INNER MONGOLIA JINGNENG SAIHAN WIND FARM PHASE I PROJECT

Document Prepared by LGAI Technological Center, S.A. (Applus+ Certification)

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Summary:

LGAI Technological Center, S.A. (hereafter referred to as Applus+ Certification) has been commissioned by Climate Bridge (Shanghai) Ltd. to perform a validation of the renewal of crediting period of "Inner Mongolia Jingneng Saihan Wind Farm Phase I Project" (Ref. No. 850) (hereinafter referred to as the project activity) in P. R. China.

The scope of the validation of the renewal of crediting period is defined as an independent and objective review of the updated sections of the PD relating to the baseline, estimated emission reductions and the monitoring plan using the most recent version of baseline and monitoring methodology applicable for the project activity. The validation opinion is finalized based on the assessment of the project description through applying standard auditing techniques including but not limited to document reviews, follow up actions (e.g. site visit, telephone or e-mail interviews) and also the review of the applicable approved methodology and underlying formulae and calculations.

The assessment was performed in accordance with the VCS standards and guidance version 4.0 and UNFCCC requirement including an assessment of:

(a) The impact of new relevant national and/or sectoral policies and circumstances on the baseline taking into account relevant guidance from the Board with regard to renewal of the crediting period of the registered VCS project activity at the time of requesting renewal of crediting period of the project activity;

(b) The correctness of the application of the approved methodology and, where applicable, the approved standardized baseline for the determination of the continued validity of the baseline or its update, and the estimation of emission reductions for the applicable crediting period of the registered VCS project activity.

The project activity was registered as a CDM project activity on 01/03/2010 and renewed on 11/11/2016 which is available at https://cdm.unfccc.int/Projects/DB/BVQI1241775281.35/view. After the registration of CDM, the project has been registered as a VCS project which is available at https://registry.verra.org/app/projectDetail/VCS/850.

The purpose of "Inner Mongolia Jingneng Saihan Wind Farm Phase I Project" (hereafter referred to as the Project) developed by Beijing International New Energy Co., Ltd. is to generate renewable electricity by utilizing wind power resource. The Project involves the installation of 30 wind turbines with a unit capacity of 750 kW and another 18 wind turbines with a unit capacity of 1,500 kW. Total of 124,497 MWh clean electricity generated by the Project are expected to be delivered to the North China Power Grid (NCPG) annually. The proposed project is located at Saihantala Town, Suniteyouqi, Xilinhaote City, Xilinguole League, Inner Mongolia Autonomous Region, P. R. China.

The coordinate of the project is north latitude 42°34'23.24'' and east Longitude 112°49'36.88''. The project activity will achieve greenhouse gases (GHGs) emission reductions by avoiding CO_2 emissions from the business-as-usual scenario electricity generation of those fossil fuel-fired power plants connected to the NCPG. The project activity contributes to sustainable development of the local community, the host country and the world.

The validation is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

During this validation, no finding was identified in relation to relevant VCS standards, guidance and UNFCCC requirements and relevant host party criteria and the applied baseline and monitoring methodology etc.

In summary, it is Applus+ Certification's opinion that the project activity "Inner Mongolia Jingneng Saihan Wind Farm Phase I Project" (Ref. No. 850) in P. R. China, as described in the PD, version 2.0 dated 19/10/2020, meets all relevant VCS and UNFCCC requirements for the renewal of the crediting period.

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1 INTRODUCTION

1.1 Objective

LGAI Technological Center, S.A. (hereafter referred to as Applus+ Certification) has been commissioned by Climate Bridge (Shanghai) Ltd. to perform a validation of the renewal of crediting period of "Inner Mongolia Jingneng Saihan Wind Farm Phase I Project" (Ref. No. 850) (hereinafter referred to as the project activity) in P. R. China.

LGAI Technological Center, S.A. as the validation body of the project activity has been accredited as a DOE by UNFCCC and also meets the competence requirements as set out in ISO 14065:2007.

The objective of this validation is to ensure that reported information in the Project Description of "Inner Mongolia Jingneng Saihan Wind Farm Phase I Project" is complete and accurate in accordance with applicable VCS standards and relevant UNFCCC requirements.

1.2 Scope and Criteria

The validation scope is defined as an independent and objective review of the project description (PD). The PD is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords and the relevant decisions by the CDM Executive Board, including the approved baseline and monitoring methodology ACM0002 version 20.0. The validation was based on the requirements in the CDM Validation and Verification standard for project activities version 02.0 and VCS guideline and standard version 4.0.

The validation is not meant to provide any consulting towards the client. However, stated requests for forward actions and/or corrective actions may provide input for improvement of the Project monitoring towards reductions in the GHG emissions.

1.3 Level of Assurance

The validation report is based on the VCS-PD and supporting evidences made available to the validator and information collected through performing interviews and during the on-site assessment.

The validation conclusion is assured a reasonable level of assurance.

