal pay for work of equal value”.

SDG 9 Infrastructure, Industrialization: SDG Indicators 9.4 requires “By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities”. The project contributes to SDG

⁶ CNNP Rich Energy Co., Ltd. is one of the subsidiaries wholly owned by China National Nuclear Power Co., Ltd.

The organization chart of CNNP: <https://www.cnp.com.cn/cnp/gywm29/zzjg1/index.html>

The company profile of CNNP Rich Energy Co., Ltd.: <https://www.cnnchn.com.cn/zhnyxgs/gywm6298/dwjs/index.html>

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Indicators 9.4 by implementing a clean, reliable and environmental-friendly infrastructure for clean energy production / up-to-date industrialization.

SDG 13 Climate Change: The project produces clean renewable energy by reducing CO₂ emission. Therefore, it contributes to SDG Indicators 13.3 “Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaption, impact reduction and early warning”.

A.2. Location of the Project Activity

Address and geodetic coordinates of the physical site of the Project Activity		
Physical address	Latitude	Longitude
Changuang Village, Mailing Town, Fuchuan County, Hezhou City, Guangxi Province in P.R. China	25.0625°N~25.1100°N (25°03'45"N ~ 25°06'36"N)	111.3236°E~111.3806°E (111°19'25"E ~ 111°22'50"E)

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中国地图



审图号: GS(2019)1694号

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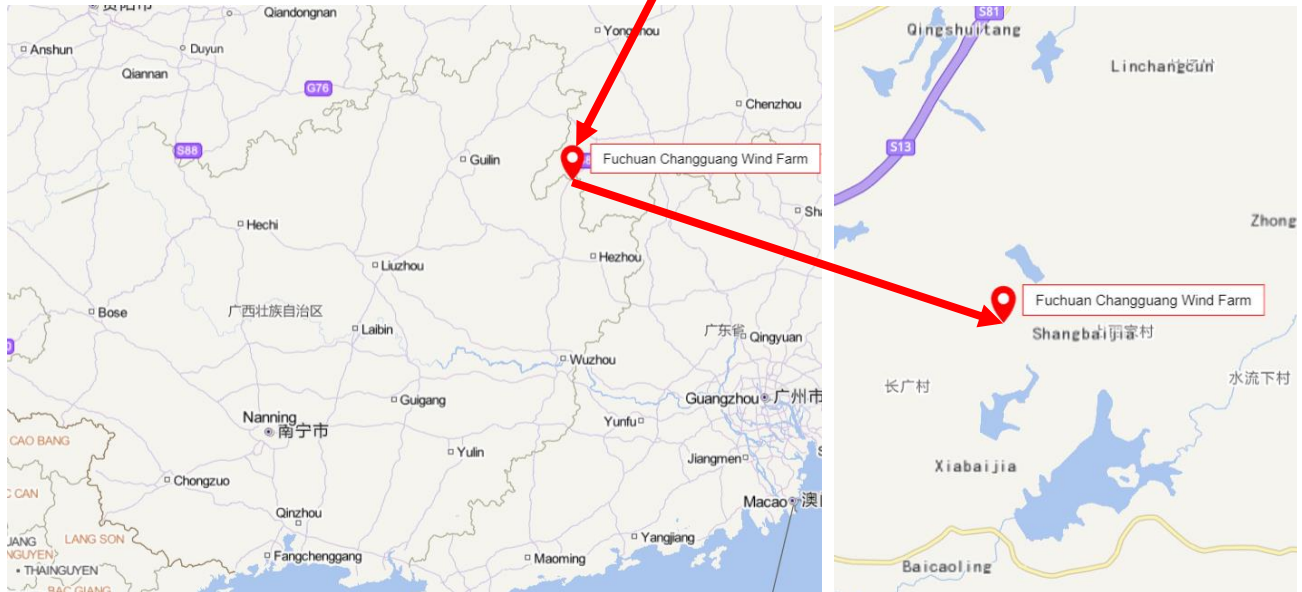


Figure 1 Location of the project

Table 1 Geodetic coordinates of the wind turbines

Wind Turbine	Latitude	Longitude
T1	25°06'27.76"N	111°21'35.22"E
T2	25°06'31.90"N	111°21'20.91"E
T3	25°06'28.70"N	111°20'58.34"E
T4	25°06'40.08"N	111°20'43.01"E
T5	25°06'33.71"N	111°20'15.68"E
T6	25°06'25.42"N	111°19'58.05"E
T7	25°06'25.03"N	111°19'43.70"E
T8	25°06'11.34"N	111°19'44.20"E
T9	25°05'30.98"N	111°19'36.31"E
T10	25°05'56.68"N	111°20'00.23"E
T11	25°05'49.77"N	111°20'07.03"E
T12	25°05'30.80"N	111°20'13.54"E
T13	25°05'33.92"N	111°20'29.76"E
T14	25°05'39.30"N	111°20'51.41"E
T15	25°05'08.89"N	111°20'43.54"E
T16	25°05'21.87"N	111°21'07.36"E
T17	25°05'16.72"N	111°21'23.62"E
T18	25°05'38.96"N	111°21'49.86"E
T19	25°05'55.60"N	111°22'33.71"E
T20	25°05'48.49"N	111°22'41.58"E

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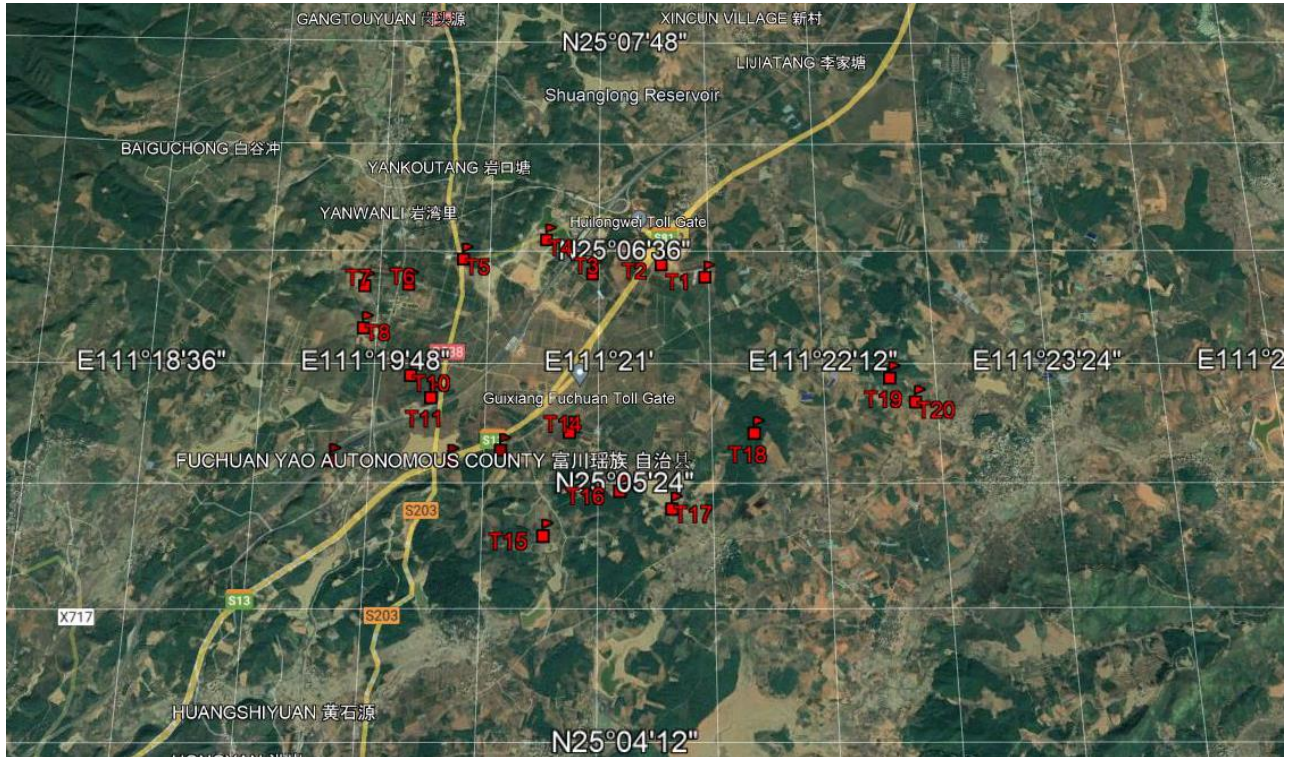


Figure 2 Location of the wind turbines

A.3. Technologies/measures

The total installed capacity of this project is 40MW. A total of 20 wind turbines are installed with a configuration of 20 × 2000kW.

The power generated by this project is boosted to 35kV by on-site box transformers, and then boosted by a 220kV booster station. After boosting to 220kV, it is connected to the Chuyue 220kV substation via a 220kV line, and then connected to Guangxi power grid. The power grid was eventually merged into the China Southern Power Grid (CSG).

The technical parameters of the main equipment for the project are shown in **Table 2**.

Table 2 Specifications of the equipment used in the project

Item	Value
Type	WTG115-2000
Rated Power (kW)	2000
Rated Voltage (V)	690
Blade Number	3

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Rotor diameter (m)	115
Rated wind speed (m/s)	9
Cut-in wind speed (m/s)	2.5
Cut-out wind speed (m/s)	19
Hub Height (m)	90
Number of units	20
Lifetime (years)	20

A.4. Project Owner(s)

Location/ Country	Project Owner(s)	Where applicable ⁷ , indicate if the host country has provided approval (Yes/No)
P.R. China	VCARBON (Guangzhou) Low-carbon Technology Co., Ltd.	No

A.5. Declaration of intended use of Approved Carbon Credits (ACCs) generated by the Project Activity

The Project Activity is expected to generate ACCs for a full 10-year crediting period and supply the credits to offset the following GHG emissions:

Period		Name of the Entities	Purpose and Quantity of ACCs to be supplied
From	To		
		To be determined	

ACCs from the project activity will be used to create additional revenue stream for the investment and for reducing the project financial risks and thus enabling the sustainability of the project. No double counting will occur in the scope of this project since GCC is the only program applied.

A.6. Additional requirements for CORSIA

Please see Section E and F.

⁷ For example, *Project Coordination Form* is to be filled-in by Project Owners for projects located in Qatar. A written attestation from the host country's national focal point or the focal point's designee, as required by CORSIA (Refer section A.5 of the PSF guidelines).

Section B. Application of selected methodology(ies)

B.1. Reference to methodology(ies)

Applied approved CDM methodology: ACM0002 Grid-connected electricity generation from renewable sources (Version 20.0).

Applied CDM tools:

am-tool-01-v7.0.0 Tool for the demonstration and assessment of additionality.

am-tool-07-v7.0 Tool to calculate the emission factor for an electricity system.

am-tool-24-v03.1 Common practice.

am-tool-27-v10.0 Investment analysis.

Please refer to the following link for applied methodology and tools:

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

<https://cdm.unfccc.int/Reference/tools/index.html>

B.2. Applicability of methodology(ies)

The project activity is grid-connected wind power projects. Version 20.0 of ACM0002 methodology is applicable to the project activities that:

Comparison of project activity characteristics and eligibility criteria of version 20.0 of ACM0002:

Para No.	Applicability criteria	Justification
1	This methodology is applicable to grid-connected renewable energy power generation project activities that: (a) Install a Greenfield power plant. (b) Involve a capacity addition to (an) existing plant(s); (c) Involve a retrofit of (an) existing operating plants/units. (d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or (e) Involve a replacement of (an) existing plant(s)/unit(s).	Applicable The project is a greenfield wind power plant.

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2	<p>The project activity may include renewable energy power plant/unit of one of the following types:</p> <ul style="list-style-type: none"> • Hydro power plant/unit with or without reservoir, • Wind power plant/unit, • Geothermal power plant/unit, • Solar power plant/unit, • Wave power plant/unit or • Tidal power plant/unit. 	<p>Applicable</p> <p>The project activity is a grid connected wind power plant.</p>
3	<p>In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects) the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.</p>	<p>This condition is not relevant, as the project activity does not involve capacity additions, retrofits, rehabilitations or replacement.</p>
4	<p>In case of hydro power plants, one of the following conditions shall apply:</p> <p>(a) The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or</p> <p>(b) The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density, calculated using equation (7), is greater than 4 W/m²; or</p> <p>(c) The project activity results in new single or multiple reservoirs and the power density, calculated using equation(7), is greater than 4 W/m²; or</p> <p>(d) The project activity is an integrated hydro power project involving multiple reservoirs, where the power density for any of the reservoirs, calculated using equation (7), is lower than or equal to 4 W/m², all of the following conditions shall apply.</p> <p>(i) The power density calculated using the total installed capacity of the integrated project, as per equation (8), is greater than 4 W/m²;</p> <p>(ii) Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity.</p> <p>(iii) Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m² shall be</p> <ol style="list-style-type: none"> a. Lower than or equal to 15 MW; and b. Less than 10 per cent of the total installed capacity of integrated hydro power project 	<p>This condition is not relevant, as the project activity is not the installation of a hydro power plant.</p>

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5	<p>In the case of integrated hydro power projects, project proponent shall:</p> <p>(a) Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or</p> <p>(b) Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This demonstration has to be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore, this water balance will take into account seasonal flows from river, tributaries (if any), and rainfall for minimum of five years prior to the implementation of the CDM project activity.</p>	<p>This condition is not relevant, as the project activity is not the installation of a hydro power plant.</p>
6	<p>The methodology is not applicable to the following:</p> <ul style="list-style-type: none"> • Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site; • Biomass fired power plants/units; 	<p>The project activity does not involve any of the given criteria hence methodology is applicable for the project activity.</p>
7	<p>In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is “the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance”.</p>	<p>This condition is not relevant, as the project activity does not involve capacity additions, retrofits, replacement or rehabilitations.</p>

Comparison of project activity characteristics and eligibility criteria of applied CDM tools:

Tool	Applicability criteria	Justification
<p>Tool for the demonstration and assessment of additionality (Version 07.0.0)</p>	<p>The use of the “Tool for the demonstration and assessment of additionality” is not mandatory for project participants when proposing new methodologies. Project participants may propose alternative methods to demonstrate additionality for consideration by the Executive Board. They may also submit revisions to approved methodologies using the additionality tool.</p>	<p>Applicable</p> <p>The methodology selected for the proposed project requires the use of this tool.</p>
	<p>Once the additionally tool is included in an approved methodology, its application by project participants using this methodology is mandatory.</p>	<p>Applicable</p> <p>The methodology applied in this proposed project requires the use of this tool.</p>

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Tool to calculate the emission factor for an electricity system (Version 07.0)	This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects).	Applicable This project replaces grid power supply and uses this tool to calculate the values of OM, BM and CM of this project.
	Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants. In the latter case, two sub-options under the step 2 of the tool are available to the project participants, i.e. option IIa and option IIb. If option IIa is chosen, the conditions specified in "Appendix 1: Procedures related to off-grid power generation" should be met. Namely, the total capacity of off-grid power plants (in MW) should be at least 10 per cent of the total capacity of grid power plants in the electricity system; or the total electricity generation by off-grid power plants (in MWh) should be at least 10 per cent of the total electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity.	Applicable The emission factor for this project electricity system was calculated for grid power plants.
	In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country.	This condition is not relevant, there is no part of the power system of this project located in Annex I countries.
	Under this tool, the value applied to the CO ₂ emission factor of biofuels is zero.	This condition is not relevant, this project is a wind power project.
	Investment analysis (Version 11.0)	This methodological tool is applicable to project activities that apply the methodological tool "Tool for the demonstration and assessment of additionality", the methodological tool "Combined tool to identify the baseline scenario and demonstrate additionality", the guidelines "Non-binding best practice examples to demonstrate additionality for SSC project activities", or baseline and monitoring methodologies that use the investment analysis for the demonstration of additionality and/or the identification of the baseline scenario.
	In case the applied approved baseline and monitoring methodology contains requirements for the investment analysis that are different from those described in this methodological tool, the requirements contained in the methodology shall prevail.	The methodology ACM0002 (Version 20.0) applied in this project requires the use of this tool to demonstrate the investment analysis of this project.

