PROJECT DESIGN DOCUMENT FORM
FOR CDM PROJECT ACTIVITIES (F-CDM-PDD)
Version 04.1

PROJECT DESIGN DOCUMENT (PDD)

Title of the project activity	North Longyuan Wulatehouqi Wuliji Wind Farm 49.5MW Project
Version number of the PDD	1.1
Completion date of the PDD	10/10/2012
Project participant(s)	Inner Mongolia North Longyuan Wind Power Co., Ltd.; Carbon Resource Management S.A.
Host Party(ies)	People's Republic of China
Sectoral scope and selected methodology(ies)	01 Energy industries ACM0002 (Version 13.0.0)
Estimated amount of annual average GHG emission reductions	100,221 tCO2e

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

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The purpose of the proposed North Longyuan Wulatehouqi Wuliji Wind Farm 49.5MW Project (the Proposed Project Activity) is the generation of electricity from wind and the supply of this electricity to the North China Power Grid (NCPG, or the Grid). The Proposed Project Activity will install and operate 33 wind turbines with a capacity of 1,500 kW each. Therefore, the project scenario is the installation of 49.5 MW of renewable energy power generation capacity, and the supply to the Grid of 111,879 MWh of electricity generated from renewable energy once fully operational. In accordance with the methodology there are no project emissions.

The baseline scenario, which is the same as the scenario existing prior to the implementation of the Proposed Project Activity, is, according to the methodology:

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, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system".

As the Grid is dominated by fossil fuel-fired power generation, the establishment of the Proposed Project Activity will lead to greenhouse gas (GHG) emission reductions. Following the methodology, the emission reductions are estimated to be on average 100,221 tonnes of CO2 equivalent (tCO2e) per year and be 701,547 tCO2e during the first seven years crediting period.

The Proposed Project Activity will contribute to sustainable development in the following ways:

- It will promote local economic development by creating local employment opportunities during both the construction and operational phase of the proposed project activity.
- It will generate electricity from renewable sources.
- It will promote technology development, through the use of advanced technology; in particular it will stimulate and accelerate the commercialisation of grid-connected wind power technologies and markets, which are an important objective of the Chinese government.
- It will reduce GHG emissions in China compared to the high-growth, fossil fuel-dominated baseline/business-as-usual scenario.
- It will avoid the emissions of other pollutants associated with the operation of fossil fuel-fired thermal power plant, including SO_2 and soot, thus improving air quality, as well as avoid thermal pollution from cooling water in the baseline/business-as-usual scenario.

A.2. Location of project activity

A.2.1. Host Party(ies)

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People's Republic of China

A.2.2. Region/State/Province etc.

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Inner Mongolia Autonomous Region

A.2.3. City/Town/Community etc.

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Bayannao'er City, Wulate Hou Qi