1.4 Summary Description of the Project

Project title	Inner Mongolia Jingneng Saihan Wind Farm Phase I Project

UNFCCC reference number VCS reference number	2567 850
Project Participants	Beijing International New Energy Co., Ltd. (Project Owner, host country, P. R. China)
Location of the project	Saihantala Town, Suniteyouqi, Xilinhaote City, Xilinguole League, Inner Mongolia Autonomous Region, P. R. China Geographic coordinates: East longitude: 112°49'36.88'' North latitude: 42°34'23.24''
Project start date	Construction date: 10/06/2008 Operation start date: 31/12/2008
First Project Description (PD)	Version 1.0, dated 09/09/2020
Final Project Description (PD)	Version 2.0, dated 19/10/2020
Applied Methodology/Version	ACM0002, version 20.0, dated 28/11/2019
Scope/Technical Area	1/1.2

The project activity was registered as a CDM project activity on 01/03/2010 and renewed on 11/11/2016 which is available at https://cdm.unfccc.int/Projects/DB/BVQI1241775281.35/view. After the registration of CDM, the project has been registered as a VCS project which is available at https://registry.verra.org/app/projectDetail/VCS/850.

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2 VALIDATION PROCESS

2.1 Method and Criteria

Validation was conducted using Applus+ Certification's procedures in line with the requirements specified in the VCS Standard version 4.0, CDM M&P, the latest version of the CDM Validation and Verification Standard, and relevant UNFCCC requirements and applying standard auditing techniques. No sampling was utilized during the site visit as well as validation for project activity.

Applus+ Certification completed a strategic review and risk assessment of the projects activities and processes in order to gain a full understanding of (if applicable):

- Project Details;
- Application of Methodology;
- Estimated GHG Emission Reduction and Removals;
- Monitoring;
- Safeguards etc.

Applus+ Certification validate that the reported information in the Project Description are complete and accurate in question. This involved a site visit and a desk review of the Project Design. This Validation Report describes the findings of this assessment.

The information of the assessment team is included in below of this report.

Assessment team

According to the sectoral scopes / technical area and experiences in the sectoral or national business environment, Applus+ Certification has composed a project assessment team in accordance with the appointment rules in Applus+ Certification. The composition of assessment team has to be approved by the Applus+ Certification ensuring that the required skills are covered by the team. The four qualification levels for team members that are assigned by formal appointment rules as below:

- Leader Auditor (LA)
- Auditor (A)/ Auditor Trainee (AT)
- Technical Reviewer (TR)

- Technical Experts (TE)

Name	Qualification	Coverage of scope	Coverage of Technical Area	Host country experience
Denny Xue	*LA/TE*	*Y (1.2)*	*Y*	*Y*
Simon Shen	*TR*	*Y (1.2)*	*Y*	*Y*

Denny Xue (Master's Degree in Environmental Engineering, Bachelor's Degree in Thermal Engineering) is an Auditor appointed by Applus+ LGAI for the GHG project assessment, auditing and technical review. He has more than 6 years of work experience in CDM/GS4GG/VCS project assessment and review with Applus+. Before he joined Applus+ LGAI, he has been working for Shanghai Chuanji Investment and Management which is a CDM consultancy company as a project manager for CDM project development.

Simon Shen (Master's Degree in Thermal Energy Engineering, Bachelor's Degree in Environmental Engineering) is an Auditor appointed by Applus+ LGAI for the GHG project assessment, auditing and technical review. He has more than 6 years of work experience in CDM/GS4GG/VCS project assessment and review with Applus+, apart from the years of experience working as GHG Auditor and ISO 9001/14001 in TUV SUD before he joined Applus+ for 3.5 years. Mr. Simon Shen has extensive experience also as former Applus+ Shanghai CDM Technical Manager.

2.2 Document Review

The VCS project design Version 1.0 dated 09/09/2020, version 2.0 dated 19/10/2020 were assessed as part of the validation. In addition, the registered VCS PD 30/06/2011, renewed CDM PDD version 07 dated 29/07/2016 and the CDM validation report for renewal of crediting period version 1.0 dated 09/08/2016 as well as relevant documents, were reviewed. A detailed documents reviewed are listed in Appendix 1 of the report.

2.3 Interviews

The key personnel interviewed are summarized in the table below:

Interviewed personnel	Role	Organization	Subject
Ms. Xu Jiaman	Manager	Beijing International New Energy Co., Ltd.	Basic information, technology of the project, etc.; Monitor Data: meter readings, control and maintenance, QA&QC systems Status of the project activity and any modifications with respect to the registered PD. Applicability to the latest methodology. National and local policies and changes Baseline of the project and its updates The lifetime of the project activity Emission Factors and their updates Monitoring plan and changes.
Mr. Wu Siran	Project Manager	Climate Bridge (Shanghai) Ltd.	

2.4 Site Inspections

The assessment team performed the on-site validation (Saihantala Town, Suniteyouqi, Xilinhaote City, Xilinguole League, Inner Mongolia Autonomous Region, P. R. China.) on 28-29/09/2020. The interviewed personnel and objective are listed in above table.

2.5 Resolution of Findings

As an outcome of the validation process, the team can raise different types of findings.

Where a non-conformance arises the assessment team shall raise a Corrective Action Request (CAR). A CAR is issued, where reported information is not in line with the applicable CDM/VCS requirements.

The assessment team shall raise a Clarification Request (CL) if information is insufficient or not clear enough to determine whether the applicable CDM/VCS requirements have been met.

All CARs and CLs raised during validation shall be resolved prior to submitting a request for registration.

There are no CARs and CLs raised for the project.

2.5.1 Forward Action Requests

As this is the validation for the project for renewal of crediting period, there are no FARs raised in the pervious validation and verification process.