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Common practice (Version 03.1)	This methodological tool is applicable to project activities that apply the methodological tool “Tool for the demonstration and assessment of additionality”, the methodological tool “Combined tool to identify the baseline scenario and demonstrate additionality”, or baseline and monitoring methodologies that use the common practice test for the demonstration of additionality.	Applicable This project apply the methodological tool “Tool for the demonstration and assessment of additionality”.
	In case the applied approved baseline and monitoring methodology defines approaches for the conduction of the common practice test that are different from those described in this methodological tool, the requirements contained in the methodology shall prevail.	The methodology ACM0002 (Version 20.0) applied in this project requires the use of this tool to demonstrate the common practice of this project.

B.3. Project boundary, sources and greenhouse gases (GHGs)

For the project, the spatial extent of the project boundary includes the proposed project and all power plants connected physically to the CSG that the proposed project is connected to. According to ACM0002 (version 20.0), the Greenhouse Gases (“GHG”) and emission sources included in or excluded from the project boundary are shown in the following table:

	Source	GHG	Included?	Justification/Explanation
Baseline	CO ₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity	CO ₂	Yes	The major source of emissions in the baseline.
		CH ₄	No	Excluded for simplification. This emission source is assumed to be very small.
		N ₂ O	No	Excluded for simplification. This emission source is assumed to be very small
Project Activity	For dry or flash steam geothermal power plants, emissions of CH ₄ and CO ₂ from non-condensable gases contained in geothermal steam	CO ₂	No	The quantity of electricity delivered to the project plant/unit from the grid has been deducted from the quantity of electricity supplied by the project plant/unit to the grid when calculating the baseline emission, hence onsite electricity use in the project does not need to be considered as project emission.
		CH ₄	No	Excluded for simplification. This emission source is assumed to be very small.
		N ₂ O	No	Excluded for simplification. This emission source is assumed to be very small.
	For binary geothermal power plants, fugitive emissions of CH ₄ and CO ₂ from non-condensable gases contained in geothermal steam	CO ₂	No	Not Applicable. This project is not a geothermal power plant.
		CH ₄	No	Not Applicable. This project is not a geothermal power plant.
		N ₂ O	No	Not Applicable. This project is not a geothermal power plant.

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For binary geothermal power plants, fugitive emissions of hydrocarbons such as n-butane and isopentane (working fluid) contained in the heat exchangers	Low GWP hydrocarbon/refrigerant	No	Not Applicable. This project is not a geothermal power plant.
CO ₂ emission from combustion of fossil fuels for electricity generation in solar thermal power plants and geothermal power plants	CO ₂	No	Not Applicable. This project is a wind power plant.
	CH ₄	No	Not Applicable. This project is a wind power plant.
	N ₂ O	No	Not Applicable. This project is a wind power plant.
For hydro power plants, emissions of CH ₄ from the reservoir	CO ₂	No	Not Applicable. This project is not a hydro power plant.
	CH ₄	No	Not Applicable. This project is not a hydro power plant.
	N ₂ O	No	Not Applicable. This project is not a hydro power plant.

The project boundary is shown in the following flow diagram.

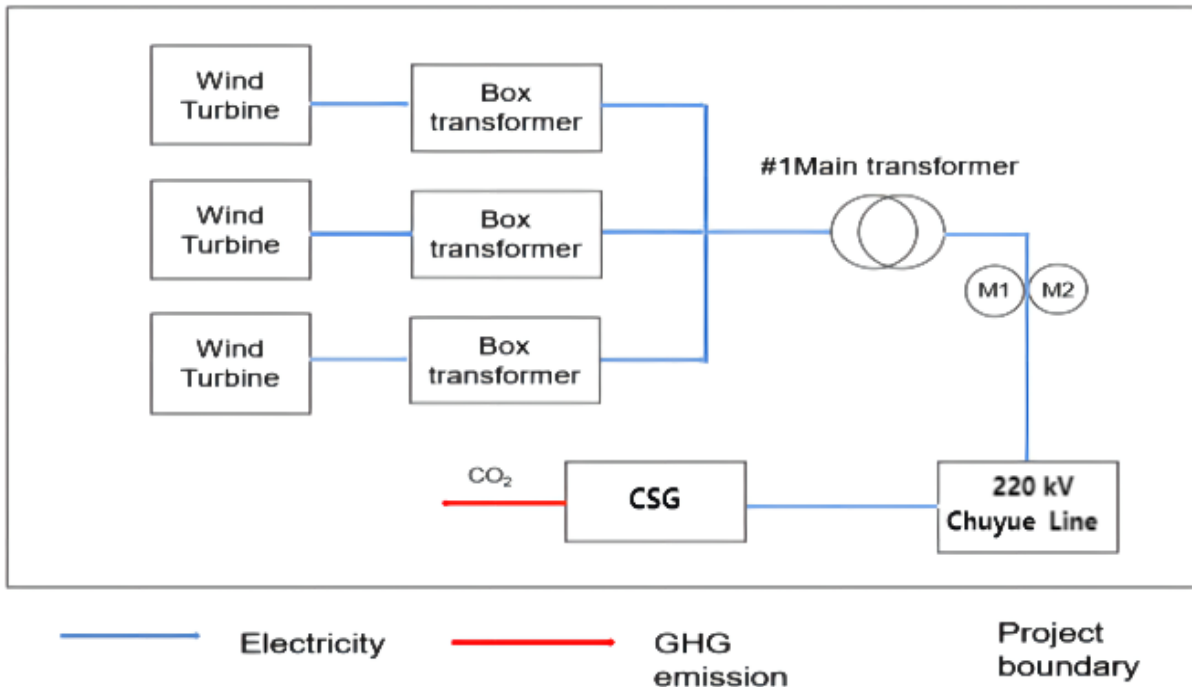


Figure 3 Project boundary of the project

B.4. Establishment and description of the baseline scenario

The relevant national and/or sectoral policies, regulations and circumstances are taken into account for the implementation of the project activity.

Implementation of the wind power generation project is not enforced by any laws and regulations in China. There are no enforced laws, statutes, regulations, court orders, environmental-mitigation agreements, permitting conditions of other legally binding mandates requiring its implementation. The project activity is a voluntary action.

The project is connected to China Southern Power Grid (CSG). As per the latest version of China Electric Power Yearbook, CSG is still dominated by fossil fuels fired power plant. The fossil-fuel fired power plants generated over 70% of the total electricity provided by CSG. Despite the gradual increase in renewable energy sources in power sector, CSG is still a CO₂-intensive power grid.

According to the methodology ACM0002 (version 20.0), as this project is the installation of a Greenfield wind power plant, the baseline scenario of the Project is the following: Electricity delivered to CSG by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the “Tool 07 to calculate the emission factor for an electricity system”.

B.5. Demonstration of additionality

As per GCC Project Standard, the GCC applies the following approach for demonstrating additionality, consisting of two components:

- (a) A Legal Requirement Test; and
- (b) An Additionality Test either based on a Positive List test or a projects-specific additionality test.

The proposed project is not enforced by law. The project passes the legal requirement test since there are no enforced laws, statutes, regulations, court orders, environmental-mitigation agreements, permitting conditions of other legally-binding mandates requiring its implementation. Furthermore, as per para. 46 of Project Standard, voluntary commitments/agreements within a sector or by an entity do not constitute the legal requirement. An Additionality Test is further applied as follows.

Additionality of the project is demonstrated by using the approved CDM tool am-tool-01-v7.0.0 Tool for the demonstration and assessment of additionality.

Step 1: Identification of alternatives to the project activity consistent with current laws and regulations

Define realistic and credible alternatives to the project activity(s) through the following Sub-steps.

Sub-step 1a: Define alternatives to the project activity

Alternatives available to the project participant or similar project developers that provide outputs or services comparable with the project activity are identified below:

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Alternative (a) The proposed project activity undertaken without being registered as a GCC project activity.

Alternative (b) Continuation of the current situation (no project activity or other alternatives undertaken).

Sub-step 1b: Consistency with mandatory laws and regulations

Both alternatives (a) and (b) are realistic and credible alternatives to the project which are consistent with mandatory laws and regulations.

Step 2: Investment analysis

Investment analysis is conducted by applying CDM tool am-tool-27-v10.0 Investment analysis.

Sub-step 2a: Determine appropriate analysis method

The project activity generates benefits from sales of electricity, therefore the simple cost analysis (Option I) is not applicable. Since the Project is a grid-connected wind power project, and the baseline scenario is the provision of equivalent amount of annual electricity by the CSG, benchmark analysis (Option III) is selected for the Project.

Sub-step 2b: Option III. Apply benchmark analysis

According to the “Economical assessment and parameters for construction project, 3rd edition”, a project will be financially acceptable when the project Internal Return Rate (project IRR) is higher than the sectoral benchmark IRR.

According to the Measures on Compiling the Feasibility Study Report of Wind Power Plant Project, the annex to Provisional Measures on the Administration of the Preparatory Work of Wind Power Plant Project (NDRC energy [2005]899), the sectoral benchmark for project IRR of wind power projects is 8%.

Given the fact that Provisional Measures on the Administration of the Preparatory Work of Wind Power Plant Project is currently the official guideline for the wind power project design, the project IRR of 8% is adopted by the Project as the benchmark. Based on above benchmark, calculation and comparison of financial indicators are carried out in sub-step 2c.

Sub-step 2c: Calculation and comparison of financial indicators

Basic parameters for calculation of financial indicators of the Project are shown in Table 3.

Table 3 Basic parameters of the project IRR calculation

Parameter	Unit	Value	Date source
Installed capacity	MW	40	FSR
Annual electricity supplied to the grid	MWh	79538	FSR
Construction Period	Year	1	FSR
Operation period	Year	20	FSR
Total static investment	10 ⁴ CNY	32425.8	FSR
Working Capital	10 ⁴ CNY	120	FSR

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Equity/Loan	-	20%:80% (long-term loan) 30%:70% (short-term loan)	FSR
Long-term loan interest rate	%	4.90%	FSR
Short-term loan interest rate	%	4.35%	FSR
Interest during construction period	10 ⁴ CNY	632.4	FSR
Tariff (including VAT)	CNY/MWh	610	FSR
Tariff (excluding VAT)	CNY/MWh	521.4	FSR
VAT rate	%	17%(with 50% refund)	FSR
Income tax rate	%	0% (Year 2-4) 12.5% (Year 5-7) 25% (Year 8-21)	FSR
City maintenance and construction tax rate (of VAT)	%	5%	FSR
Education tax (of VAT)	%	5%	FSR
Depreciation period	Year	15	FSR
Annual depreciation rate	%	6.33%	FSR
Residual value ratio (of fixed asset)	%	5%	FSR
Annual O&M cost (lifetime average)	10 ⁴ CNY	1292.5	FSR
Maintenance fee rate (of fixed asset)	%	2%	FSR
Insurance fee rate (of fixed asset)	%	0.35%	FSR
Material cost	CNY/kW	30	FSR
Miscellaneous expense	CNY/kW	40	FSR
Staff	Person	20	FSR
Average annual salary	CNY/P	100000	FSR
Rate of employee welfare (of annual salary)	%	60%	FSR
Grid emission factor	tCO ₂ /MWh	0.6565	PSF B.6.1
Emission reduction	tCO ₂	52217	PSF B.6.3
Expecting ACC price	CNY/tCO ₂	85	Estimated

Table 4 Comparison of IRR with and without the income from ACCs sale

	Without carbon credits	Benchmark	With carbon credits
IRR	6.83%	8%	8.01%

Based on the data above, without the revenue from carbon credit sales, the project IRR is 6.83%, which is lower than the benchmark (8%). The Project is not financially attractive. While considering such income, the project IRR is 8.01%, higher than the benchmark, and the proposed project is financially acceptable.

Sub-step 2d: Sensitivity analysis

As per CDM tool am-tool-27-v10.0 Investment analysis, variables, including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues should be subjected to reasonable variation. For the Project, the following financial parameters were taken as uncertain factors for sensitive analysis of financial attractiveness:

- Total static investment
- Annual OM cost
- Annual electricity supply
- Tariff

The variation range of -10%~10% which was employed in the approved FSR and prevailing in China was used. The results of sensitivity analysis of the four parameters of the proposed project are shown in the following table and figure:

Project Sensitivity Analysis						
Range of Variation	-10%	-5%	0	+5%	+10%	Critical Variation
Total static investment	8.30%	7.53%	6.83%	6.18%	5.57%	-8.08%
Annual electricity supplied to the grid	5.12%	5.98%	6.83%	7.66%	8.47%	7.11%
Annual O&M cost	7.31%	7.07%	6.83%	6.58%	6.34%	-24.47%
Electricity tariff	5.12%	5.98%	6.83%	7.66%	8.47%	7.11%

Table 5 Results of sensitivity analysis (without carbon credit revenues)

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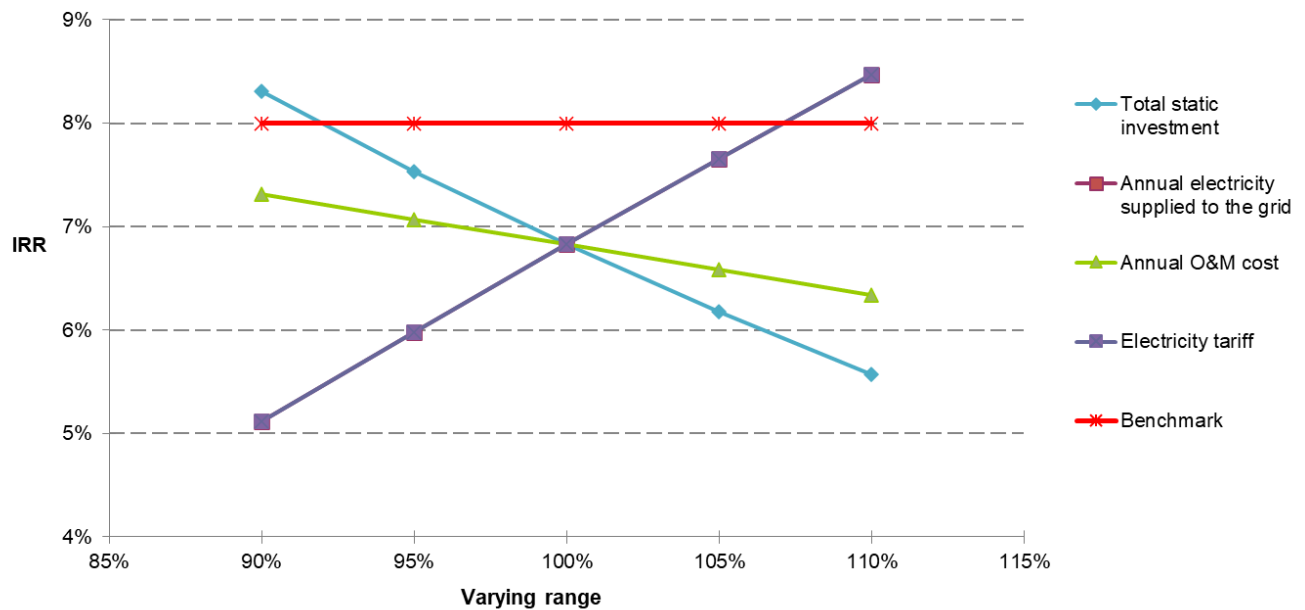


Figure 4 Sensitivity analysis for project

In conclusion, the investment analysis and sensitivity analysis show that the project undertaken without carbon credit revenue is not financially attractive and the ACC revenue will improve the financial indicators of the Project.