A.2.4. Physical/Geographical location

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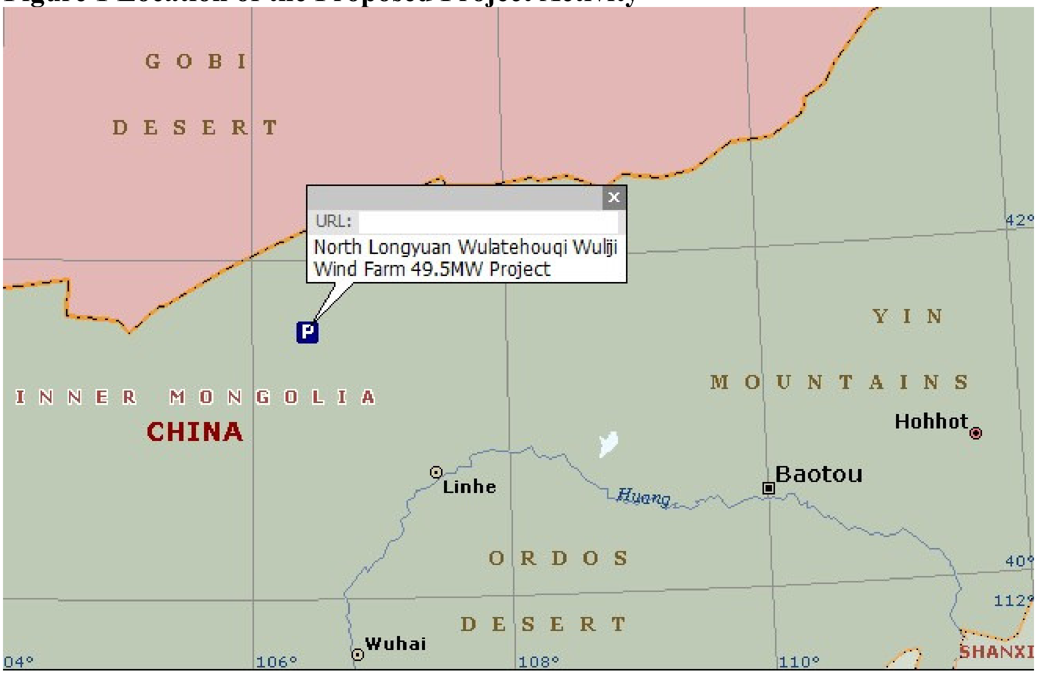
Table 1 Geographical co-ordinates of the project

Longitude	106°27'10" East
Latitude	41°35'30" North

Figure 1 Location of the Proposed Project Activity



A.3. Technologies and/or measures

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The technologies employed by the Proposed Project Activity include 33 new wind turbines with a capacity of 1,500 kW each, i.e. an aggregate of 49.5 MW of renewable energy power generation capacity, and the transmission lines and substations required to supply the generated electricity to the Grid.[1]

Table 2 Wind Turbine specifications

Power rating	1500 kW
Rotor Diameter	82m
Hub Height (Centre)	70m
Lifetime	20 year

Note: all parameters come from the Feasibility Study Report.

The Proposed Project Activity is estimated to supply on average approximately 111,879 MWh of renewable electricity per year to the Grid once fully operational. The expected load factor of 25.80% is determined by an independent qualified design institute contracted by the project participant in the FSR using detailed onsite information and long-term local wind data, in accordance with the guidelines (EB48 Annex 11).

[1] Further detail on the technologies employed, technology specifications, etc. is available to the DOE, but is not presented in this PDD as, in accordance with the guidelines, "information related to equipment, systems and measures that are auxiliary to the main scope of the project activity and do not affect directly or indirectly GHG emissions and/or mass and energy balances of the processes related to the project activity should not be included".

The generation and consumption of the Proposed Project Activity is monitored continuously through an electronic control and monitoring system in the onsite office, using meters (bi-directional, recording supply and consumption) in the onsite substation.

In the baseline scenario, which is the same as the scenario existing prior to the implementation of the Proposed Project Activity, the facilities, systems and equipment in operation are all power plants connected physically to the electricity system that the CDM project power plant is connected to.[2]

The equipment used by the proposed project will be manufactured in China; the manufacturer is still to be decided. Within the wind turbine industry, technology is often introduced from Annex I and produced under licence or jointly developed with an Annex I-based company.[3] Technology transfer is defined as 'a broad set of processes covering the flows of know-how, experience and equipment for mitigating and adapting to climate change among different stakeholders'.[4] Therefore the establishment and operation of the proposed project activity is likely to promote technology transfer and utilization of advanced technology in China.

A.4. Parties and project participants

Party involved (host) indicates a host Party	Private and/or public entity(ies) project participants (as applicable)	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
People's Republic of China (host)	Inner Mongolia North Longyuan Wind Power Co., Ltd.	No
United Kingdom of Great Britain and Northern Ireland	Carbon Resource Management S.A.	No

A.5. Public funding of project activity

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The Proposed Project Activity does not receive public funding from Parties included in Annex I.