3 VALIDATION FINDINGS

3.1 Project Details

The following description of the project as per PD was verified during the on-site visit:

The project activity is a wind power project located at Saihantala Town, Suniteyouqi, Xilinhaote City, Xilinguole League, Inner Mongolia Autonomous Region, P. R. China. which is to use wind resource for electricity generation. The installed capacity of the project activity is 49.5 MW, consisting of 30 wind turbines with a unit capacity of 750 kW and another 18 wind turbines with a unit capacity of 1,500 kW. The average annual power delivered to the grid by the project is expected to be 124,497 MWh. The Project can reduce GHG emissions by replacing the electricity generated by fossil fuel fired power plants North China Power Grid (NCPG). It's estimated that the proposed project could achieve GHG emission reductions of 104,633 tCO_2e annually in the second crediting period.

The project activity was invested and operated by Beijing International New Energy Co., Ltd. which is the project proponent of project by checking the business license of the project.

By site visit checking the nameplate of the project, following technical parameter of project activity are confirmed:

Parts	Parameters	Parameters
Turbine		
Type	Goldwind S50/750kW	Goldwind 77/1500kW
Quantity	30	18
Rated capacity (kW)	750	1,500
Number of blades	3	3
Rotor diameter (m)	50	77
Swept area (m^2)	1,963.5	4,657
Cut-in speed (m/s)	3.5	3
Rated wind speed (m/s)	14-15	11
Safe wind speed (m/s)	70	59.5
Cut-out speed (m/s)	25	22
Height of tower (m)	50	65
Rated voltage of generator (V)	690	690
Rated capacity of generator (kW)	750	1,500

By checking the registered VCS PD and site visit interview with project owner, it is confirmed that the project started operation on 31/12/2008 which is the project start date according to the requirement of VCS. But, the start date of the first VCS crediting period of the project has been set started from 01/01/2009 to 31/12/2018 last for 10 years and second VCS crediting period of the project would start from 01/01/2019 to 31/12/2028 last for 10 years in line with the requirement of VCS.

As the installed capacity of the project is 49.5 MW which falls under large scale project according to the requirement of CDM. Also, due the annually estimated emission reductions are lower than 300,000 tCO_2, the project falls under project under VCS standard.

The project is located at Saihantala Town, Suniteyouqi, Xilinhaote City, Xilinguole League, Inner Mongolia Autonomous Region, P. R. China. The geographical coordinators of project are 112°49'36.88'' E longitude and 42°34'23.24'' N latitude verified by the site visit.

Before the implementation of the project activity, the electricity generated by the project would be supplied by NCPG in the baseline scenario.

By checking laws and regulation, it is confirmed that the project activity is in complicate with all laws and regulations in China.

By checking information on the Internet, it is confirmed that the project activity has been validated by BV based on the CDM PDD version 3 dated 23/02/2010 and reported in the validation report No. BVC/CHINA-VAL/0090/2008, version 02, completed on 26/02/2010. The project activity was registered as a CDM project activity on 01/03/2010. All above information is available at https://cdm.unfccc.int/Projects/DB/BVQI1241775281.35/view. By checking statement issued by the project proponent, it is confirmed that in this crediting period, the project would either been issued under CDM or VCS. Until now, there are CERs issuance of request under CDM scheme covering from 01/03/2010 to 20/08/2012.

The project does not participate in the other emissions trading program by checking public information on Internet and interviewing with project owner. Of course, no rejection from other GHG programs.

As the project is not a grouped project, the eligibility criteria for grouped project is not applicable; No leakage management as not an AFOLU project; No commercially sensitive information confirmed through site visit.

The project activity would contribute sustainable development in the region in following aspects confirmed by site visit:

1. GHG emission reduction

The proposed project activity achieves obvious greenhouse gas (GHG) emission reductions by avoiding CO_2 emissions, as grid-connected fossil fuel-fired power dominates in the North China Power Grid.

2. Pollutants emission reduction through replacing fossil fuel combustion

The proposed project is to replace grid-connected fossil fuel-fired power plants in the North China Power Grid, and thus reduce fossil fuel consumption and avoid pollutants emission, such as sulfur dioxide and dust, brought by fossil fuel combustion. Therefore, the proposed project has obvious environmental benefit.

3. Employment opportunities

The conducting of the proposed project offered 16 job opportunities for local people.

4. Economy development

The region can achieve economic growth and booming of local tourism through the construction and operation of the project. Furthermore, the project contributes to local government with more tax revenues and poverty eradication.

Overall, it is confirmed that the PD is accurate, complete, and provides an understanding of the nature of the project.

3.2 Safeguards

3.2.1 No Net Harm

By checking the EIA summary and conclusion provided in the registered PDD, it is confirmed that wind power is green power and the impact caused by wind power on the surrounding ecosystem and residents, water, and atmosphere etc. is very little, there would be no net harm caused due to the project activity. Also, the EIA of the project are approved by the government.

Also, no potential environment or social economic matter was found during the site visit. The project is renewable energy project and thus no net harm observed in air or water quality on-site.

3.2.2 Local Stakeholder Consultation

The local stakeholder's meeting was held in the local County around project in 18/03/2008. 50 participants attended the meeting including local residents, builders and members of the local authorities. The project owner introduced the proposed project, and then a survey was arranged through a one-page questionnaire, which was designed to be easily filled in. The opinions expressed by the stakeholders were recorded and are available on request.