Step 3: Barrier analysis

The proposed project does not employ the barrier analysis.

Step 4: Common practice analysis

Common practice analysis is carried out as per CDM tool am-tool-24-v03.1 Common practice.

Sub-step 4a: The proposed project activity(ies) applies measure(s) that are listed in the definitions section above

The project is a renewable wind power project, which adopts type (ii) measure listed in the Methodological tool: Tool for the demonstration and assessment of additionality. As per additionality tool, am-tool-24-v03.1 Common practice is applied as below:

Sub-Step 4a-1: calculate applicable capacity or output range as +/-50% of the total design capacity or output of the proposed project activity.

The installed capacity of the project is 40MW, therefore the applicable capacity range is 20MW to 60MW.

Sub-Step 4a-2: identify similar projects (both CDM and non-CDM) which fulfil all of the following conditions:

- (a) The projects are located in the applicable geographical area;

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The applicable geographical area is defined as Guangxi Zhuang Autonomous Region.

(b) The projects apply the same measure as the proposed project activity;
The project adopts type (ii) measure, therefore only type (ii) measure is included.

(c) The projects use the same energy source/fuel and feedstock as the proposed project activity, if a technology switch measure is implemented by the proposed project activity;
The project is a wind power project, therefore only wind power projects are included.

(d) The plants in which the projects are implemented produce goods or services with comparable quality, properties and applications areas (e.g. clinker) as the proposed project plant;
The project is a wind power project, which supply electricity to CSG, therefore only grid-connected wind power projects are included.

(e) The capacity or output of the projects is within the applicable capacity or output range calculated in Sub-Step 4a-1;
Projects with installed capacity within the range of 20MW to 60MW are included.

(f) The projects started commercial operation before the project design document (CDM-PDD) is published for global stakeholder consultation or before the start date of proposed project activity, whichever is earlier for the proposed project activity

The start date of the proposed project is 28/12/2017 which is earlier than the PSF published, so the applicable commercial operation starting date is 28/12/2017.

In conclusion, grid-connected wind power projects started operation before 28/12/2017 with installed capacity from 20MW to 60MW in Guangxi Zhuang Autonomous Region are selected for common practice analysis.

Sub-Step 4a-3: within the projects identified in Sub-Step 4a-2, identify those that are neither registered CDM project activities, project activities submitted for registration, nor project activities undergoing validation. Note their number N_{all} .

According to publicly available information, all grid-connected wind power projects started operation before the start date of proposed project activity with installed capacity from 20MW to 60MW in Guangxi Zhuang Autonomous Region have been registered under CDM/VCS/GS and other GHG program, therefore $N_{all}=0$.

Sub-Step 4a-4: within similar projects identified in Sub-Step 4a-3, identify those that apply technologies that are different to the technology applied in the proposed project activity. Note their number N_{diff} .

Since $N_{all}=0$, $N_{diff}=0$.

Sub-Step 4a-5: calculate factor $F=1-N_{diff}/N_{all}$ representing the share of similar projects (penetration rate of the measure/technology) using a measure/technology similar to the measure/technology used in the proposed project activity that deliver the same output or capacity as the proposed project activity.

Since both N_{all} and N_{diff} equal to 0, $N_{all}-N_{diff}=0$. As per am-tool-24-v03.1 Common practice, the project is not the common practice in Guangxi Zhuang Autonomous Region.

In conclusion, the project activity is not financially feasible and not a common practice, therefore the project is additional.

B.6. Estimation of emission reductions

B.6.1. Explanation of methodological choices

The GHG emission reduction calculation of the project was based on the applied methodology ACM0002 (version 20.0).

Baseline emissions include only CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as follows:

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

Where:

BE_y = Baseline emission in year y (tCO₂e)

$EG_{P,J,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)

$EF_{grid,CM,y}$ = Combined margin emission factor of CSG, calculated using the latest version of the “Tool to calculate the emission factor for an electricity system” (tCO₂e/MWh)

The project is a Greenfield wind power plant, then:

$$EG_{P,J,y} = EG_{facility,y} \quad (2)$$

Where:

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

Following ACM0002 (version 20.0), the baseline emission factor (EF_y) is calculated as a combined margin emission factor of CSG ($EF_{grid,CM,y}$), consisting of the combination of operating margin emission factor of CSG ($EF_{grid,OM,y}$) and build margin emission factor of CSG ($EF_{grid,BM,y}$) according to the following six steps defined in the “Tool to calculate the emission factor for an electricity system” (version 7.0). Data for the calculations are based on official national statistics books: China Energy Statistical Yearbook and China Electric Power Yearbook.

According to the latest version of the “Tool to calculate the emission factor for an electricity system”, $EF_{grid,CM,y}$ is calculated by following six steps:

- **Step 1:** Identify the relevant electricity systems;
- **Step 2:** Choose whether to include off-grid power plants in the project electricity system (optional);

- **Step 3:** Select a method to determine the operating margin (OM);
- **Step 4:** Calculate the operating margin emission factor according to the selected method;
- **Step 5:** Calculate the build margin (BM) emission factor;
- **Step 6:** Calculate the combined margin (CM) emission factor.

As China DNA has published the calculation method for emission factor of grid, the published data and method have been applied for this project to calculate operating margin (OM) and build margin, as following steps:

Step 1: Identify the relevant electricity systems;

This project site is in Guangxi Zhuang Autonomous Region of China, which belongs to CSG according to the public delineation of DNA⁸, so CSG is identified as the relevant electric system.

Step 2: Choose whether to include off-grid power plants in the project electricity system (optional);

For this project, Option I (only grid power plants are included in the calculation) is chosen.

Step 3: Select a method to determine the operating margin (OM);

Calculation of Operating Margin should be based on one of the four following methods according to the tool:

- (a) Simple OM, or
- (b) Simple adjusted OM, or
- (c) Dispatch Data Analysis OM, or
- (d) Average OM.

As the low-cost / must-run resources constituted less than 50% of total electricity generation of CSG in recent five years (respectively 27.54%, 24.29%, 24.13%, 23.54% and 23.47% in 2017, 2016, 2015, 2014 and 2013)⁹, the Simple OM (a) method is selected and the following data vintage is chosen to calculate the emission factor:

Ex ante option: use a 3-year generation-weighted average, based on the most recent data available, without requirement to monitor and recalculate the emissions factor during the crediting period. And according to the tool, the emission factor is determined once at the validation stage, thus no monitoring and recalculation of the emissions factor during the crediting period is required.

⁸ <http://cdm.ccchina.gov.cn/zyDetail.aspx?newsId=46143&Tid=161>

⁹ China Electric Power Yearbook (2014, 2015, 2016, 2017, 2018)

Step 4: Calculate the operating margin emission factor according to the selected method;

The Simple OM emission factor ($EF_{OM,y}$) is calculated as the generation-weighted average emissions per electricity unit (tCO₂e/MWh) of all generating sources serving in the system, excluding low-operating cost and must-run power plants. It may be calculated:

Option A: Based on the net electricity generation and a CO₂ emission factor of each power plant / unit, or

Option B: Based on the total net electricity generation of all power plants serving the system and the fuel types and total fuel consumption of the project electricity system.

Option B can only be used if:

- (a) The necessary data for Option A is not available; and
- (b) Only nuclear and renewable power generation are considered as low-cost/must-run power sources and the quantity of electricity supplied to the grid by these sources is known; and
- (c) Off-grid power plants are not included in the calculation.

In this project, all of the above conditions can be met, so Option B was chosen.

Under this option, the simple OM emission factor is calculated based on the net electricity supplied to the grid by all power plants serving the system, not including low-cost/must-run power plants/units, and based on the fuel type(s) and total fuel consumption of the project electricity system, as follows:

$$EF_{grid,OMsimple,y} = \frac{\sum i(FC_{i,y} \cdot NCV_{i,y} \cdot EF_{CO_2,i,y})}{EG_y} \quad (3)$$

Where:

- $EF_{grid,OMsimple,y}$ = Simple operating margin CO₂ emission factor in year y (tCO₂/MWh)
- $FC_{i,y}$ = Amount of fuel type i consumed in the project electricity system in year y (mass or volume unit)
- $NCV_{i,y}$ = Net calorific value (energy content) of fuel type i in year y (GJ/mass or volume unit)
- $EF_{CO_2,i,y}$ = CO₂ emission factor of fuel type i in year y (tCO₂/GJ)
- EG_y = Net electricity generated and delivered to the grid by all power sources serving the system, not including low-cost/must-run power plants/units, in year y (MWh)
- i = All fuel types combusted in power sources in the project electricity system in year y

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y = The relevant year as per the data vintage chosen in **Step 3**.

Based on the most recent three years (2015-2017) where the data are the latest and available at the time of this PSF submission, the calculation result of $EF_{grid,OM,y}$ is 0.8042 tCO₂e/MWh. Please refer to ER calculation sheet for detailed calculation.

Step 5: Calculate the build margin (BM) emission factor;

As per Section 6.5 of TOOL07 (version 07.0), in terms of vintage of data, project participants can choose between one of the following two options:

(a) Option 1 - for the first crediting period, calculate the build margin emission factor ex ante based on the most recent information available on units already built for sample group m at the time of CDM-PDD submission to the DOE for validation. For the second crediting period, the build margin emission factor should be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the DOE. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used. This option does not require monitoring the emission factor during the crediting period;

(b) Option 2 - For the first crediting period, the build margin emission factor shall be updated annually, ex post, including those units built up to the year of registration of the project activity or, if information up to the year of registration is not yet available, including those units built up to the latest year for which information is available. For the second crediting period, the build margin emissions factor shall be calculated ex ante, as described in Option 1 above. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used.

In line with China's Baseline emission factors of regional grids 2019 (BEF_{2019}) published by the Development and Reform Commission of China, Option 1 is chosen for the project; the BM emission factor is calculated ex ante based on the most recent information available on units already built for sample group m at the time of this project description submission.

The sample group of power units m used to calculate the build margin should be determined as per the following procedure, consistent with the data vintage selected above:

(a) Identify the set of five power units, excluding power units registered as CDM project activities, that started to supply electricity to the grid most recently ($SET_{5-units}$) and determine their annual electricity generation ($AEG_{SET-5-units}$, in MWh);

(b) Determine the annual electricity generation of the proposed project electricity system, excluding power units registered as CDM project activities (AEG_{total} , in MWh). Identify the set of power units, excluding power units registered as CDM project activities, that started to supply electricity to the grid most recently and that comprise 20% of AEG_{total} (if 20% falls on part of the generation of a unit, the generation of that unit is fully included in the calculation) ($SET_{\geq 20\%}$) and determine their annual electricity generation ($AEG_{SET_{\geq 20\%}}$, in MWh)

(c) From $SET_{5-units}$ and $SET_{\geq 20\%}$ select the set of power units that comprises the larger annual electricity generation (SET_{sample});

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Identify the date when the power units in SET_{sample} started to supply electricity to the grid. If none of the power units in SET_{sample} started to supply electricity to the grid more than 10 years ago, then use SET_{sample} to calculate the build margin. In this case ignore Steps (d), (e) and (f).

Otherwise:

(d) Exclude from SET_{sample} the power units which started to supply electricity to the grid more than 10 years ago. Include in that set the power units registered as CDM project activities, starting with power units that started to supply electricity to the grid most recently, until the electricity generation of the new set comprises 20% of the annual electricity generation of the proposed project electricity system (if 20% falls on part of the generation of a unit, the generation of that unit is fully included in the calculation) to the extent is possible. Determine for the resulting set ($SET_{sample-CDM}$) the annual electricity generation ($AEG_{SET-sample-CDM}$, in MWh); If the annual electricity generation of that set comprises at least 20% of the annual electricity generation of the proposed project electricity system (i.e. $AEG_{SET-sample-CDM} \geq 0.2 \times AEG_{total}$), then use the sample group $SET_{sample-CDM}$ to calculate the build margin. Ignore steps (e) and (f).

Otherwise:

(e) Include in the sample group $SET_{sample-CDM}$ the power units that started to supply electricity to the grid more than 10 years ago until the electricity generation of the new set comprises 20% of the annual electricity generation of the proposed project electricity system (if 20% falls on part of the generation of a unit, the generation of that unit is fully included in the calculation);

(f) The sample group of power units m used to calculate the build margin is the resulting set ($SET_{sample-CDM \rightarrow 10yrs}$).

The BM emissions factor is the generation-weighted average emission factor (tCO₂/MWh) of all power units m during the most recent year y for which electricity generation data is available, calculated as follows:

$$EF_{grid,BM,y} = \frac{\sum_m (EG_{m,y} \times EF_{EL,m,y})}{\sum_m EG_{m,y}} \quad (4)$$

where:

$EF_{grid,BM,y}$ = Build margin emission factor of CSG (tCO₂/MWh)

$EG_{m,y}$ = Net quantity of electricity generated and delivered to the grid by power unit m in year y (MWh)

$EF_{EL,m,y}$ = CO₂ emission factor of power unit m in year y (tCO₂/MWh)

m = Power units included in the build margin

y = The most recent year for which the generation data is available

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As it is difficult to obtain the detailed data on the power generation, fuel consumption and thermal efficiency of each newly built power unit from public documents, a deviation of TOOL07 (07.0) is adopted following the clarifications¹⁰ given by the CDM EB concerning the BM emission factor calculation:

- (1) The CDM EB suggested using the efficiency level of the best technology commercially available in the provincial/regional or national grid of China, as a conservative proxy, for each fuel type in estimating the fuel consumption to estimate the build margin.
- (2) The EB agreed the use of capacity additions during last 1 ~ 3 years for estimating the build margin emission factor for grid electricity.
- (3) The EB also agreed to use of weights estimated using installed capacity in place of annual electricity generation.