SECTION B. Application of selected approved baseline and monitoring methodology

B.1. Reference of methodology

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(a) The selected methodology(ies):

- ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (Version 13.0.0).

(b) Any tools and other methodologies to which the selected methodology(ies) refer:

- AM Tool 01 "Tool for the demonstration and assessment of additionality" (Version 6.0.0);
- AM Tool 02 "Combined tool to identify the baseline scenario and demonstrate additionality" (Version 4.0.0) (this tool is not applicable to the Proposed Project Activity);
- AM Tool 03 "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion" (Version 2) (this tool is not applicable to the Proposed Project Activity);
- AM Tool 07 "Tool to calculate the emission factor for an electricity system" (Version 02.2.1).

[2] The project electricity system is determined in B.6.

[3], http://event.ccidconsulting.com/en/insights/content.asp?Content_id=16757.

[4] http://unfccc.int/essential_background/glossary/items/3666.php.

B.2. Applicability of methodology
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This methodology is applicable to grid-connected renewable power generation project activities that (a) install a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (Greenfield plant); (b) involve a capacity addition; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s).

Therefore, the methodology is applicable as the Proposed Project Activity is the installation of a Greenfield, grid-connected wind power plant (a).

The methodology is applicable under the following conditions:

Criteria	**Applicability**	**Conclusion**
The project activity is the installation, capacity addition, retrofit or replacement of a power plant/unit of one of the following types: hydro power plant/unit (either with a run-of-river reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit	The Proposed Project Activity is the installation of a wind power plant.	OK
In the case of capacity additions, retrofits or replacements (except for wind, solar, wave or tidal power capacity addition projects which use Option 2 on page 10 of the methodology to calculate the parameter $EG_{PJ,y}$): the existing plant 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 addition or retrofit of the plant has been undertaken between the start of this minimum historical reference period and the implementation of the project activity	Not applicable. The Proposed Project Activity is a Greenfield plant and does not represent a capacity addition, retrofit or replacement.	OK
In case of hydro power plants: • At least one of the following conditions must apply: o The project activity is implemented in an existing single or multiple reservoirs, with no change	Not applicable. The Proposed Project Activity is a wind power plant.	OK

in any of the reservoirs; or o The project activity is implemented in an existing single or multiple reservoirs, where the volume of any of the reservoirs is increased and the power density of each reservoir, as per definitions given in the Project Emissions section, is greater than 4 W/m^2; or o The project activity results in new single or multiple reservoirs and the power density of each reservoir, as per definitions given in the Project Emissions section, is greater than 4 W/m^2.		
In case of hydro power plants using multiple reservoirs where the power density of any of the reservoirs is lower than 4 W/m^2 after the implementation of the project activity all of the following conditions must apply: • The power density calculated for the entire project activity using equation 5 is greater than 4 W/m^2; • Multiple reservoirs and hydro power plants are located at the same river and where are designed together to function as an integrated project[5] that collectively constitutes the generation capacity of the combined power plant; • Water flow between the	Not applicable. The Proposed Project Activity is a wind power plant.	OK

[5] This requirement can be demonstrated, for example, (i) by the fact that water flow from upstream power units spilling directly to the downstream reservoir, or (ii) through the analysis of the water balance. Water balance is the mass balance of water fed to power units, with all possible combinations of multiple reservoirs and without the construction of reservoirs. The purpose of such water balance is to demonstrate the requirement of specific combination of multiple 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 three years prior to implementation of CDM project activity.

multiple reservoirs is not used by any other hydropower unit which is not a part of the project activity; • Total installed capacity of the power units, which are driven using water from the reservoirs with a power density lower than 4 W/ m^2, is lower than 15 MW; • Total installed capacity of the power units, which are driven using water from reservoirs with a power density lower than 4 W/ m^2, is less than 10% of the total installed capacity of the project activity from multiple reservoirs.		