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

Communications with Local stakeholders was being carried out at periodic intervals. There are no negative comments received for the project.

All such conclusion has been verified through site visit and check registered PDD.

3.2.3 Environmental Impact

By checking the EIA summary and conclusion provided in the registered PDD, it is confirmed that wind power is green power and the impact caused by wind power on the surrounding ecosystem and residents, water, and atmosphere etc. is very little, there would be no net harm caused due to the project activity. Also, the EIA of the project are approved by the government.

Also, no potential environment or social economic matter was found during the site visit. The project is renewable energy project and thus no net harm observed in air or water quality on-site.

3.2.4 Public Comments

There are no public comments received.

3.2.5 AFOLU-Specific Safeguards

Not applicable as non-AFOLU project.

3.3 Application of Methodology

3.3.1 Title and Reference

The approved methodology applied in the project activity is ACM0002 – "Grid-connected electricity generation from renewable sources" (version 20.0)

Related tools are:

Tool to calculate the emission factor for an electricity system (version 07.0)

Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation (version 03.0)

Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period (version 03.0.1).

3.3.2 Applicability

The criteria and assessment of ACM0002 (version 20.0) are in the following table:

Criteria	Analysis	Assessment team's opinion
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).	The project is a greenfield NCPG-connected renewable power generation project.	By site visit and checking FSR, it is confirmed that the project is a Greenfield power plant.
The methodology is applicable under the following conditions: (a) The project activity may include renewable energy power plant/unit of one of the following types: hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power	The project is a new wind power project.	By site visit and checking FSR, it is confirmed that the project is a Greenfield power plant.

plant/unit, wave power plant/unit or tidal power plant/unit; (b) 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.		
In case of hydro power plants, one of the following conditions shall apply: (a) The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or (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/m^2; or (c) The project activity results in new single or multiple reservoirs and the power density, calculated using equation (7), is greater than 4 W/m^2; or (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/m^2, all of the following conditions shall apply:	The project is a wind power project, not hydro power plant. Therefore, this is not applicable	By site visit and checking FSR, it is confirmed that the project is a wind power project, this is not applicable.

(i) The power density calculated using the total installed capacity of the integrated project, as per equation (8), is greater than 4 W/m^2; (ii) Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity; (iii) Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m^2 shall be: 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.		
In the case of integrated hydro power projects, project proponent shall: (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 (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.	The project is a wind power project, not an integrated hydro power plant. Therefore, this is not applicable	By site visit and checking FSR, it is confirmed that the project is a wind power project, this is not applicable.

The methodology is not applicable to: (a) 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; (b) Biomass fired power plants/units.	The project does not involve switching from fossil fuel to renewable energy. The project is not biomass fired power plant.	By site visit and checking FSR, it is confirmed that the project is a Greenfield power plant, does not involved in switching from fossil fuel to renewable energy and biomass fired power plant.
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".	The project is not retrofit, rehabilitation, replacement, or capacity addition project. Therefore, this item is not applicable.	By site visit and checking FSR, it is confirmed that the project is a Greenfield power plant.

According to the table above, the assessment team confirm the project meets all the applicable criteria of ACM0002 version 20.0

Also, for related tools, the assessment team confirm all applicable criteria have been met confirmed by site visit and checking FSR.

3.3.3 Project Boundary

Project boundary has been ascertained and confirmed during the site visit using ACM0002 version 20.0 – "The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to".

Hence the project boundary includes the renewable energy power generation, sub-stations, grid and all power plants connected to grid. The proposed project activity will evacuate power to the grid. The boundary also extends to the project power plant and all power plants connected physically to the electricity system that the VCS project power plant is connected to.

The calculation of net electricity supplied to grid is under purview of state electricity board and project activity Owner or project activity Implementer does not have any control on it. Thus, for project activity, net electricity supplied to grid is the monitoring parameter which is used for ER calculations.

The sources and GHG gases involved for proposed Project activity are as below

Source		Gas	Included?	Justification/Explanation
Baseline	Grid connected electricity generation.	CO_2	Yes	Main emission source
		CH_4	No	Minor emission source
		N_2O	No	Minor emission source
		Other	No	No other emissions are emitted from the project
Project	Greenfield Wind Power Project Activity.	CO_2	No	No CO_2 emissions are emitted from the project
		CH_4	No	Project activity does not emit CH_4
		N_2O	No	Project activity does not emit N_2O
		Other	No	Project activity does not emit other forms of GHG emissions

3.3.4 Baseline Scenario

The baseline scenario of the project activity is that the electricity delivered to the grid 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 into the grid. According to the methodology ACM0002 version 20.0, the baseline emissions are the electricity produced by the project activity multiplied by the emission factor of NCPG.

For the second crediting period, the continued validity of the original baseline has been assessed in the updated PD. Applus+ Certification confirms that there have been no changes in the relevant national and/or sectoral regulations on building a wind power project for exporting electricity to power grid since the previous crediting period. On the other hand, the baseline scenario for building a wind power project for exporting electricity to power grid was still valid according to methodology ACM0002 version 20.0.