The newly built power plants in the past few years are bundled into “grouped new power plant” according to their construction year, their province and their fuel type. The annual net electricity generation in the year y of each “grouped new power plant” EG_m , is estimated according to their total capacity and the average utilization hours, as the following equation:

$$EG_m = CAP_m \times H_{m,y} \quad (5)$$

where:

- $EG_{m,y}$ = Annual net electricity generation the unit m in year y (MWh)
- CAP_m = Installed capacity of the unit m (MW)
- $H_{m,y}$ = Utilization hour of the unit m in the year y (h), determined according to the average utilization hour of the same type of unit in the same province
- y = The most recent year for which the generation data is available. For the calculation of BM in 2019, $y = 2017$
- m = grouped new power plant

Since the newly built power plants in the same province (A), in the same year (t) and using the same fuel type (k) are grouped into “a grouped new power plant”, CAP_m represents the total installed capacity of fuel type k power plants located in the provinces A and in the year t :

$$CAP_m = CAP_{A,k} \quad (6)$$

where:

¹⁰ “Request for clarification on use of approved methodology AM0005 for several projects in China”, the EB’s guidance on DNV deviation request.
http://cdm.unfccc.int/UserManagement/FileStorage/AM_CLAR_QEJWJEF3CFBP10ZAK6V5YXPQKK7WYJ

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- CAP_m = Installed capacity of the unit m (MW), with m representing the specified combination of A , t , and k
- $CAP_{A,t,k}$ = Total installed capacity of fuel type k power plants located in the province A and in the year t
- A = Provinces covered by the CSG, namely, Guangdong Province, Yunnan Province, Guizhou Province, Hainan Province and Guangxi Zhuang Autonomous Region.
- t = Years related to the grouped new power plants, for the 2019 calculation, t represents 2017, 2016, 2015.... Until the aggregated electricity generation of the grouped new power plants reaches 20% of the total electricity generation of the CSG
- k = Fuel type of the grouped new power plants, including hydro, thermal (coal, gas, oil, waste incineration, other thermal), nuclear, wind, solar and others.

Figure 5 shows the procedure to determine the sample group of power units m .

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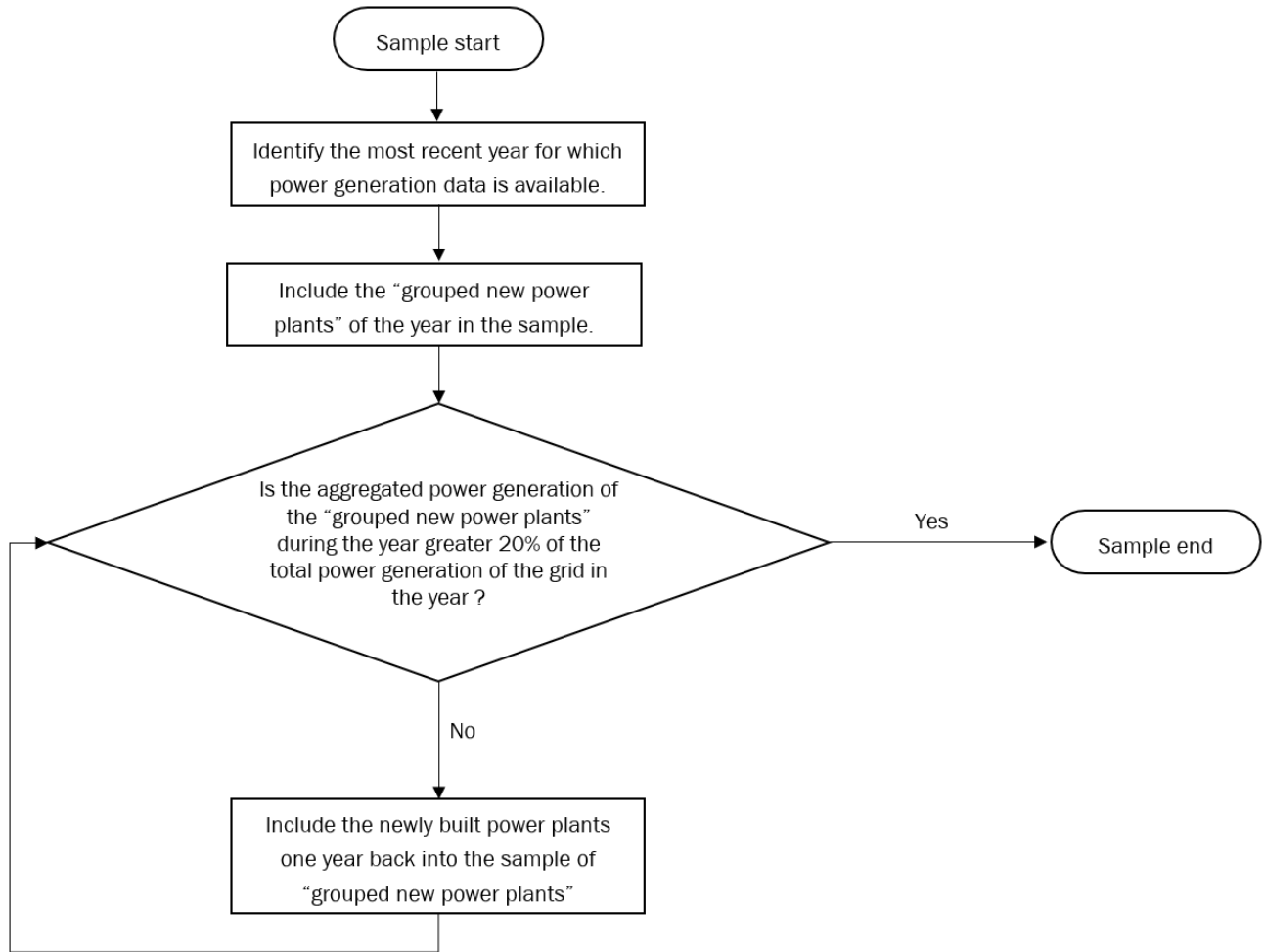


Figure 5 Procedure to determine the sample group of power units m used for the BM emission factor Calculation

The emission factors of each fuel type $EF_{EL,y}$ are determined according to the Option A2 in the TOOL07, as the following equation:

$$EF_{EL,m,y} = \frac{EF_{CO_2,m,i,y} \times 3.6}{\eta_{m,y}} \quad (7)$$

where:

- $EF_{EL,m,y}$ = CO₂ emission factor of power unit m in year y (tCO₂/MWh)
- $EF_{CO_2,m,i,y}$ = Average CO₂ emission factor of fuel type i used in power unit m in year y (tCO₂/GJ)
- $\eta_{m,y}$ = Average net energy conversion efficiency of power unit m in year y (ratio)

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m = All power units serving the grid in year y except low-cost / must-run power units

3.6 = Conversion factor (GJ/MWh)

Among the fuel types, the emission factors of hydro, nuclear, wind, other thermal and others are 0. Concerning the emission factors of coal, gas, oil and waste incineration, Equation takes the following form due to conservativeness:

$$EF_{best,m,y} = \frac{EF_{CO_2,m,i,y} \times 3.6}{\eta_{best,y}} \quad (8)$$

where:

$EF_{best,m,y}$ = Emission factor of power unit m with the best technology commercially available in year y (tCO₂/MWh)

$\eta_{best,y}$ = Power generation efficiency of the best technology commercially available in year y

m = Power units serving the grid with coal, gas, oil or waste incineration in year y

According to the latest and available data at the time of this PSF submission, $EF_{grid,BM,y}$ is calculated to be 0.2135 tCO₂e/MWh. Please refer to ER calculation sheet for the details of calculation.

Step 6: Calculate the combined margin (CM) emission factor.

The calculation of the combined margin emission factor ($EF_{grid,CM,y}$) is based on one of the following methods:

(a) Weighted average CM; or

(b) Simplified CM.

The weighted average CM method (option A) should be used as the preferred option.

The simplified CM method (option b) can only be used if:

a) The project activity is located in: (i) a Least Developed Country (LDC); or in (ii) a country with less than 10 registered CDM projects at the starting date of validation; or (iii) a Small Island Developing States (SIDS); and

b) The data requirements for the application of step 5 above cannot be met.

This PSF choose option A.

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The combined margin emissions factor is calculated as follows:

$$EF_{grid,M,y} = EF_{grid,OM,y} \times W_{OM} + EF_{grid,BM,y} \times W_{BM} \quad (9)$$

Where:

$EF_{grid,OM,y}$ = a) operating margin emission factor of CSG (tCO₂e/MWh)

$EF_{grid,BM,y}$ = b) build margin CO₂ emission factor of CSG (tCO₂e/MWh)

W_{OM} = c) the weighting of operating margin emission factor (%)

W_{BM} = d) the weighting of build margin emission factor (%)

According to the tool, as a wind power generation project, $W_{OM} = 0.75$ and $W_{BM} = 0.25$ for the second crediting period.

$$EF_{grid,CM,y} = 0.8042 * 0.75 + 0.2135 * 0.25 = 0.6565 \text{ tCO}_2\text{e/MWh}$$

Project Emissions

As a wind power generation project, according to ACM0002 (version 20.0), the project emissions $PE_y = 0$.

Leakage

According to ACM0002 (version 20.0), no leakage emissions are considered.

Net GHG Emission Reductions

Net GHG Emission Reductions are calculated as follows:

$$ER_y = BE_y - LE_y - PE_y$$

Where

ER_y = Emission reductions in year y (tCO₂e)

BE_y = Baseline emissions in year y (tCO₂e)

PE_y = Project emissions in year y (tCO₂e)

LE_y = Leakage emissions in year y (tCO₂e)

Since $LE_y = 0$ and $PE_y = 0$

$$ER_y = BE_y$$

B.6.2. Data and parameters fixed ex ante

Data / Parameter Table 1.

Data / Parameter:	$EF_{grid,y}$ ($EF_{grid,CM,y}$)
Methodology reference	ACM0002 (Version 20.0)
Data unit	tCO ₂ /MWh
Description	Combined margin emission factor of CSG
Measured/calculated /default	Calculated
Data source	2019 Baseline Emission Factors for Regional Power Grids in China, published by China DNA
Value(s) of monitored parameter	0.6565
Measurement/ Monitoring equipment (if applicable)	-
Measuring/reading/ recording frequency (if applicable)	Ex-ante determined and fixed for the crediting period.
Calculation method (if applicable)	Calculated as per am-tool-07-v7.0 Tool to calculate the emission factor for an electricity system
QA/QC procedures	Official data from DNA
Purpose of data	Baseline emission calculation
Additional comments	The detailed calculation process of $EF_{grid,OM,y}$ and $EF_{grid,BM,y}$ can be found at the following link: http://www.mee.gov.cn/ywgz/xdqhbh/wsqtgz/202012/t20201229_815386.shtml

B.6.3. Ex-ante calculation of emission reductions

Year	$EG_{PJ,y}$ (MWh)	$EF_{grid,y}$ (tCO _{2e} /MWh)	Baseline Emissions (tCO _{2e})
2019/12/04-2020/12/03	79,538	0.6565	52,217
2020/12/04-2021/12/03	79,538	0.6565	52,217
2021/12/04-2022/12/03	79,538	0.6565	52,217
2022/12/04-2023/12/03	79,538	0.6565	52,217
2023/12/04-2024/12/03	79,538	0.6565	52,217
2024/12/04-2025/12/03	79,538	0.6565	52,217

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2025/12/04-2026/12/03	79,538	0.6565	52,217
2026/12/04-2027/12/03	79,538	0.6565	52,217
2027/12/04-2028/12/03	79,538	0.6565	52,217
2028/12/04-2029/12/03	79,538	0.6565	52,217
Total	795,380	0.6565	522,170

B.6.4. Summary of ex ante estimates of emission reductions

Year	Baseline emissions (tCO ₂ e)	Project emissions (tCO ₂ e)	Leakage (tCO ₂ e)	Emission reductions (tCO ₂ e)
2019/12/04-2020/12/03	52,217	0	0	52,217
2020/12/04-2021/12/03	52,217	0	0	52,217
2021/12/04-2022/12/03	52,217	0	0	52,217
2022/12/04-2023/12/03	52,217	0	0	52,217
2023/12/04-2024/12/03	52,217	0	0	52,217
2024/12/04-2025/12/03	52,217	0	0	52,217
2025/12/04-2026/12/03	52,217	0	0	52,217
2026/12/04-2027/12/03	52,217	0	0	52,217
2027/12/04-2028/12/03	52,217	0	0	52,217
2028/12/04-2029/12/03	52,217	0	0	52,217
Total	522,170	0	0	522,170
Total number of crediting years	10			
Annual average over the crediting period	52,217	0	0	52,217

B.7. Monitoring plan

B.7.1. Data and parameters to be monitored

Data / Parameter Table 2.