The methodology is not applicable to the following:

Criteria	Applicability	Conclusion
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;	Not applicable. The Proposed Project Activity does not involve switching from fossil fuels to renewable energy at the site of the project activity.	OK
Biomass fired power plants	Not applicable. The Proposed Project Activity is a wind power plant.	OK
Hydro power plant[6] that result in the creation of a new single reservoir or in the increase in an existing single reservoir where the power density of the reservoir is less than 4 W/m^2.	Not applicable. The Proposed Project Activity is a wind power plant.	OK

In addition, the applicability conditions included in the tools applied and referred to above apply as follows:

Tool / Criteria	Applicability	Conclusion
AM Tool 1 / Once the additionally tool is included in an approved methodology, its	The chosen methodology prescribes the use of this tool. There are no further applicability	OK

[6] Project participants wishing to undertake a hydroelectric project activity that result in a new reservoir or an increase in the existing reservoir, in particular where reservoirs have no significant vegetative biomass in the catchments area, may request a revision to the approved consolidated methodology.

application by project participants using this methodology is mandatory.	criteria for using the tool.	
AM Tool 7 / 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, i.e. 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).	The Proposed Project Activity is the installation of a wind power plant supplying electricity to the Grid.	OK
AM Tool 7 / 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.	The project electricity system is located in a non-Annex I country.	OK

Any conditions for the application of the tools are addressed in the sections below where the tools are used, sections B.5 and B.6, showing that the tools are applicable to the Proposed Project Activity. In addition, it is noted that:

- the Proposed Project Activity is a Greenfield project, therefore the "Combined tool to identify the baseline scenario and demonstrate additionality" is not required to identify the baseline scenario of the Proposed Project Activity; and
- the Proposed Project Activity is a wind power project, therefore there are no fossil fuels used for electricity generation, so there are no CO2 emissions and leakage from combustion of fossil fuels, and thus the "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion" is not applicable to the Proposed Project Activity.