The information presented in the updated PD has been validated by an initial document review of all data. Further confirmation has been made based on the review of information from similar projects and/or technologies. The sources referenced in the PD have been quoted correctly. The information was verified against credible sources, such as the following:

- China Energy Statistical Yearbook 2013;
- China Energy Statistical Yearbook 2014;
- China Energy Statistical Yearbook 2015;
- China Energy Statistical Yearbook 2016;
- China Energy Statistical Yearbook 2017;
- China Energy Statistical Yearbook 2018.

The steps from the Methodological Tool "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period" version 03.0.1 as per VCS standard version 4.0 were applied to assess the continued validity of the baseline and/or to update the baseline at the renewal of a crediting period:

Step 1: Assess the validity of the current baseline for the next crediting period

VCS standard version 4.0 requires assessing the impact of new relevant national and/or sectoral policies and circumstances on the baseline. The validity of the current baseline is assessed using the following Sub-steps:

Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies

In China, the Renewable Energy Law has been put into effect since 2006, which encourages the development of renewable energy projects. However, although renewable energy projects have been developed rapidly in recently years, grid connected power generation in China is still dominated by fossil-fuel power plants. There are no new relevant national and/or sectoral policies and/or circumstances in the electricity generation sector applicable to the project activity, in comparison to the time of the submission of the project activity for validation, which would affect the compliance of the current baseline scenario. Hence in the absence of the project activity electricity would still have been generated in the existing fossil fuel power plants or by the addition of new fossil fuel power plants connected to the NCPG.

Applus+ Certification confirms that no relevant mandatory national and/or sectoral polices applicable to the project activity came into effect after the submission of the project activity for validation.

Step 1.2: Assess the impact of circumstances

For the project activity, the baseline scenario identified at the validation of the project activity was the continuation of the current practice without any investment. The main investment environment or market characteristics especially the feed-in tariff, the policy in terms of market access permit have no significant change. The current practice for the baseline emissions is still the GHG emitted by NCPG: the equivalent electricity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources within the NCPG.

By verifying China Energy Statistical Yearbook 2013, China Energy Statistical Yearbook 2014, China Energy Statistical Yearbook 2015, China Energy Statistical Yearbook 2016, China Energy Statistical Yearbook 2017 and China Energy Statistical Yearbook 2018. It is confirmed that thermal power (which coal is the fuel) still domain the power supply in NCPG which is the same situation when project activity was under validation. Therefore, the main market characteristics have no change.

As the project is under normal operation which is in line with the original design thereby the condition used to determine baseline emissions in the previous crediting is still valid.

The conditions used to determine the baseline emissions in the previous crediting period are not valid: the emission factor calculation of NCPG in the first crediting period is basing on the data of 2004-2006. Before the time of requesting renewal of the crediting period, the China DNA have issued the latest “2017 Baseline Emission Factors for Regional Power Grids in China” on 20/12/2018, so the emission factor of NCPG and all values need to be updated for the second crediting period.

Step 1.3: Assess whether the continuation of use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which renewal is requested

The current baseline scenario is the continuation of the current practice. In the absence of the project, the electricity would have been supplied by NCPG, and it will not request an investment by the project proponent or third party. So, this step is not applicable.

Step 1.4: Assessment of the validity of the data and parameters

The NCPG emission factor calculated ex-ante for the 1st crediting period needs to be updated, as per the "Tool to calculate the emission factor for an electricity system" version 07.0.

This parameter is properly described in the 3.3.6 of following report.

Conclusion on step 1:

Applus+ Certification confirms that the current baseline is still valid as per methodology ACM0002 version 20.0. However, the grid emission factor needs to be updated for the subsequent crediting period.

Step 2: Update the current baseline and the data and parameters

Step 2.1: Update the current baseline

As the baseline scenario of the project activity is still sustained in this crediting period, no update would be required.

Step 2.2: Update the data and parameters

The NCPG emission factor will be updated as described in 3.3.6 of this report.

3.3.5 Additionality

Not applicable for the renewal of crediting period.

3.3.6 Quantification of GHG Emission Reductions and Removals

The calculation of the emissions reductions exactly follows the procedures described in the methodology ACM0002 version 20.0 and relevant tool, e.g. the "Tool to calculate the emission factor for an electricity system" version 07.0.

Applus+ Certification has assessed the calculation of project emissions, baseline emissions, leakage emissions and emission reductions. Corresponding calculations have been carried out based on calculation spreadsheet. The consistency of the parameters and equations presented in PD, as well as calculation spreadsheet etc., has been compared with the information and requirements presented in the methodology and respective tools.

The assumptions and data used to determine the emission reductions are listed in the PD and all the sources have been checked. Based on the information reviewed it is confirmed that the sources used are correctly quoted and interpreted in the PD. The values presented in the PD are considered reasonably based on the documentation and references reviewed and the results of the interviews.

The estimation of the emission reductions are considered correct as the calculations have been reproduced by the assessment team with the attainment of the same results.

Applus+ Certification confirms methodology ACM0002 version 20.0 and relevant tool, e.g. the "Tool to calculate the emission factor for an electricity system" version 07.0 have been correctly applied to calculate baseline emissions, project emissions, leakage and net GHG emission reductions and removals.

Detailed information on the verification of the parameters used in the equations is found below. The algorithms for the determination of the baseline and project are discussed in the following sections.

The emission reductions are calculated by the difference between baseline emissions (BE_y), project emissions (PE_y) and leakage.