Data / Parameter:	$EG_{facility,y} (EG_{P,J,y})$
Methodology reference	ACM0002 (Version 20.0)
Data unit	MWh
Description	Net Electricity generated and delivered to the grid by the power plant in year y
Measured/calculated/default	Calculated
Data source	Calculated

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Value(s) of monitored parameter	79,538 (ex-ante estimated)
Measurement/ Monitoring equipment	-
Measuring/reading/ recording frequency	Measured continuously and recorded monthly
Calculation method (if applicable)	Calculated based on the electricity delivered to the grid by the project ($EG_{out,y}$) and the electricity consumed by the project which is imported from the grid ($EG_{in,y}$). $EG_{facility,y} = EG_{out,y} - EG_{in,y}$
QA/QC procedures	The calibration of meters, including the frequency of calibration, should be done in accordance with national standards or requirements set by the meter supplier or requirements set by the grid operators. The accuracy class of the meters should be in accordance with the stipulation of the meter supplier and/or as per the requirements set by the grid operators or national requirements.
Purpose of data	Calculation of baseline emissions
Additional comments	-

Data / Parameter:	$EG_{out,y}$	
Methodology reference	ACM0002 (Version 20.0)	
Data unit	MWh	
Description	Quantity of the electricity delivered to the grid by the project in year y	
Measured/calculated /default	On-site measurement	
Data source	On-site measurement	
Value(s) of monitored parameter	79,538 (ex-ante estimated)	
Measurement/ Monitoring equipment		
	Type of meter	WQ.MT860
	Location of meter	On-site
	Accuracy of meter	0.5S
	Serial number of meter	-
	Calibration frequency	Every year
	Date of Calibration/ validity	-
	Reference No. of Calibration Certificate	-
	Calibration Status	Calibrated
Type of meter	WQ.MT860	
Location of meter	On-site	

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	Accuracy of meter	0.5S
	Serial number of meter	-
	Calibration frequency	Every year
	Date of Calibration/ validity	-
	Reference No. of Calibration Certificate	-
	Calibration Status	Calibrated
Measuring/reading/ recording frequency	Measured continuously and recorded monthly	
Calculation method (if applicable)	-	
QA/QC procedures	Cross check measurement results with records for sold electricity. The calibration of meters, including the frequency of calibration, should be done in accordance with national standards or requirements set by the meter supplier or requirements set by the grid operators. The accuracy class of the meters should be in accordance with the stipulation of the meter supplier and/or as per the requirements set by the grid operators or national requirements.	
Purpose of data	Calculation of baseline emissions	
Additional comments	-	

Data / Parameter:	$EG_{in,y}$	
Methodology reference	ACM0002 (Version 20.0)	
Data unit	MWh	
Description	Quantity of the electricity consumed by the project which is imported from the grid in year y	
Measured/calculated /default	On-site measurement	
Data source	On-site measurement	
Value(s) of monitored parameter	0	
Measurement/ Monitoring equipment		
	Type of meter	WQ.MT860
	Location of meter	On-site
	Accuracy of meter	0.5S
	Serial number of meter	-
	Calibration frequency	Every year
	Date of Calibration/ validity	-
	Reference No. of Calibration Certificate	-
	Calibration Status	Calibrated
Type of meter	WQ.MT860	
Location of meter	On-site	

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	Accuracy of meter	0.5S
	Serial number of meter	-
	Calibration frequency	Every year
	Date of Calibration/ validity	-
	Reference No. of Calibration Certificate	-
	Calibration Status	Calibrated
Measuring/reading/ recording frequency	Measured continuously and recorded monthly	
Calculation method (if applicable)	-	
QA/QC procedures	Cross check measurement results with records for sold electricity. The calibration of meters, including the frequency of calibration, should be done in accordance with national standards or requirements set by the meter supplier or requirements set by the grid operators. The accuracy class of the meters should be in accordance with the stipulation of the meter supplier and/or as per the requirements set by the grid operators or national requirements.	
Purpose of data	Calculation of baseline emissions	
Additional comments	-	

B.7.2 Monitoring-program of risk management actions

There is no parameter evaluated as “Harmful” in Section E.

B.7.3. Sampling plan

N/A

B.7.4. Other elements of the monitoring plan

1. Operation and management structure

Overall responsibility for daily monitoring and reporting lies with the project owner. A monitoring group will be established within the project company to carry out the monitoring work. The structure of the monitoring group is as follows:

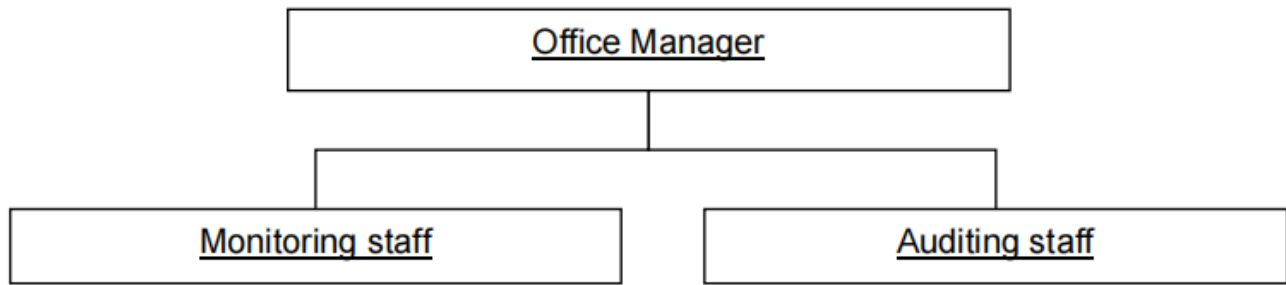


Figure 6 Organization structure of the monitoring team

The responsibilities of each role in the team structure are:

- Office manager has the overall management responsibility, especially supervising the implementation of the monitoring plan.
- Monitoring staff measures the electricity imported to and exported from the project.
- Auditing staff performs internal verification of the measurement, collects relevant receipts and calculates emission reductions.

Finally, the monitoring reports will be reviewed by the General Manager.

2. Monitoring equipment and installation

The electricity generated by the project was boosted to 220kV by main transformer (#1) before connected to the 220kV Chuyue Line.

And two bi-directional meters M1 and M2 were installed in the high voltage side of #1 main transformer to measure the electricity delivered to the grid by the project ($EG_{out,y}$) and the electricity consumed by the project from grid ($EG_{in,y}$)

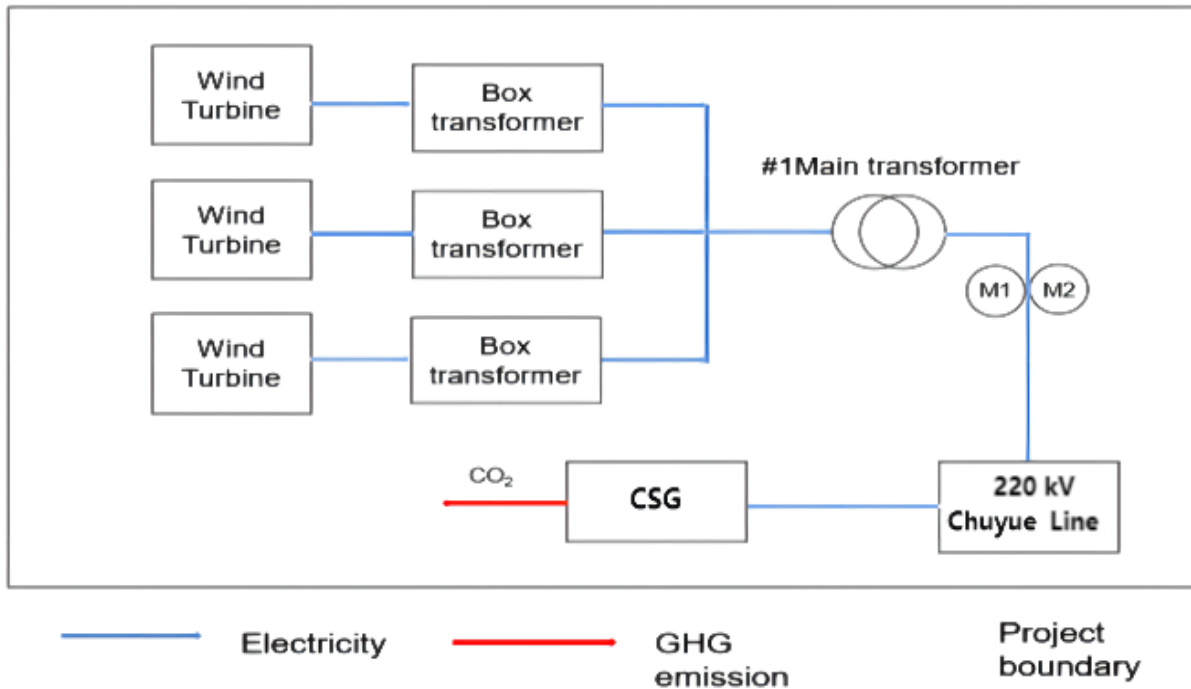
$EG_{out,y}$ and $EG_{in,y}$ are recorded by reading from main meter M1, when M1 is out of order, the readings from the back-up meter M1' shall be used for reference. The main meter and back-up meter is owned, operated and maintained by the grid company. The total electricity delivered to the grid by the project:

$$EG_{facility,y} = EG_{out,y} - EG_{in,y}$$

The meters were configured to meet the technology requirements of “Management Regulations for Power Metered Device Technology” (DL/T448-2016) and the subsequent industrial standards. These meters installed for power measurement should reach 0.5 or above in accuracy degree. And before the electric energy metering equipment was put into operation, the project owner and power grid company have checked and accepted the equipment according to the regulation.

The power line diagram of the project is shown as follow:

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3. Data collection system

The procedures of data recording and collecting are listed below:

- The project owner reads the main meter (M1) every month and then submits the reading results to the grid company. Upon agreement on the electricity reading from both parties, the power grid pays the project owner for exported electricity and the project owner provides the grid company with a sale receipt.
- The project owner files the meter readings in the monthly report, a data collection form designed for monitoring. The data on this monthly report which can be cross-checked with the electricity sale receipt are used to calculate emission reductions.
- The project owner collects and keeps on file maintenance records, meter calibration documents.

4. Quality assurance and quality control (QA/QC)

QA/QC practice involves:

- The metering equipment will be calibrated and checked annually for accuracy;
- Calibration will be carried out by qualified parties with the records being supplied to the project owner, and the calibration shall ensure sufficient accuracy so that any error resulting from such equipment shall not exceed the allowable error of full-scale rating.
- When M1 is out of work, M2 will be used for measurement, and no emission reduction will be claimed when both M1 and M2 are out of work.
- All data collected as part of monitoring is archived electronically. All information should be stored by the technology department of the project owner and all the material has a physical

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copy for backup. In order to facilitate auditors' reference of relevant literature relating to the project, the project material and monitoring results are indexed. And all data including calibration records is kept until 2 years after the end of the crediting period.

Section C. Start date, crediting period type and duration

C.1. Start date of the Project Activity

30/04/2019 (the date the first wind turbine was put into operation)

C.2. Expected operational lifetime of the Project Activity

20 years

C.3. Crediting period of the Project Activity

C.3.1. Fixed crediting period

The crediting period is fixed as 10 years.

C.3.2. Start date of the crediting period

04/12/2019 (the date all wind turbines are connected to the grid)

C.3.3. Duration of the crediting period

10 years (04/12/2019~ 03/12/2029)

Section D. Environmental impacts

D.1. Analysis of environmental impacts

The potential environmental impacts by the project during construction and operation are analyzed below:

Construction Period:

Noise pollution

The noise sources generated by the dump trucks and other transportation facilities used in this project are mobile noise sources. The sound level ranges from 75dB(A) to 92dB(A). However, because the off-site transportation of vehicles mainly uses the current highway, the impact on the residents near the highway is therefore not significant. On-site transportation mainly uses the temporary and

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permanent roads. Since there are few residents in the site and the road planning has avoided the residents, the impact is not significant.

The construction of this project is carried out during daytime, and the noise generated by the machinery and equipment used in the construction process is about 85dB(A)~102dB(A), which drops below 70dB(A) at 50 meters away from the source. The noise at the construction site can meet the requirements of "*Construction Site Noise Limits GB12523-2011*" of 85dB during daytime. The noise drops to below 55dB(A) at 250 meters away from the source, which basically meets the requirements of "*Environmental Quality Standard for Noise GB3096-2008*" of 55dB(A) during daytime. Because the construction area is far from the residential area, the construction period basically has no impact on the surrounding sound environment.

Air pollution

During the construction period, the main air pollutants is TSP which generated from construction dust and exhaust dust from construction vehicles and machinery. The dust volume is related to many factors such as the construction site conditions, management level, mechanization degree, construction season, soil quality and weather. Water sprinkling can reduce the amount of dust by more than 80%. During the construction period, the exhaust gas mainly comes from the emission of construction machinery and transportation vehicles, and the main pollution factors in the exhaust emissions are CO and NO_x. The amount of air pollutants is small and the construction site is relatively open, therefore the actual impact is not very big. Moreover, the construction period is short-term, and the air pollutants will disappear with the end of the construction period.

Water pollution

Wastewater during the construction mainly includes domestic sewage and construction machinery cleaning wastewater. The construction machinery cleaning wastewater includes mainly sediment, and the wastewater will be recycled after treated in the sedimentation tank basically without pollution. The main pollutants in the domestic sewage of construction personnel are SS, COD_{Cr}, but the concentration is low.

Groundwater is used for on-site construction water supply, and a cistern is set up on the site. The domestic sewage and machinery cleaning wastewater of the project will be collected centrally, and after treatment, they will flow into the nearby drainage spring well and be discharged out of the site. And the drainage water will eventually seep into the ground and flow into the nearby seasonal river.

Solid waste

The solid waste generated during the construction period is mainly domestic waste generated by onsite construction workers and construction waste. The domestic waste will be collected and transported to landfill site by the local environmental sanitation department. Construction waste mainly includes abandoned earthwork. Part of earthwork will be used for backfilling, the rest will be properly collected and stored at the designated location appointed by the local government.

Ecological environment impact

The transportation of vehicles, the placement and stacking of construction machinery and materials, the roads for maintenance and construction, and the living areas of construction personnel will all cause damage and occupation to the land and plants to a certain extent.

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Construction noise, dust, and transportation vehicles will interfere with the original living environment of some animals such as rodents and birds, making it impossible for them to forage, nest and breed within the site.

Because of the short construction period, the small size of the site relative to the whole area, and the animals' instinct to avoid danger, there is little impact on the animals during construction, let alone a decline in the number of animals.

Operation Period:

Air pollution

Wind power project does not generate air pollution.

Noise pollution

The main noise during the operation period is the noise generated by the wind turbine and transformer. After free attenuation, the noise will have little impact on the surrounding environment. It can meet the requirements of the national "*Environmental Quality Standard for Noise GB3096-2008*" Category 1 standard requirements. Therefore, the noise during the operation period has little impact on the surrounding environment.

Water pollution

The waste water in operation period is mainly machine repair waste water and workers' living sewage. The machine repair wastewater mainly comes from the machine repair workshop constructed in the booster substation service area, and the main pollutant is petroleum. The machine repair wastewater is pretreated with a simple oil trap, and then collected together with domestic sewage. It is treated with buried integrated sewage treatment equipment. The sewage flows into the nearby drainage well, and is removed from the site with a pump. And the drainage eventually seeps into the underground or into the nearby seasonal river. Due to the small amount of sewage, the treated wastewater has little impact on the surrounding water quality.

Solid waste

The solid waste during the operation period mainly includes domestic waste by onsite project staffs. Domestic waste is collected and classified in the trash bins, and then transported to landfill site by the local environmental sanitation department.

In conclusion, the environmental impact during the construction was temporary and not significant, and the environmental impact during the project operation will be minor. The Project owner has taken appropriate measures to minimize adverse environmental impacts.

D.2. Environmental impact assessment

Environmental impact assessment (EIA) was conducted by Guangxi T-Energy Engineering Consulting Co., Ltd. in 2015. The EIA report dated November 2014 has been evaluated and approved by Environment Protection Bureau of Hezhou City, Guangxi Zhuang Autonomous Region. The EIA approval (Hehuanshen [2015] No.112) was issued on 09/12/2015.

The EIA report has identified all possible environmental impacts by the project and recommended

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proper measures to minimize adverse environmental impacts, which have been fully described in section D.1 above. The EIA approvals from the government official state that all the environmental protection measures recommended in the EIA reports shall be adopted by the project to ensure that all environmental impacts and pollutants emissions comply with national standards and regulations. Environment supervision team from the local Environment Protection Bureau will conduct spot check on the project's implementation of environmental protection measures periodically.