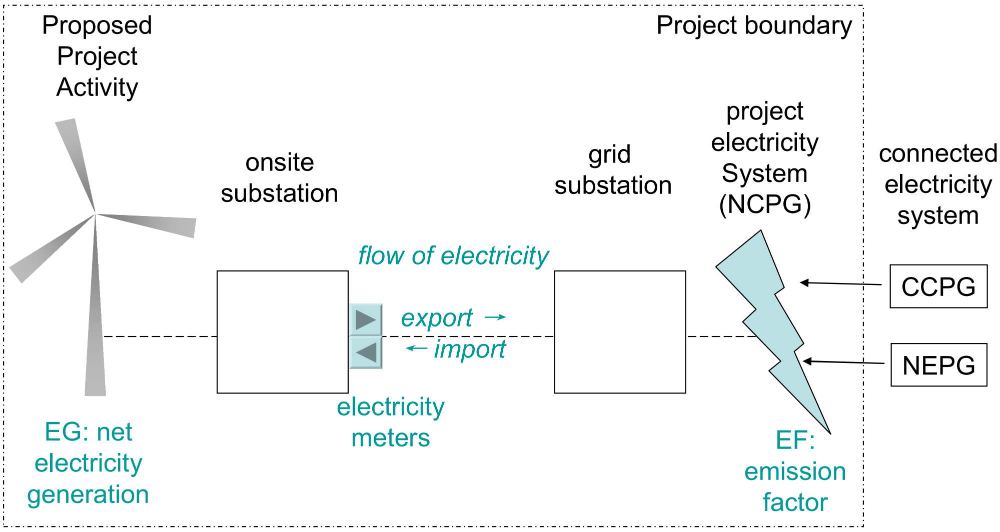
B.3. Project boundary

<table>
<tr><th colspan="2">Source</th><th>GHGs</th><th>Included?</th><th>Justification/Explanation</th></tr>
<tr><td rowspan="4">Baseline scenario</td><td rowspan="4">CO2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity.</td><td>CO_2</td><td>Yes</td><td>Main emissions source.</td></tr>
<tr><td>CH_4</td><td>No</td><td>Minor emissions source.</td></tr>
<tr><td>N_2O</td><td>No</td><td>Minor emissions source.</td></tr>
<tr><td>Other</td><td>No</td><td>Not included in the methodology.</td></tr>
<tr><td rowspan="12">Project scenario</td><td rowspan="4">For geothermal power plants, fugitive emissions of CH4 and CO2 from non-condensable gases contained in geothermal steam.</td><td>CO_2</td><td>No</td><td>Not applicable to wind.</td></tr>
<tr><td>CH_4</td><td>No</td><td>Not applicable to wind.</td></tr>
<tr><td>N_2O</td><td>No</td><td>Minor emissions source.</td></tr>
<tr><td>Other</td><td>No</td><td>Not included in the methodology.</td></tr>
<tr><td rowspan="4">CO2 emissions from combustion of fossil fuels for electricity generation in solar thermal power plants and geothermal power plants.</td><td>CO_2</td><td>No</td><td>Not applicable to wind.</td></tr>
<tr><td>CH_4</td><td>No</td><td>Minor emissions source.</td></tr>
<tr><td>N_2O</td><td>No</td><td>Minor emissions source.</td></tr>
<tr><td>Other</td><td>No</td><td>Not included in the methodology.</td></tr>
<tr><td rowspan="4">For hydro power plants, emissions of CH4</td><td>CO_2</td><td>No</td><td>Minor emissions source.</td></tr>
<tr><td>CH_4</td><td>No</td><td>Not applicable to wind.</td></tr>
<tr><td>N_2O</td><td>No</td><td>Minor emissions source.</td></tr>
<tr><td>Other</td><td>No</td><td>Not included in the methodology.</td></tr>
</table>

	from the reservoir			

In addition to the table, a flow diagram of the project boundary is presented below, physically delineating the Proposed Project Activity, based on the description provided in section A.3 above. The flow diagram includes the equipment, systems and flows of mass and energy, and in particular the emission sources (the plant connected to the project electricity system) and GHGs included (as determined by the applicable emission factor of the grid, indicated as $EF_{grid,CM,y}$ in the diagram) in the project boundary and the data and parameters to be monitored (the generation and consumption of the Proposed Project Activity, monitored as the net electricity generation, indicated as $EG_{facility,y}$ in the diagram). The project electricity system is North China Power Grid (NCPG), and the connected electricity system is Northeast Power Grid (NEPG) and the Central China Power Grid (CCPG).

Figure 2 Flow diagram and the project boundary



B.4. Establishment and description of baseline scenario

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The Proposed Project Activity is the installation of a new grid-connected renewable power plant, and is not a capacity addition, retrofit or replacement of existing grid-connected renewable power plant/unit. Therefore, the baseline scenario is prescribed in the methodology:

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, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system".

The selected methodology prescribes the baseline scenario, thus no further analysis is required.[7] The combined margin calculated in Section B.6 below.

B.5. Demonstration of additionality

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CDM consideration

[7] Validation and Verification Standard (EB65 Annex 4), para 115.

The start date of the project activity is after the date of publication of the PDD for the global stakeholder consultation. Therefore, the prior consideration of the CDM is demonstrated.[8]

Table 3 Timeline of the implementation of the project

Time	Milestone
05/2011	Feasibility Study Report (FSR) completed, taking CER revenue into account
08/06/2011	FSR approved by Inner Mongolia Development and Reform Commission
15/10/2011	Board meeting decides to develop the proposed project as CDM
18/03/2012	Emission Reduction Purchase Agreement (ERPA) signed with buyer
14/05/2012	Notification of commencement of the Project and prior consideration of CDM to UNFCCC Secretariat
16/05/2012	Start of GSP
24/05/2012	The notification of commencement of the Project and prior consideration of CDM was confirmed by China's DNA
01/03/2013	Wind turbines contract expects to been signed (Starting date)

Additionality

According to the selected methodology the additionality of the Proposed Project Activity shall be demonstrated and assessed using the "Tool for the demonstration and assessment of additionality"[9]. The Tool consists of the steps below.