(1) Baseline emissions

As per the methodology ACM0002 version 20.0 that the baseline emissions include only CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The baseline emissions are calculated by the 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) ($EG_{PJ,y}$) multiplied by the Combined margin CO_2 emission factor for grid connected power generation in year y ($EF_{grid,CM,y}$).

Because the project activity is the installation of a new grid-connected renewable power plant/unit at a site where no renewable power plant was operated prior to the implementation of the project activity, the $EG_{PJ,y}$ equals to the Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh) ($EG_{facility,y}$). According to ACM0002, version 20.0, Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh) ($EG_{facility,y}$) is determined according to Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation, version 03.0.

The Combined margin CO_2 emission factor for grid connected power generation in year y ($EF_{grid,CM,y}$) is calculated in a transparent and conservative manner as a combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the steps prescribed in the "Tool to calculate the emission factor for an electricity system", version 07.0.

The PD version 2.0 completed on 19/10/2020 using the data for calculation of the grid emission factor at the time the PD was received for validation. The latest data available was from China Electric Power Yearbook 2014-2016, China Energy Statistical Yearbook 2014-2016. The calculation is in accordance with the calculation process of the combined margin emission factor published by the Chinese DNA: 2017 Baseline Emission Factors for Regional Power Grids in China published by the DNA of China on 20/12/2018.

The NCPG is selected as the electricity system of the project activity. Simple OM method (method a) is applied for calculating OM emission factor because according to the data from China Electric Power Yearbook 2012-2016, the low-cost/must-run resources in the latest five years (2011-2015) constitute less than 50% of the total grid generation. Ex-ante option with a 3-year generation-weighted average is chosen to account for $EF_{grid,OMsimple,y}$. Option B of simple OM is selected for the calculation 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 A was denied because necessary data for Option A is not available). As a result, $EF_{grid,OMsimple,y}$ is calculated to be 0.9680 tCO_2e/MWh as a generation weighted average for the year 2013-2015.

Based on the most recent years energy balance of the NCPG, calculating the proportions of CO_2 emissions from the coal-fired, oil-fired and gas-fired power plants in total CO_2 emissions of thermal power plants and taking them as weight of each type of plant in the calculations;

Based on the most advanced commercialized technologies which applied by the coal-fired, oil-fired and gas-fired power plants, calculating the emission factor of thermal power plants in NCPG. This approach is more conservative as it assumes all recently built plants have the fuel efficiency as that of the most advanced commercialized technologies;

Calculating the $EF_{grid,BM,y}$ through multiplying the emission factor of thermal power plants by the percentage share of thermal power plants installed capacity addition within all recently built installed capacity. The proper year is selected so that it is the closest time when the last 20% of installed capacity was built.

As a result, the $EF_{grid,BM,y}$ is calculated to be 0.4578 tCO_2e/MWh.

Based on the weight w_{OM} and w_{BM} of 0.75:0.25 by default for the second crediting period, the combined margin emission factor is calculated to be 0.8405 tCO_2e/MWh.

The annual net electricity supplied to the grid is 124,497 MWh which is in line with the original design of the project. It's confirmed that the estimation of the figure is reasonable. Thereby, the baseline emissions could be calculated to be 124,497 MWh * 0.8405 tCO_2e/MWh = 104,633 tCO_2e. The assessment team confirmed that the remission reductions calculation is corrected in the PD.

The values of the main parameters for calculating combined emission factor ($EF_{grid,CM,y}$) are crosschecked by the assessment team and the data sources are listed in below table:

Data and Parameters	Description	Data source
$EF_{grid,OM,y}$	CO_2 emission factor of operation margin of NCPG in 2017	2017 Baseline Emission Factors for Regional Power Grids in China
$EF_{grid,BM,y}$	CO_2 emission factor of Built margin of NCPG in 2017.	2017 Baseline Emission Factors for Regional Power Grids in China

Applus+ Certification confirms that all data sources and assumptions are appropriate, and calculations are correct, applicable to the proposed VCS project activity and will result in a conservative estimate of the emission reductions.

(2) Project emissions

The project is a wind power project. Therefore, the project emission is considered as zero based on ACM0002, version 20,0. Therefore, $PE_y = 0$ tCO_2e.

(3) Leakage

According to the methodology, the project activity leakage do not take into account, then no leakage according to ACM0002.

(4) Emission reductions

Based on the calculations and results presented in the sections above the implementation of the project activity will result in an average ex-ante estimation of emission reduction conservatively calculated to be 104,633 tCO_2e per year for the selected 10 years crediting period. Total emission reductions during the second crediting period are estimated to be 1,046,330 tCO_2e.

3.3.7 Methodology Deviations

There are no methodology deviations for the project.

3.3.8 Monitoring Plan

The project applies methodology ACM0002 version 20.0. The original monitoring plan was updated based on ACM0002 version 20.0 requirements.