Section E. Environmental and social safeguards

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E.1. Environmental safeguards

Impact of Project Activity on		Information on Impacts, Do-No-Harm Risk Assessment and Establishing Safeguards									Project Owner's Conclusion	
		Description of Impact (both positive and negative)	Legal requirement / Limit	Do-No-Harm Risk Assessment			Risk Mitigation Action Plans		Do-No-Harm Residual Risk Assessment		Self-Declaration	
				Not Applicable (No actions required)	Harmless (No actions required)	Harmful (Actions required)	Operational Controls	Program of Risk Management Actions	Re-evaluate Risks	Monitoring	Explanation of Conclusion	The Project Activity will not cause any harm
Environmental impacts on the identified categories¹¹ indicated below.	Indicators for environmental impacts	Describe anticipated environmental impacts, both positive and negative from all sources (stationary and mobile), that may result from the Project Activity, within and outside the project boundary, over which the Project Owner(s) has control, and beyond what would reasonably be expected to occur in the absence of the Project Activity.	Describe the applicable national regulatory requirements /legal limits related to the identified risks of environmental impacts.	If no environmental impacts are anticipated, then the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as Not Applicable (No actions required)	If environmental impacts are anticipated, but are expected to be in compliance with applicable national regulatory requirements/ below the legal limits, then the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as Harmless (No actions required)	If environmental impacts are anticipated that will not be in compliance with the applicable national regulatory requirements or are likely to exceed legal limits, then the Project Activity is likely to cause harm (may be un-safe) and shall be indicated as Harmful (Actions required).	Describe the operational controls and best practices, focusing on how to implement and operate the Project Activity, to reduce the risk of impacts that have been identified as Harmful .	Describe the Program of Risk Management Actions (refer to Table 3), focusing on additional actions (e.g., installation of pollution control equipment) that will be adopted to reduce the risk of impacts that have been identified as Harmful .	Re-evaluate risks after Risk Mitigation Action Plans have been developed (refer to previous two columns) for impacts that have been identified as Harmful . Indicate whether the risks have been eliminated or reduced and, where appropriate, indicate them as Harmless (No actions required)	Describe the monitoring approach and the parameters to be monitored for each impact that has been identified as Harmful and described in the PSF (refer to Table 3).	Describe how the Project Owner has concluded that the Project Activity is likely to achieve the identified Risk Mitigation Action Plan targets for managing risks to levels that are unlikely to cause any harm.	Confirm that the Project Activity risks of negative environmental impacts are expected to be managed to levels that are unlikely to cause any harm (Mark +1 for Yes or and -1 for No)
Environmental Safeguards												
Environment - Air	SO _x emissions	N/A	Based on the National Ambient Air Quality Standards GB3095-2012 ¹² , the 24-hour average	N/A	-	-	N/A	N/A	N/A	N/A	N/A	

¹¹ sourced from the CDM SD Tool and the sample reports are available (<https://www4.unfccc.int/sites/sdcmicrosite/Pages/SD-Reports.aspx>)

¹² National Ambient Air Quality Standards GB3095-2012 (https://www.mee.gov.cn/ywgz/fgbz/bz/bzwb/dqjhbdqjzlbz/201203/t20120302_224165.shtml)

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			concentration limit for SO ₂ is 150µg/m ³ .									
<i>NO_x emissions</i>	N/A		Based on the National Ambient Air Quality Standards GB3095-2012, the 24-hour average concentration limit for NO ₂ is 80µg/m ³ and for NO _x is 100µg/m ³ .	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
<i>CO₂ emissions</i>	The project reduces CO ₂ emissions since it reduces the amount of fossil fuel consumed. In the case of "no project", stated amount of electricity would be generated from fossil fuels and cause air pollution.	There are no laws and regulations which limit the CO ₂ emissions by wind power generation projects in China.	The project reduces CO ₂ emissions, hence the project will not cause any harm in this regard.	-	-	N/A	N/A	N/A	The electricity generated by the project will be monitored and CO ₂ emission reduction will be calculated accordingly.	Chinese national power grid is still dominated by fossil fuel based power generation. This project uses wind power generation to replace the equivalent amount of electricity provided by the national power grid, thereby reducing CO ₂ emissions, which will be regularly monitored and verified ex-post and therefore, it is eligible to be scored.	+1	
<i>CO emissions</i>	N/A		Based on the National	N/A	-	-	N/A	N/A	N/A	N/A	N/A	

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			Ambient Air Quality Standards GB3095-2012, the 24-hour average concentration limit for CO is 4µg/m ³ .									
<i>Suspended particulate matter (SPM) emissions</i>	N/A		Based on the National Ambient Air Quality Standards GB3095-2012, the 24-hour average concentration limit for PM ₁₀ is 150µg/m ³ and for PM _{2.5} is 75µg/m ³ .	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
<i>Fly ash emissions</i>	N/A	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
<i>Non-Methane Volatile Organic Compounds (NMVOCs)</i>	N/A	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
<i>Odor emissions</i>	N/A	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
<i>Noise Pollution</i>	During the construction period, the noise may be generated from building up the infrastructure of wind farm and installation of wind turbines, such as the equipment	Based on the Environmental Quality Standard for Noise GB3096-2008 ¹³ , for class I Acoustic Environmental Functional Area, the	-	Some measures are taken to limit the noise impact on the surrounding environment. For example, construction only in the daytime,	-	-	N/A	N/A	N/A	The noise within and outside the project boundary will be monitored at periodic interval.	The noise outside the project facility complies with national regulation. The project has taken some measures to significantly minimize the impact	+1

¹³ Environmental Quality Standard for Noise GB3096-2008 (https://www.mee.gov.cn/ywgf/fgbz/bz/bzwb/wlhj/shjzlbz/200809/t20080917_128815.shtml)

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		operation noise from excavation, drilling and cement mixing etc. During the operation period, the noise comes from the aerodynamic noise generated by the rotation of the wind turbine blades, the mechanical noise from the gearbox and generator components and the daily operation of the 220kV booster station transformer in the control center.	noise level should be under 55dB during the day and 45dB during the night.		keep a certain distance from the residential area, adopt low-noise technology and equipment, keep monitoring the noise level and ensure that it falls below the standard. Since the wind turbines are far apart from each other, the noise level is simulated and estimated to be lower than the legal limit. Therefore, the project is deemed Harmless .						on local acoustic environment . The closest residential area is more than 300m away from the wind turbines. Low-noise equipment and technology are adopted to this project. Therefore, this project does no harm to the surrounding acoustic environment and it is eligible to be scored.	
Environment - Land	<i>Solid waste Pollution from Plastics</i>	There may be plastic wastes generated at the end of domestic use by the staffs at the project site. A contractor is responsible for the collection and disposal of those plastic wastes properly.	Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Waste ¹⁴ stipulates proper collection and disposal of	-	The plastic waste is properly collected and disposed as per regulations. There is no negative impact on land environment by any solid waste pollution from plastics.	-	N/A	N/A	N/A	The plastic wastes will be collected and disposed properly by a contractor on a weekly basis.	The solid waste pollution from plastics is properly collected and disposed as per regulations.	+1

¹⁴ Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Waste (<http://english.mofcom.gov.cn/article/policyrelease/internationalpolicy/200703/20070304471567.html>)

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			plastic wastes.		Therefore, the project is deemed Harmless.							
<i>Solid waste Pollution from Hazardous wastes</i>	The hazardous substances during the operation period of this project are lubricating oil, hydraulic oil and transformer oil. While the hazardous wastes would mainly be the waste oil generated from the equipment maintenance such as the waste lubricating oil and waste hydraulic oil. The maintenance specialist is responsible for collecting the waste oil and send it to a qualified hazardous waste disposal organization. There is a potential risk of transformer oil leakage during the equipment failure; and wind turbine lubricating oil leakage and hydraulic oil	The hazardous waste must be stored in accordance with the Standard for Pollution Control on Hazardous Waste Storage GB18597-2001 ¹⁵ . The transfer of hazardous waste must comply with the Administrative Measures on the Management of Hazardous Waste Manifests ¹⁶ issued by the Ministry of Ecology and Environment. The management and treatment of hazardous waste must strictly comply with the Hazardous Waste Pollution Prevention and Control	-	-	The hazardous wastes is properly managed, transferred, treated and disposed as per regulations. The impact on surrounding land environment is controlled and minimized to comply with the Standards and Law. Therefore, the project is deemed Harmless.	-	N/A	N/A	N/A	During the operation period, regular inspection is performed to the wind turbines, transformer and other equipment to avoid any oil leakage. While doing the maintenance service, the maintenance specialist is responsible for managing the waste oil following the regulations. The amount of transformer oil used and waste will be recorded by the operation team. The waste transformer oil is properly stored in a controlled storage room and sent to a qualified hazardous waste	A comprehensive solid waste management plan is developed to remove the negative impact on land environment. An emergency response plan is also developed in case of any accidental oil leakage from the transformer. A special oil sump, with volume of 60m ³ , is in place for any emergency drain of transformer oil in order to prevent any oil from entering the environment. Therefore, this project does no harm to the land environment and it is eligible to be scored.	+1

¹⁵ Standard for Pollution Control on Hazardous Waste Storage GB18597-2001 (https://www.mee.gov.cn/ywgz/fgbz/bz/bzwb/gthw/gtfwwrkzbz/200207/t20020701_63217.shtml)

¹⁶ Administrative Measures on the Management of Hazardous Waste Manifests (http://english.mee.gov.cn/Resources/laws/regulations/Solid_Waste/200710/t20071025_112181.shtml)

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		leakage during maintenance. The project site has developed an emergency response plan for any oil leakage in order to minimize the impact on surrounding land environment.	Policy ¹⁷ which is formulated in accordance with the Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Waste.							disposal organization for disposal on a regular basis.		
<i>Solid waste Pollution from Bio-medical wastes</i>	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	N/A	
<i>Solid waste Pollution from E-wastes</i>	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	N/A	
<i>Solid waste Pollution from Batteries</i>	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	N/A	
<i>Solid waste Pollution from end of life products/ equipment</i>	Some waste bearings for wind turbines, waste electric elements and waste fibreglass materials are generated while doing the maintenance service to the equipment. All the solid waste will be collected and sent to licenced recycling organizations for better utilization.	The management, storage and disposal of end-of-life products/equipment must comply with the Standards for Pollution Control on the Storage and Disposal Site for General Industrial Solid Wastes	-	The end-of-life products/equipment will be collected and sent to licenced recycling organization for better utilization. There is no negative impact on land environment by any solid waste pollution from end-of-life products/equipment.	-	N/A	N/A	N/A	The equipment maintenance service history will be recorded. The replacement of wind turbine bearings and electric elements will also be monitored and recorded by operation team.	The solid waste pollution from end-of-life products/equipment will be collected and sent to licenced recycling organization for better utilization. Therefore, this project does no harm to the land environment and it is eligible to be scored.	+1	

¹⁷ Hazardous Waste Pollution Prevention and Control Policy (https://www.mee.gov.cn/ywgz/fgbz/bz/bzwb/wrfzjzsc/200607/t20060725_91281.shtml)

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			GB18599-2001 ¹⁸ .		Therefore, the project is deemed Harmless .								
	Soil Pollution from Chemicals (including Pesticides, heavy metals, lead, mercury)	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A		
	Soil erosion	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A		
Environment - Water	Reliability/ accessibility of water supply	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A		
	Water Consumption from ground and other sources	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A		
	Generation of wastewater	The wastewater is mainly generated from the domestic wastewater of operation staffs. The project site is equipped with domestic wastewater treatment facility. The capacity of wastewater treatment can fulfill the domestic wastewater produced by project staffs. There is no	The wastewater is treated in accordance with the Integrated Wastewater Discharge Standard GB8978-1996 ¹⁹ . The quality of surface water around the project area must comply with the Class II Standard of Environmental Quality Standards for Surface	-	The domestic wastewater is treated by a buried integrated domestic wastewater treatment unit as per regulations. The treated water will be used for greenery irrigation. The surface water around the project area is monitored and tested with the test results in	-	N/A	N/A	N/A	N/A	The domestic wastewater is treated by a buried integrated domestic wastewater treatment unit as per regulations. The treated water will be used for greenery irrigation. The project has negligible impact on the surface water around the project area		

¹⁸ Standards for Pollution Control on the Storage and Disposal Site for General Industrial Solid Wastes GB18599-2001

(https://www.mee.gov.cn/ywgz/fgbz/bz/bzwb/gthw/gtfwwrkzbz/200207/t20020701_63216.shtml)

¹⁹ Integrated Wastewater Discharge Standard GB8978-1996 (https://www.mee.gov.cn/ywgz/fgbz/bz/bzwb/shjbh/swrwpfbz/199801/t19980101_66568.shtml)

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		impact on the surface water around the project area.	Water GB3838-2002 ²⁰ .		compliance with the national standards. Therefore, the project is deemed Harmless .						and the water body. Since the treated wastewater is not discharged to any water body, it is not monitored regularly. Hence, it cannot be scored.	
<i>Wastewater discharge without/with insufficient treatment</i>	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	N/A	
<i>Pollution of Surface, Ground and/or Bodies of water</i>	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	N/A	
<i>Waste Oil</i>	There is a potential risk of transformer oil leakage during the equipment failure. A special oil sump, with volume of 60m ³ , is in place in case of any emergency drain of transformer oil. During the equipment failure/accident, the oily sewage is collected in the oil sump, and then go through the oil-water	The waste oil must be stored in accordance with the Standard for Pollution Control on Hazardous Waste Storage GB18597-2001 ²¹ . The transfer of waste oil must comply with the Administrative Measures on the Management of Hazardous Waste	-	The waste oil is properly collected, managed, transferred, treated and disposed as per regulations. There is no negative impact on surrounding water body. Therefore, the project is deemed Harmless .	-	N/A	N/A	N/A	During the operation period, regular inspection is performed to the wind turbines, transformer and other equipment to avoid any oil leakage. While doing the maintenance service, the maintenance specialist is responsible for managing the waste oil following the	A comprehensive waste oil management plan is developed to remove the negative impact on environment. An emergency response plan is also developed in case of any accidental oil leakage from the transformer. A special oil sump, with volume of 60m ³ , is in place for	+1	

²⁰ Environmental Quality Standards for Surface Water GB3838-2002 (https://www.mee.gov.cn/ywgz/fgbz/bz/bzwb/shjbh/shjzlbz/200206/t20020601_66497.shtml)

²¹ Standard for Pollution Control on Hazardous Waste Storage GB18597-2001 (https://www.mee.gov.cn/ywgz/fgbz/bz/bzwb/gthw/gtfwwrkzbz/200207/t20020701_63217.shtml)