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

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

The PDD shall identify credible alternatives to the project activity in order to determine the most realistic baseline scenario, unless the approved methodology that is selected by the proposed CDM project activity prescribes the baseline scenario and no further analysis is required.[10]

The Proposed Project Activity is the installation of a new grid-connected renewable power plant, and is not a capacity addition, retrofit or replacement of existing grid-connected renewable power plant/unit. Therefore, the selected methodology prescribes the baseline scenario – the baseline scenario according to the methodology is the following:

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, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system".

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

The alternative, i.e. the prescribed baseline scenario, is realistic and feasible and complies with applicable laws and regulations.

Step 2. Investment analysis

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[8] EB65 Annex 5, para 26.
[9] Version of the tool given in B.1.
[10] Validation and Verification Standard (EB 65 Annex 4), para 115.

The purpose of this step is to determine whether the Proposed Project Activity is not:
(a) The most economically or financially attractive; or
(b) Economically or financially feasible, without the revenue from the sale of certified emission reductions (CERs).

To conduct the investment analysis, the following sub-steps are used and the guidelines provided by the Board on investment analysis[11] are taken into account:

Sub-step 2a. Determine appropriate analysis method

The purpose of this sub-step is to determine whether to apply the simple cost analysis, investment comparison analysis or benchmark analysis (sub-step 2b):

The Proposed Project Activity generates financial benefits by the sales of electricity, so the simple cost analysis (Option I) can not be applied. According to EB guidelines[12], if the alternative to the Proposed Project Activity is the supply of electricity from the grid, this is not considered an investment and a benchmark approach is considered appropriate. As the baseline alternative involves the continuation of current practices, supply of electricity from the grid, a benchmark analysis is used to identify whether the project is economically attractive (Option III). The use of a benchmark analysis is also in line with Chinese practice and is followed in the FSR.

Therefore, the benchmark analysis (Option III) is adopted.

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

According to the “Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects” issued by former State Power Corporation of China in 2002, the benchmark of total investment financial internal rate of return (project IRR) of electric power industry is 8% (after tax), and only if the project IRR of the Proposed Project Activity is higher than or equivalent to this benchmark, the Proposed Project Activity is financially feasible. This benchmark is commonly used in the electricity sector, and therefore appropriate in accordance with the EB guidelines[13].

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

The financial analysis in the PDD of this Proposed Project Activity is derived from the Feasibility Study Report (FSR) which is approved by the national authorities.

(a) The FSR is the basis for the decision to proceed with the investment in the project, i.e. that the period of time between the finalization of the FSR and the investment decision is sufficiently short that it is unlikely in the context of the underlying project activity that the input values would have materially changed. The investment estimation in the FSR was carried out by an independent design institute[14], and is based on the national regulation and the material and equipment price level, and is taking CER revenue into account. There are no changes in the input values of the investment analysis between the time of writing the FSR (05/2011), approval by the authorities (06/2011), and the date of the Board decision to go proceed with the project as a CDM project (10/2011). The analysis from the FSR was the basis of the decision to proceed with the investment in the project.
(b) The values used in the PDD and associated annexes are fully consistent with the FSR.

[11] ‘Guidelines on the Assessment of Investment Analysis’ (version 05), EB 62 Annex 5.
[12] ‘Guidelines on the Assessment of Investment Analysis’ (version 05), EB 62 Annex 5, para 19.
[13] ‘Guidelines on the Assessment of Investment Analysis’ (version 05), EB 62 Annex 5, para 12 and 13.
[14] An experience design institute with the highest certificate (grade A).

(c) The input values from the FSR are valid and applicable at the time of investment decision. The investment estimation in the FSR was carried out by an independent design institute[15], and is based on the national regulation and the material and equipment price level, and taking CER revenue into account. A detailed assessment of the accuracy and suitability of the most important parameters is given below. This assessment shows that each of the input parameters is valid and applicable.