Parameters	Description	Measurement method and QA/QC procedures	Assessment conclusion
$EG_{facility,y}$	Quantity of net electricity generation supplied by the project plants/units to the grid in year y	The parameter would be calculated by total electricity supplied to the grid via the main power line by the Project, Project B and other project(s) during year y ($EG_{export,y}$), total electricity purchased from the grid by the Project and Project B and other project(s) during year y ($EG_{import,y}$), quantity of electricity supplied to the grid by Group A-i (i=1,2,3,4) of the Project in year y ($EG_{A-i,y}$), quantity of electricity supplied to the grid by Group B-i (i=1,2,3,4) of the	Consistent with methodology

		Project B in year y ($EG_{B-i,y}$), quantity of electricity supplied to the grid by Group C-i (i=1,2,..,n) of other project(s) in year y ($EG_{C-i,y}$) and total electricity purchased from the gird by the Project, Project B and Other project(s) through a spare 10 kV line in the year y ($EG_{im-spare,y}$) as below formula: $EG_{facility,y} = EG_{export,y} \times EG_{A-i,y} / (EG_{A-i,y} + EG_{B-i,y} + EG_{C-i,y}) - EG_{import,y} - EG_{im-spare,y}$	
$EG_{export,y}$	Total electricity supplied to the grid via the main power line by the Project, Project B and other project(s) during year y	This parameter would be monitored by 1 set of bidirectional electricity meter (M1 as main and M2 as backup) installed at the Wenduer substation and high voltage of the 35kV/220kV substation respectively. The meter readings will be continuous measurement and monthly recorded. The measurement/ monitoring equipments should adopt the colligated automation system according with national standard and technology. The qualified entity will check out these electricity meters every year. Other sources such as the ETNs (or on grid statements if applicable) will be available to double check this parameter.	Consistent with methodology
$EG_{import,y}$	Total electricity purchased from the grid by the Project and Project B and other project(s) during year y	This parameter would be monitored by 1 set of bidirectional electricity meter (M1 as main and M2 as backup) installed at the Wenduer substation and high voltage of the 35kV/220kV substation respectively. The meter readings will be continuous measurement and monthly recorded. The measurement/ monitoring equipments should adopt the colligated automation system according with national standard and technology. The	Consistent with methodology

		qualified entity will check out these electricity meters every year. Other sources such as the ETNs (or on grid statements if applicable) will be available to double check this parameter.	
$EG_{A-i,y}$	Quantity of electricity supplied to the grid by Group A-i (i=1,2,3,4) of the Project in year y	This parameter would be monitored by 4 electricity meters (A-1, A-2, A-3 and A-4) installed at the 35kV transmission line of the project activity respectively. The meter readings will be continuous measurement and monthly recorded. The measurement/ monitoring equipments should adopt the colligated automation system according with national standard and technology. The qualified entity will check out these electricity meters every year.	Consistent with methodology
$EG_{B-i,y}$	Quantity of electricity supplied to the grid by Group B-i (i=1,2,3,4) of the Project B in year y	This parameter would be monitored by 4 electricity meters (B-1, B-2, B-3 and B-4) installed at the 35kV transmission line of the Project B respectively. The meter readings will be continuous measurement and monthly recorded. The measurement/ monitoring equipments should adopt the colligated automation system according with national standard and technology. The qualified entity will check out these electricity meters every year.	Consistent with methodology
$EG_{C-i,y}$	Quantity of electricity supplied to the grid by Group C-i (i=1,2,..,n) of other project(s) in year y	This parameter would be monitored by n electricity meters (C-1, C-2...C-n) installed at the 35kV transmission line of the other project(s) site respectively. The meter readings will be continuous measurement and monthly recorded. The measurement/ monitoring equipments should adopt the colligated automation system according with	Consistent with methodology

		national standard and technology. The qualified entity will check out these electricity meters every year.	
$EG_{im\text{-}spare,y}$	Total electricity purchased from the gird by the Project, Project B and Other project(s) through a spare 10 kV line in the year y	This parameter would be monitored by 1 electricity meter (M3) installed at the spare 10 kV line. The meter readings will be continuous measurement and monthly recorded. The measurement/ monitoring equipments should adopt the colligated automation system according with national standard and technology. The qualified entity will check out these electricity meters every year. Other sources such as the ETNs (or on grid statements if applicable) will be available to double check this parameter.	Consistent with methodology

1 set of bidirectional electricity meter (one as main (M1) and another as backup (M2)) installed at the Wenduer substation and high voltage of the 35kV/220kV substation respectively with accuracy of 0.2s are used to measure total electricity supplied to the grid via the main power line by the Project, Project B and other project(s) during year y ($EG_{export,y}$), total electricity purchased from the grid by the Project and Project B and other project(s) during year y ($EG_{import,y}$).

4 electricity meters (A-1, A-2, A-3 and A-4) installed at the 35kV transmission line of the project activity respectively with accuracy of 0.5s are used to measure quantity of electricity supplied to the grid by Group A-i (i=1,2,3,4) of the Project in year y ($EG_{A-i,y}$). Another 4 electricity meters (A-1, A-2, A-3 and A-4) at the 35kV transmission line of Project B respectively with accuracy of 0.5s are used to measure quantity of electricity supplied to the grid by Group B-i (i=1,2,3,4) of the Project B in year y ($EG_{B-i,y}$). Undetermined number N electricity meters (C-1, C-2...C-n) installed at the 35kV transmission line of the other project(s) site respectively with accuracy of 0.5s are used to measure quantity of electricity supplied to the grid by Group C-i (i=1,2,..,n) of other project(s) in year y ($EG_{C-i,y}$).

1 electricity meter (M3) installed at the spare 10 kV line with accuracy of 2.0 are used to measure total electricity purchased from the gird by the Project, Project B and Other project(s) through a spare 10 kV line in the year y ($EG_{im-spare,y}$).