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		separation treatment. Most of the oil can be recycled and the remaining small amount of waste oil residue is sent to a qualified hazardous waste disposal organization. Through this treatment process, the waste oil does not enter any water body by any chance. The waste oil generated from equipment maintenance is also strictly controlled and managed by maintenance specialist to avoid any leakage into water body.	Manifests ²² issued by the Ministry of Ecology and Environment. The management and treatment of waste oil must strictly comply with the Hazardous Waste Pollution Prevention and Control Policy ²³ which is formulated in accordance with the Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Waste ²⁴ .							regulations. The amount of transformer oil used and waste will be recorded by the operation team. The waste transformer oil is properly stored in a controlled storage room and sent to a qualified hazardous waste disposal organization for disposal on a regular basis.	any emergency drain of transformer oil. Oil-water separation treatment is applied to oily sewage in order to prevent any oil from entering the water body. Therefore, this project does no harm to the water body and it is eligible to be scored.	
Environment – <i>Natural Resources</i>	<i>Conserving mineral resources</i>	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	<i>Protecting/enhancing plant life</i>	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	<i>Protecting/enhancing</i>	There are 2 major impacts on birds due	No national regulatory and	-	Harmless	-	N/A	N/A	N/A	Ornithology study has been	According to the Ornithology	+1

²² Administrative Measures on the Management of Hazardous Waste Manifests
(http://english.mee.gov.cn/Resources/laws/regulations/Solid_Waste/200710/t20071025_112181.shtml)

²³ Hazardous Waste Pollution Prevention and Control Policy (https://www.mee.gov.cn/ywgz/fgbz/bz/bzwb/wrfzjzsc/200607/t20060725_91281.shtml)

²⁴ Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Waste
(<http://english.mofcom.gov.cn/article/policyrelease/internationalpolicy/200703/20070304471567.html>)

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	<p><i>species diversity</i></p>	<p>to wind turbine operation. Firstly, the birds' lives may be affected, because the flying birds might possibly hit the blades. Secondly, the noise and light generated by wind turbine rotation may disturb birds. According to EIA report, the impact of this project on birds is very little and controllable.</p>	<p>requirement identified.</p>							<p>conducted for this project. Based on the study result, there are no obvious cluster of migratory birds and no bird migration routes in the project area. The wind turbines are installed on the mountain top and the hillside with relatively high altitude, it is not a common bird habitat. Also the hub height of a wind turbine is 90m, which is taller than the flight altitude of most of the small birds. There is a very low possibility for birds to hit the blades, because the rotation speed of blades is slow and regular. At the early stage of operation, the birds might possibly hit the blades, but as the birds</p>	<p>study, the impact of this project on birds is very little and controllable. There are some mitigation measures outlined in EIA report to protect the birds and their habitats. Therefore, the project does no harm to the birds, and it is eligible to be scored.</p>	
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										gradually adapt to the wind turbines, they are less likely to hit the blades and there will be no long-term impact.		
<i>Protecting/enhancing forests</i>	The wind turbines are installed on the mountain top and the hillside. Since the increased human activity in the forest zone, to some extent, there may be impacts on forest ecology system during both the construction and operation period. Also, the wind farm does not involve the ecologically sensitive areas such as nature reserves and forest park. According to EIA report, the impact of this project on forest is very little.	While doing the construction inside the forest zone, the builders must comply with the Forest Law of the People's Republic of China ²⁵ .	-	Control measures are in place to prevent bush fire and destroying forest. The whole construction process is completed in compliance with the Forest Law of the People's Republic of China. Therefore, the project is deemed Harmless .	-	N/A	N/A	N/A	During the construction period, some effective measures are in place to prevent bush fire and destroying forest. Fire prevention warning signs are placed inside the construction zone; A certain number of fire extinguisher are equipped; Assign a specific person who's responsible for inspection and supervision of hot work and forest protection.	According to EIA report, the impact of this project on forest is very little. Bush fire prevention and forest protection measures are strictly followed. Therefore, the project does no harm to forest, and it is eligible to be scored.	+1	
<i>Protecting/enhancing other depletable</i>	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A		

²⁵ Forest Law of the People's Republic of China (http://english.mee.gov.cn/Resources/laws/envir_elatedlaws/202102/t20210207_820735.shtml)

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	<i>natural resources</i>											
	<i>Conserving energy</i>	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	<i>Replacing fossil fuels with renewable sources of energy</i>	The project utilizes wind power to generate electricity, which will replace the electricity generated by fossil fuel plants of China Southern Power Grid.	No national regulatory and requirement identified.	The project activity causes positive impact on environment by replacing the fossil fuels with renewable energy sources of energy.	-	-	N/A	N/A	N/A	The electricity generated from wind power will be monitored throughout the crediting period.	This project is expected to supply an annual average of 79,538 MWh renewable electricity to China Southern Power Grid.	+1
	<i>Replacing ODS with non-ODS refrigerants</i>	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	

Note: If the score is: (a) zero or greater, the overall impact is neutral or positive and there is no net harm; and (b) less than zero, the overall impact is negative and there is net harm to Environment. Score is obtained after adding the individual scores in each of the rows in the last column of the above table.

Net Score:	+9
Project Owner's Conclusion in PSF:	The Project Owner confirms that the Project Activity will not cause any net harm to the environment.

E.2. Social Safeguards

Impact of Project Activity on		Information on Impacts, Do-No-Harm Risk Assessment and Establishing Safeguards										Project Owner's Conclusion	
		Description of Impact (both positive and negative)	Legal requirement /Limit	Do-No-Harm Risk Assessment			Risk Mitigation Action Plans		Do-No-Harm Residual Risk Assessment		Self-Declaration		
				Not Applicable (No actions required)	Harmless (No actions required)	Harmful (Actions required)	Operational Controls	Program of Risk Management Actions	Re-evaluate Risks	Monitoring	Explanation of Conclusion	The Project Activity will not cause any harm	
Social impacts on the identified categories²⁶ indicated below.	Indicators for social impacts	Describe the impacts on society and stakeholders, both positive and negative, that may result from constructing and operating of the Project Activity.	Describe the applicable national regulatory requirements / legal limits related to the identified risks of social impacts.	If no social impacts are anticipated, then the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as Not Applicable (No actions required)	If social impacts are anticipated, but are expected to be in compliance with applicable national regulatory requirements/ legal limits, then the Project Activity is unlikely to cause any harm (is safe) and shall be indicated as Harmless (No actions required)	If social impacts are anticipated that will not be in compliance with the applicable national regulatory requirements/ legal limits, then the Project Activity is likely to cause harm (may be unsafe) and shall be indicated as Harmful (Actions required).	Describe the operational controls and best practices, focusing on how to implement and operate the Project Activity, to reduce the risk of impacts that have been identified as Harmful .	Describe the Program of Risk Management Actions (refer to Table 3), focusing on additional actions (e.g., construction of crèche for workers) that will be adopted to reduce the risk of impacts that have been identified as Harmful .	Re-evaluate risks after Risk Mitigation Actions plans have been developed (refer to previous two columns) for impacts that have been identified as Harmful. Indicate whether the risks have been eliminated or reduced and, where appropriate, indicate them as Harmless (No actions required)	Describe the monitoring approach and the parameters to be monitored for each impact that has been identified as Harmful and to be described in the PSF (refer to Table 3).	Describe how the Project Owner has concluded that the Project Activity is likely to achieve the identified Risk Mitigation Action Plan targets for managing risks to levels that are unlikely to cause any harm.	Confirm that the Project Activity risks of negative social impacts are expected to be managed to levels that are unlikely to cause any harm (Mark +1 for Yes or -1 for No)	
Social Safeguards													
Social - Jobs	Long-term jobs (> 1 year) created/ lost	The project is expected to create 20 long-term job opportunities during operation.	All employment are done according to the national employment regulations. All the employees will be provided with the social	The social impact is expected to be positive, due to the increased number of employment within the society around the project area. Therefore, it	-	-	N/A	N/A	N/A	Project activity creates direct employment of around 20 people per year during operation period. They are involved in the daily operation	The social impact is expected to be positive, since the project activity has increased the local employment . It can be confirmed by the	+1	

²⁶ sourced from the CDM SD Tool and the sample reports are available (<https://www4.unfccc.int/sites/sdcmicrosite/Pages/SD-Reports.aspx>)

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			security insurance, health insurance, housing allowance and some other welfares, in compliance with Labour Law of the People's Republic of China ²⁷ .	will not cause any harm to society.						and maintenance of wind farm. The project has a positive impact on society, which would have not been available in the absence of this project activity. The employment will be monitored and recorded by internal Human Resource department and management team.	payroll records or the social security insurance payment slips of the project. Therefore, it is eligible to be scored.	
<i>New short-term jobs (< 1 year) created/ lost</i>	The construction of the project will create short-term job opportunities.	All employment are done according to the national employment regulations.	The social impact is expected to be positive, due to the increased number of local employment. Therefore, it will not cause any harm to society.	-	-	N/A	N/A	N/A	Construction of the project is implemented by a qualified contractor. Project owner has no access to the employment records of short-term employees, who work for the construction contractor. Therefore, it cannot be monitored.	Project owner has no access to the employment records of short-term employees. Therefore, it cannot be scored. But it definitely has positive impact on society, due to the increased number of local employment during construction period.		
<i>Sources of income generation</i>	Sources of income generation	All the employees will be	The social impact is expected to	-	-	N/A	N/A	N/A	N/A	Local income has been		

²⁷ Labour Law of the People's Republic of China (<http://english.mofcom.gov.cn/article/lawsdata/chineselaw/200211/20021100050875.shtml>)

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	<i>increased / reduced</i>	increased comparing to the baseline scenario, due to the increased number of local employment. The increased sources of income would have not been available in the absence of this project.	provided with the social security insurance, health insurance, housing allowance and some other welfares, in compliance with Labour Law of the People's Republic of China. Also, employees are protected by the minimum wage system defined by Labour Law.	be positive, due to the increased number of local employment long-term or short-term. Therefore, it will not cause any harm to society.								increased due to the increased number of local employment from project activity. But it cannot be monitored. Hence, it cannot be scored.	
Social - Health & Safety	<i>Disease prevention</i>	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	N/A	
	<i>Reducing / increasing accidents</i>	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	N/A	
	<i>Reducing / increasing crime</i>	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	N/A	
	<i>Reducing / increasing food wastage</i>	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	N/A	
	<i>Reducing / increasing indoor air pollution</i>	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	N/A	
	<i>Efficiency of health services</i>	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	N/A	
	<i>Sanitation and waste management</i>	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	N/A	

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Social - Education	<i>Job related training imparted or not</i>	<i>The project owner provides job related training which is mandatory for working on a wind farm, especially the HSE training and some technical training on electrical engineering.</i>	All the job related trainings are delivered in compliance with the Law of the People's Republic of China on Work Safety ²⁸ and the Administrative Regulations on the Work Safety of Construction Projects ²⁹ .	The social impact is expected to be positive, due to the job related training are delivered to all the employees in compliance with the law and internal requirement . Therefore, It will not cause any harm to society.	-	-	All of the employees are given job-related training to increase their capability of working on a wind farm. The HSE training and job-related qualification training are mandatory for employees.	N/A	N/A	The job-related training delivered to the employee is monitored and filed. It can be confirmed by checking the training records and attendance sheet.	All the employees are provided with job-related training, as require. It is expected to have a positive impact on society. Therefore, it is eligible to be scored.	+1
	<i>Educational services improved or not</i>	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	<i>Project-related knowledge dissemination effective or not</i>	N/A	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A
Social - Welfare	<i>Improving/deteriorating working conditions</i>	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	<i>Community and rural welfare</i>	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	<i>Poverty alleviation (more people above poverty level)</i>	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	
	<i>Improving / deteriorating wealth</i>	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	

²⁸ Law of the People's Republic of China on Work Safety (https://english.court.gov.cn/2015-08/17/content_21624880.htm)

²⁹ Administrative Regulations on the Work Safety of Construction Projects (http://www.gov.cn/zwgg/2005-05/23/content_183.htm)

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<i>distribution/ generation of income and assets</i>												
<i>Increased or / deteriorating municipal revenues</i>	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	N/A	
<i>Women's empowerment</i>	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	N/A	
<i>Reduced / increased traffic congestion</i>	N/A	N/A	N/A	-	-	N/A	N/A	N/A	N/A	N/A	N/A	

Note: If the score is: (a) zero or greater, the overall impact is neutral or positive and there is no net harm; and (b) less than zero, the overall impact is negative and there is net harm to society. Score is obtained after adding the individual scores in each of the rows in the last column of the above table.

Net Score:	+2
Project Owner's Conclusion in PSF:	The Project Owner confirms that the Project Activity will not cause any net harm to society.

Section F. United Nations Sustainable Development Goals (SDG)

UN-level SDGs	UN-level Target	Declared Country-level SDG	Defining Project-level SDGs					Project Owner(s)'s Conclusion	
			Project-level SDGs	Project-level Targets/ Actions	Project-level Indicators	Contribution of Project-level Actions to SDG Targets	Monitoring	Explanation of Conclusion	Are Goal/ Targets Likely to be Achieved?
<p>Describe UN SDG targets and indicators</p> <p>See: https://unstats.un.org/sdgs/indicators/indicators-list/</p>	<p>Describe the UN-level target(s) and corresponding indicator no(s)</p>	<p>Has the host country declared the SDG to be a national priority? Indicate Yes or No</p>	<p>Define project-level SDGs by suitably modifying and customizing UN/ Country-level SDGs to the project scope.</p> <p>For guidance see: Integrating the SDGs into Corporate Reporting- A Practical Guide: https://www.unglobalcompact.org/docs/publications/Practical_Guide_SDG_Reporting.pdf</p> <p>Case-study from Coca-Cola and other organizations to develop organization-wide SDGs (page 114): https://pub.iges.or.jp/pub/realising-transformative-potential-sdgs</p>	<p>Define project-level targets/actions, by suitably modifying and customizing UN/Country-level targets to the project scope. Define the target date by which the Project Activity is expected to achieve the project-level SDG target(s). Refer to the previous column for guidance</p>	<p>Define project-level indicators by suitably modifying and customizing UN/Country-level indicators to the project scope or creating a new indicator(s). Refer to the previous column for guidance</p>	<p>Describe and justify how actions taken under the Project Activity are likely to result in a direct positive effect that contributes to achieving the defined project-level SDG targets and is additional to what would have occurred in the absence of the Project Activity</p>	<p>Describe the monitoring approach and the monitoring parameters to be applied for each project-level SDG target and Indicator</p>	<p>Describe how the Project Owner has concluded that the project is likely to achieve the identified Project level SDGs target(s).</p>	<p>Describe whether the project-level SDG target(s) is likely to be achieved by the target date (Yes or No)</p>
<p>Goal 1: End poverty in all its forms everywhere</p>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<p>Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture</p>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<p>Goal 3. Ensure healthy lives and</p>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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promote well-being for all at all ages									
Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Goal 5. Achieve gender equality and empower all women and girls	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Goal 6. Ensure availability and sustainable management of water and sanitation for all	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all	SDG Indicator 7.2 "By 2030, increase substantially the share of renewable energy in the global energy mix."	Yes	<p>The project generates electricity from the sustainable and renewable wind source and contributes to increasing the share of renewable energy mix in the global energy mix.</p> <p>Project uses advanced wind power technology which is a cleaner source of energy. The project activity can generate greenhouse gas (GHG) emission reductions by avoiding CO₂ emissions from electricity generated from fossil fuel-fired power plants. Project activity is likely to encourage more investment into the cleaner technology-based power generation projects, and thus would have the potentially positive impact on increasing the share of renewable energy in the global energy mix.</p> <p>By installing advanced wind power technology, project owner also promotes upgraded cleaner</p>	<p>Project targets to generate and feed 79,538 MWh/year wind-based electricity for entire project life time into the Chinese national power grid.</p> <p>Project has already started contributing to the SDG 7 since 30/04/2019, the start date of project operation.</p>	<p>Enhance the share of installed electricity generation capacity from renewable energy sources.</p> <p>Project generates and feeds 79,538 MWh/year wind-based electricity for entire project life time into the Chinese national power grid.</p>	<p>The project increases the renewable energy share in Chinese domestic power generation mix. It provides 79,538 MWh/year clean energy to the Chinese national power grid.</p>	<p>Project Operation and Maintenance team on site continuously monitor the quantity of net electricity generated and supplied by the project wind farm.</p>	<p>Project has already commissioned to Chinese national power grid and fed the renewable electricity to the grid. Therefore, it contributes positively to SDG 7, SDG Indicator 7.2.</p>	Yes