As indicated as a preference in the EB guidelines[16], the period of assessment reflects the full period of expected operation of the Proposed Project Activity.

The cost of financing expenditures is not included in the calculation of project IRR; however such costs are calculated to help estimate the level of taxes due.

Input values[17]

In accordance with the additionality tool, the investment analysis is presented in a transparent manner and with all the relevant assumptions provided in the IRR calculation spreadsheet.

Item	Value	Data Source
Static investment	479.1698 million Yuan	FSR
Operating life	20 years	FSR
Annual O&M costs	11.3509 million Yuan	FSR
Annual electricity supplied to the grid	111,879 MWh	FSR
Tariff (incl. VAT)	0.51 RMB/kWh	FSR
Value Added Tax	17%[18]	FSR
Depreciation period	15 years	FSR
Residual value	5%	FSR
Income tax	25%	FSR
education tax	4%	FSR
city build tax	5%	FSR
Long term loan interest rate	7.05%	The website of the People's Bank of China [19]
Short term loan interest rate	6.56%	The website of the People's Bank of China

Investment costs
The investment costs of the Proposed Project Activity were estimated by an independent design institute which has been awarded the highest certificate (grade A). The estimated specific investment costs for the

[15] An experience design institute with the highest certificate (grade A).
[16] 'Guidelines on the Assessment of Investment Analysis' (version 05), EB 62 Annex 5, para 3.
[17] Parameter values may be rounded in the text, but calculations are based on all non-rounded values.
[18] The normal VAT rate in China is 17%. According to the "Notice of Value Added Tax Policy Regarding Products Using Certain Synthesized Resources and Other Products (Cai Shui [2008]156)" issued by the Ministry of Finance and the State Administration of Taxation in Dec 2008, effective as of 1 Jan 2009, for wind power projects, it states that 17% VAT shall be levied first and then 50% will be refunded. In accordance with "Ministry of Finance and State Administration of Taxation issued Notice about Implementation of VAT Reform (Cai Shui [2008]170)". VAT payments of newly purchase equipments are allowed to be compensated to wind power projects.
[19] The long term loan interest rate (6.80%) and short term loan interest rate (6.31%) in FSR was the most recent available loan rate when compiling the FSR (May 2011), with which the IRR is 5.93%. The long term loan interest rate (7.05%) and short loan interest rate (6.56%) was the most recent available loan rate at the time of investment decision (15 Oct 2011), with which the IRR is 5.94%. So the most recent available loan rates at the time of investment decision were used in investment analysis.

proposed project activity are 9,680 RMB/kW, which is comparable to the investment level of previous wind projects in China[20] and is within the range of the other registered wind projects in Inner Mongolia Autonomous Region, which is from 7,656 to 11,719 RMB/kW[21].

Therefore, it can be concluded that the estimated investment costs of the Proposed Project Activity in the FSR are reasonable.

Operation and maintenance costs
The O&M costs for the Proposed Project Activity were estimated by an independent design institute which has been awarded the highest certificate (grade A). The total is based on detailed estimates of staff costs, maintenance and material costs, insurance costs and other (miscellaneous) costs. The estimated total average O&M costs are annually 2.37% of the total static investment, which is within the range of the other registered wind projects in Inner Mongolia Autonomous Region, which is 1.18% to 5.48%[22].

Therefore, it can be concluded that the estimated average O&M costs for the Proposed Project Activity in the FSR are reasonable.

Generation / plant load factor
The expected power generation / plant load factor of the Proposed Project Activity was estimated by an independent design institute contracted by the project participant with the highest grade (Grade A) in the FSR. The estimate was based on onsite wind measurements, long-term wind assessment records for 1971 to 2009, and detailed information on the equipment. Therefore, the generation / plant load factor determination is in line with EB guidelines[23]: (a) provided to the government while applying the Proposed Project Activity for implementation approval, and (b) determined by a third party contracted by the project participants.