The calibration of meters would be conducted by qualified third party based on the requirement of local and national standard.

Finally, Quantity of net electricity generation supplied by the project plants/units to the grid in year y ($EG_{facility,y}$) would be calculated as below:

$$EG_{facility,y} = EG_{export,y} \times EG_{A-i,y} / (EG_{A-i,y} + EG_{B-i,y} + EG_{C-i,y}) - EG_{import,y} - EG_{im-spare,y}$$

Applus+ Certification confirms that the monitoring plan contains all necessary parameters which have been clearly described in PD and that the means of monitoring described in the plan complies with the requirements of the methodology.

An organizational structure is provided in PD. The functions such as data collection, aggregation, verification, calculation, archiving, as well as the maintenance of equipment etc. have been defined. Quality assurance and quality control procedures for recording, maintaining and data archiving etc. will be ensured according to VCS and CDM EB rules. The calibration of the meter will be implemented as per national standard. An emergency treatment process has been defined in PD when the meter is in malfunction. Data management and quality control system are quoted in PD. The monitoring staffs will be trained based on the training program described in PD.

3.4 Non-Permanence Risk Analysis

Not applicable for the present project activity.

4 VALIDATION CONCLUSION

Applus+ Certification has performed a validation of renewal of crediting period of the "Inner Mongolia Jingneng Saihan Wind Farm Phase I Project" (Ref. No. 850). The validation was performed on the basis of the updated sections of the PD relating to the baseline, estimated emission reductions and the monitoring plan using the most recent version of baseline and monitoring methodology applicable for the project activity. The final validation opinion was finalized in accordance with the VCS standard version 4.0, CDM VVS for project activities version 02.0 and the CDM PS for project activities version 02.0 including the assessment of:

(a) The impact of new relevant national and/or sectoral policies and circumstances on the baseline taking into account relevant guidance from the Board with regard to renewal of the crediting period of the registered VCS project activity at the time of requesting renewal of crediting period of the project activity;

(b) The correctness of the application of the approved methodology and, where applicable, the approved standardized baseline for the determination of the continued validity of the baseline or its update, and the estimation of emission reductions for the applicable crediting period of the registered VCS project activity.

The review of the project design documentation and the subsequent follow-up interviews have provided Applus+ Certification with sufficient evidence to determine the validity of the original baseline. The project correctly applies the latest baseline and monitoring methodology ACM0002, "Grid-connected electricity generation from renewable sources" version 20.0. Applus+ Certification is able to confirm:

(a) The updated PD complies with the valid version of the applicable PD form and instructions therein for filling out the PD;

(b) Information transferred to the later valid version of the PD form is materially the same as that in the registered PD;

(c) The baseline and monitoring methodology was applied in accordance with the applicable requirements in the VCS standard and Project Standard;

(d) The baseline, the estimated GHG emission reductions, and the monitoring plan in the updated PD comply with the applicable requirements in the VCS standard and Project Standard, and the valid version of the methodology that is applicable to the registered VCS project activity;

(e) The next crediting period of the registered VCS project activity commences on the day immediately after the expiration of the current crediting period;

(f) The names of project participants in the updated PD are consistent with the names of the project participants in the registered PD.

Applus+ Certification also confirms that there have been no proposed methodology deviations for the second crediting period when submitting this report.

Given that the project is implemented as designed and the underlying assumptions do not change, the project is likely to achieve the estimated amount of annual emission reductions of 104,633 tCO_2e and a total estimated emission reduction of 1,046,330 tCO_2e over the 2nd renewable crediting period as specified within the final PD.

In summary, it is Applus+ Certification's opinion that the project activity "Inner Mongolia Jingneng Saihan Wind Farm Phase I Project" (Ref. No. 850) in P. R. China, as described in the PD, version 2.0 dated 19/10/2020, meets all relevant VCS and UNFCCC requirements for the renewal of the crediting period.

APPENDIX 1: REFERENCE LIST

1. VCS PD, Version 1.0, dated 09/09/2020; version 2.0, dated 19/10/2020

2. ER calculation spreadsheet

3. CDM PDD, version 3, dated 23/02/2010

   CDM PDD, version 07, dated 29/07/2016

4. CDM Validation Report, version 02, dated 26/04/2010

   CDM Validation Report, version 1.0, dated 09/08/2016

5. VCS PD, dated 30/06/2011

6. VCS standard version 4.0, dated on 19/09/2019

7. Approved methodology ACM0002, version 20.0, dated 28/11/2019

8. Tool to calculate the emission factor for an electricity system, version 07.0

9. Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation, version 03.0

10. Assessment of the validity of the original/current baseline and to update the baseline at the renewal of a crediting period, version 03.0.1

11. CDM Validation and Verification Standard for project activities version 02.0

12. CDM Project Standard for project activities version 02.0

13. CDM project cycle procedure for project activities version 02.0

14. Business license

15. Statement issued by the project proponent

16. Nameplate of the equipment

17. FSR

18. China Energy Statistical Yearbook 2013-2018

19. 2017 Baseline Emission Factors for Regional Power Grids in China dated 20/12/2018

20. China Electric Power Yearbook 2014-2016

21. 2006 IPCC Guidelines for National Greenhouse Gas Inventories