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			technology solutions and infrastructure in the power generation sector in the host country.						
Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	SDG Indicator 8.5 “By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities and equal pay for work of equal value”	Yes	<p>Project activity creates some short-term and long-term job opportunities during both the construction and operation period. It enhanced economic productivity through technology upgradation and innovation.</p> <p>The project provides some decent job positions, protects employees’ labour rights and creates a safe and secure working environment. All the employees are treated equally regardless to their gender; they are hired based on their working capability; they are paid the same for the work of equal value; they received job-related training sufficiently and equally; they have the equal opportunities to get promoted.</p>	<p>The project is expected to provide 20 long-term job opportunities.</p> <p>Through the project activity, the local sustainable economic growth can be achieved. The project not only can increase the local employment, but also can contribute to the economy sustainable development by supplying clean renewable energy to Chinese national power grid.</p>	20 people are recruited including all levels.	The project created job opportunity during both construction and operation period. It created long-term job opportunities for 20 people who are directly working at the site.	The employment will be monitored and recorded by internal Human Resource department and management team. It can be confirmed by checking the payroll records or the social security insurance payment slips.	Project owner employs people in compliance with the law and regulations. Social security insurance, health insurance and other welfares are provided to employees equally. Therefore, it contributes positively to SDG 8, SDG Indicator 8.5.	Yes
Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	SDG Indicator 9.4 “By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency	Yes	Project activity involves upgradation to an advanced wind power technology, which is a more resilient and cleaner infrastructure comparing to the conventional fossil-fuel-based power plant. The project promotes the advanced industrialization by providing zero greenhouse gas emission and non-polluting renewable electricity. It also promotes the adoption of clean and environmentally sound technologies by investing and constructing a wind farm, a clean and resilient energy generation facility.	Project activity involves installation of a total capacity of 40MW wind power project in China.	9.4.1 CO ₂ emission per unit of value added. Project activity provides green-house gas emission reduction of 52,217 tCO ₂ e annually and 522,170 tCO ₂ e during	The project helps adaptation of clean energy technologies by implementing a wind farm project.	Project Operation and Maintenance team on site continuously monitor the real-time operation of the wind farm. They record and report the quantity of net electricity generated and supplied	Project has already commissioned to Chinese national power grid and fed the renewable electricity to the grid. Therefore, it contributes positively to SDG 9, SDG Indicator 9.4.	Yes

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	and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities”				the crediting period.		by the wind farm on a daily basis. Then the greenhouse gas emission reduction can be calculated accordingly.		
Goal 10. Reduce inequality within and among countries	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Goal 12. Ensure sustainable consumption and production patterns	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Goal 13. Take urgent action to combat climate change and its impacts	SDG Indicator 13.3 “Improve education, awareness-raising and human	Yes	Project activity generates renewable energy-based electricity and mitigates the CO ₂ emissions which would have been generated from the fossil fuel based power plants.	Project activity involves installation of a total capacity of 40MW wind power project in China.	Project activity provides green-house gas emission reduction of 52,217 tCO ₂ e annually and 522,170	Ensure that the project wind farm is operating at its optimum working condition, so that the electricity delivered to the grid can be	Project Operation and Maintenance team on site continuously monitor the real-time operation of the wind farm. They	Project has already commissioned and started to generate greenhouse gas emission reduction since 2019.	Yes

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	and institutional capacity on climate change mitigation, adaption, impact reduction and early warning”				tCO ₂ e during the crediting period.	guaranteed qualitatively and quantitatively.	record and report the quantity of net electricity generated and supplied by the wind farm on a daily basis. Then the greenhouse gas emission reduction can be calculated accordingly.	Therefore, it contributes positively to SDG 13, SDG Indicator 13.3.	
Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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institutions at all levels										
Goal 17. Strengthen the means of implementation and revitalize the global partnership for sustainable development	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
SUMMARY							Targeted	Likely to be Achieved		
Total Number of SDGs							4	4		
Certification label (Bronze, Silver, Gold, Platinum, or Diamond) for the ACCs as defined in the PSF							Gold	Gold		

Section G. Local stakeholder consultation

G.1. Modalities for local stakeholder consultation

Local stakeholder consultation (LSC) was performed by Guangxi T-Energy Engineering Consulting Co., Ltd. in 2015 during the EIA process according to national regulation Interim Measures for Public Participation in Environmental Impact Assessment³⁰ (Huanfa [2006] No.28) published by The Ministry of Environmental Protection of the People's Republic of China and provincial regulation the Notice of the Department of Environmental Protection on Further Regulating and Strengthening Public Participation in Environmental Impact Assessment of Construction Projects³¹ (Gui Huanfa [2014] No.26) published by The Department of Ecology and Environment of Guangxi Zhuang Autonomous Region.

Local stakeholder consultation was conducted on 20th - 21st of March 2015 to introduce the project to the local stakeholders and ensure that the voice/feedbacks from local stakeholders were highly valued and thoroughly considered by project owner.

The following group of people are identified as the stakeholders of this project:

- Residents of the village around the project area
- Relevant department of local government

The LSC was carried out via a questionnaire survey among the above-described stakeholders. During the LSC session, introduction to the project detail were firstly delivered to local stakeholders, such as project information, contact information of project owner, channels to receive stakeholders' comments, LSC process etc. Local stakeholders could fill out the Public Participation Questionnaires voluntarily after the introduction to the project.

The questions in the Public Participation Questionnaires were as following:

1. Do you know anything about this wind power project?
2. What are the main current existing environmental issues in or around the project area?
3. What are the main environmental issues during the construction period of the project?
4. What are the main environmental issues after the operation of the project?
5. Do you support the implementation of this project?

³⁰ Interim Measures for Public Participation in Environmental Impact Assessment
(https://www.mee.gov.cn/gkml/zj/wj/200910/t20091022_172384.htm)

³¹ Notice of the Department of Environmental Protection on Further Regulating and Strengthening Public Participation in Environmental Impact Assessment of Construction Projects
(<http://sthjt.gxzf.gov.cn/zfxxgk/zfxxgkgl/fdzdgknr/hjjccf/hjyxpj/t3602564.shtml>)

G.2. Summary of comments received

A total of 23 Public Participation Questionnaires were distributed to the stakeholders and 23 copies were collected with valid answers. 5 copies of questionnaires were received from 5 different relevant department of local government; 18 copies of questionnaires were received from the representatives of the local residents. The results are summarized in the following tables.

Survey Result from Department of Local Government		
No.	Department	Attitude
1	Forestry Bureau of Fuchuan County	Support
2	Environmental Protection Bureau of Fuchuan County	Support
3	Local Government of Mailing Town	Support
4	Villagers Committee of Changchun Village, Mailing Town, Fuchuan County	Support
5	Villagers Committee of Mailing Village, Mailing Town, Fuchuan County	Support

Survey Result from Local Stakeholders			
Questions	Options	No. of Answers	Percentage (%)
Do you know anything about this wind power project?	Yes	2	11.1
	Have gained some understanding	9	50
	No	7	38.9
What are the main current existing environmental issues in or around the project area?	Noise	4	22.2
	Dust due to construction	3	16.7
	Ecological environmental impact	5	27.8
	Pollution of ground water	1	5.6
	Pollution of surface water	6	33.3
	Soil erosion	8	44.4
What are the main environmental issues during the construction period of the project?	Affecting the migration of birds	1	5.6
	Affecting the survival of resident birds	5	27.8
	Noise pollution	2	11.1
	Dust pollution during construction	5	27.8
	Soil erosion	6	33.3
	Destruction of ecological environment	4	22.2
	Pollution of surface water	0	0
	Affecting the operation of forest farm	0	0
	Affecting the scenic spots	5	27.8
Affecting the wildlife (animals and plants)	4	22.2	
What are the main environmental issues after the operation of the project?	Noise pollution	2	11.1
	Pollution of surface water	0	0
	Solid waste pollution	6	33.3
	Ecological environmental impact	7	38.9
	Affecting the operation of forest farm	0	0

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	Environmental risks	4	22.2
	Affected by electromagnetic field	4	22.2
Do you support the implementation of this project?	Yes	18	100
	No	0	0

Conclusion:

Based on the survey results from Public Participation Questionnaires, 2 out of 18 survey respondents had known about this wind power project; 9 of them had gained some understanding about this project; 7 of them did not know anything about this project. Considering the environmental issues, the survey respondents believed that the noise pollution, dust pollution due to construction, ecological environmental impacts, ground water pollution, surface water pollution and soil erosion were the main current existing environmental issues in or around the project area. The local residents also concerned about the impact on environment during the construction period of the project. They believed that the migration of birds and the survival of resident birds might be affected by this project, along with other issues, such as noise pollution, dust pollution, soil erosion, destruction of ecological environment, affecting the scenic spots and affecting the wildlife. For the environmental issues during the operation period, the representatives of local residents were worried about the noise pollution, solid waste pollution, ecological environmental impact, environmental risks and affecting by electromagnetic field.

Even though the majority of survey respondents had limited understanding of this wind power project and, to some extent, had the environmental concerns towards the construction and operation period, they still showed 100% supportive attitude towards this project. The department of local government also expressed their positive attitude towards the implementation of this project.

Survey respondents were encouraged to leave a comment in any forms, such as email, phone call, letters, website comments etc. Their comments and opinions were highly valued by project owner. There were 4 main suggestions given by the representatives of local residents:

1. All the construction activity must be strict accordance with the national laws and regulations
2. The negative impacts on environment during the construction and operation period must be minimized.
3. The environmental protection facilities were constructed for the project to deal with the environmental issues accordingly.
4. Effective measures must be taken to control and mitigate the environmental pollution. Make sure that all the pollutants are managed and disposed in compliance with local and national regulations.

It's project owner's responsibility to make sure that the implementation of the project is in strict accordance with the national laws and regulations. All the negative impacts on environment were thoroughly considered and listed out during the Environmental Impact Assessment (EIA). The

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environmental protection facilities must be in place to deal with the environmental issues accordingly. Effective measures were designed in EIA report. Project owner must take the effective measures, outlined in EIA report, to mitigate and control the environmental pollution. All the pollutants are managed and disposed properly as per regulations.

Both the advantages and disadvantages of this project were introduced to all the stakeholders during the LSC process. The local residents and relevant department of local government all understood that there will be substantial benefits to local economic development, sustainable development, clean and resilient energy generation infrastructure construction, energy security and local employment. Also they believed that this is a clean, renewable, reliable and environmental-friendly energy generation project. There might be some impacts on people's living environment, ecological environment and social environment around the project area, but the impacts were controlled and mitigated within the legal limits and acceptable limits of local residents. Therefore, the project is considerably having no negative impacts environmentally and socially.

G.3. Consideration of comments received

The detail of stakeholders' comments and suggestions, along with the project owner response are summarized in section G.2.

As described above, most of the stakeholders expressed the positive attitude towards this project. They believed that this project will bring in benefits to the local economic development, sustainable development, clean and resilient energy generation infrastructure construction, energy security and local employment. There were no significant negative environmental impacts accused by local stakeholders. For more detail effective measures and environmental impact analysis and actions to be taken, please refer to the Environmental Impact Assessment report.

Section H. Approval and authorization

Not applicable.

Appendix 1. Contact information of project owners

Organization name	VCARBON (Guangzhou) Low-carbon Technology Co., Ltd.
Country	P.R. China
Address	502C, Building 1, E-Park, No.239 Gaotang Road, Tianhe District, Guangzhou City, Guangdong Province, P.R. China 510630
Telephone	+86 020 31001246
Fax	-
E-mail	official@vcarbon.cn
Website	www.vcarbon.cn
Contact person	Chao Cai

Appendix 2. Affirmation regarding public funding

Not applicable.

Appendix 3. Applicability of methodology(ies)

Refer to Section B.2

Appendix 4. Further background information on ex ante calculation of emission reductions

Not applicable.

Appendix 5. Further background information on monitoring plan

Not applicable.

Appendix 6. Summary report of comments received from local stakeholders

Refer to Section G.2

Appendix 7. Summary of de-registered CDM project (Type B)

Not applicable.

DOCUMENT HISTORY

Version	Date	Comment
V 3.2	31/12/2020	<ul style="list-style-type: none"> ▪ The name of GCC Program’s emission units has been changed from “Approved Carbon Reductions” or ACRs to “Approved Carbon Credits” or ACCs.
V 3.1	17/08/2020	<ul style="list-style-type: none"> ▪ Editorial revisions made <ul style="list-style-type: none"> ○ Revised Table in section B.7.2 on Monitoring-program of risk management actions ○ Revised Table in section E.1 on Environmental Safeguards ○ Revised Table in section E.1 on Social Safeguards ○ Revised Table in section F on United Nations Sustainable Development Goals (SDG)
V 3.0	05/07/2020	<ul style="list-style-type: none"> ▪ Revised version released on approval by Steering Committee as per GCC Program Process; ▪ Revised version contains following changes: <ul style="list-style-type: none"> ○ Change of name from Global Carbon Trust (GCT) to Global Carbon Council (GCC); ○ Considered and addressed comments raised by Steering Committee: <ul style="list-style-type: none"> ➤ during physical meeting (SCM 01, dated 29 Oct 2019, Doha Qatar); and ➤ electronic consultations EC01-Round 01 (15.09.2019 – 25.09.2019), EC01-Round 02 (27.03.2020 – 27.06.2020). ○ Feedback from Technical Advisory Board (TAB) of ICAO on GCC submission for approval under CORSIA³²;
V 2.0	25/06/2019	<ul style="list-style-type: none"> ▪ Revised version released for approval by the GCC Steering Committee. ▪ Revised version includes additional details and instructions on the information to be provided, consequent to the latest developments world-wide (e.g., CORSIA EUC).
V 1.0	01/11/2016	Initial version released under the GCC Program Version 1

³²See ICAO recommendation for conditional approval of GCC at https://www.icao.int/environmental-protection/CORSIA/Documents/TAB/Excerpt_TAB_Report_Jan_2020_final.pdf

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