Tariff
The expected on-grid tariff for the Proposed Project Activity used in the financial analysis in the FSR refers to the tariff notification issued by NDRC in July 2009 (Fa Gai Jia Ge [2009]1906])[24], which indicated that the applicable unified tariff for the Proposed Project Activity located in wind resource region I, was 0.51 RMB/kWh (incl. VAT). This notification clarified that all future projects would automatically be awarded this tariff upon approval of their FSR. The FSR was approved after this notification and the tariff was therefore automatically fixed at the estimated level in line with the NDRC notification. Thus the tariff was fixed at the estimated level of 0.51 RMB/kWh (incl. VAT) prior to the project start date, and is therefore correct.

Taxes
Each of the tax rates used in the FSR is in accordance with Chinese law as indicated below.

a) Income Tax: According to People's Republic of China Enterprise Income Tax Provisional Regulations issued in March 2007, State Council No. 63, the income tax was approved as 25%[25].
b) Value Added Tax: According to the "Provisional Regulation of Value Added Tax in China" (Regulation No. 134 [1993], 13 Dec 1993) the VAT rate was 17%. The State Council "Provisional regulations of the People's Republic of China on Value Added Tax" (State Council No. 538 [2008], 5 Nov 2008) is the current regulation for VAT, confirming the VAT rate at 17%.

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[20] The average investment level of the wind farm is 8,000 to 12,000 RMB/kWh. see http://www.in-en.com/newenergy/html/newenergy-20072007042885858.html.
[21] Registered CDM projects ref.3777 and ref.1629, respectively.
[22] Registered CDM projects ref.0981 and ref.3282, respectively.
[23] 'Guidelines for the reporting and validation of plant load factors', EB48 Annex 11.
[24] Notification of electricity tariff for wind power projects issued by NDRC (Fa Gai Jia Ge [2009]1906), 20/07/2009.
[25] http://www.chinagender.com/html/ZC/200809/25-132.html.

i) The Value Added Tax rate on electricity sales revenue in the FSR is 17%, the normal VAT rate in China. However, as a subsidy for wind projects, half the VAT amount is returned to the developer in accordance with the "Notice of the Ministry of Finance and the State Administration of Taxation about policies regarding the value added tax on comprehensive utilization of resources and other products" (Cai Shui [2008] 156, 9 Dec 2008).[26]

ii) The Value Added Tax on the purchase of the equipment for renewable energy projects can be recouped from the VAT on sales revenue in accordance with the "Notice about implementation of VAT reform in the whole country" issued by Ministry of Finance and State Administration of Taxation of People's Republic of China (Cai Shui [2008] 170, 19 Dec 2008).

c) Education Tax: According to the Interim Provision on Education Tax Law[27], the national education rate is 3% of VAT. In addition, the local education tax in Inner Mongolia is 1% of VAT[28]. Therefore, the total education tax rate is 4%.

d) City Building Tax: According to the National City Tax Law, the city building tax is a 5% surtax on VAT[29].

Comparison of the financial indicators

A comparison of the financial indicator for the Proposed Project Activity and the financial benchmark is presented in the table below. It shows that the Proposed Project Activity has a less favourable indicator (i.e. lower IRR) than the benchmark identified in sub-step 2b, and therefore the Proposed Project Activity cannot be considered as financially attractive.

Table 4 Comparison of indicators

	Project IRR
Proposed Project Activity	5.94%
Benchmark	8%

Note: See calculation spreadsheet.

Sub-step 2d. Sensitivity analysis

A sensitivity analysis is used to show whether the conclusion regarding the economic or financial attractiveness is robust to reasonable variations in the critical assumptions. The investment analysis above provides a valid argument in favour of additionality as the sensitivity analysis consistently supports the conclusion that the Proposed Project Activity is unlikely to be economically or financially attractive for a realistic range of assumptions.

According to EB guidelines[30], only variables that constitute more than 20% of either total project costs or total project revenues should be subjected to reasonable variations. For the Proposed Project Activity, the key variables analysed, which constitute more than 20% of costs or revenues, are:

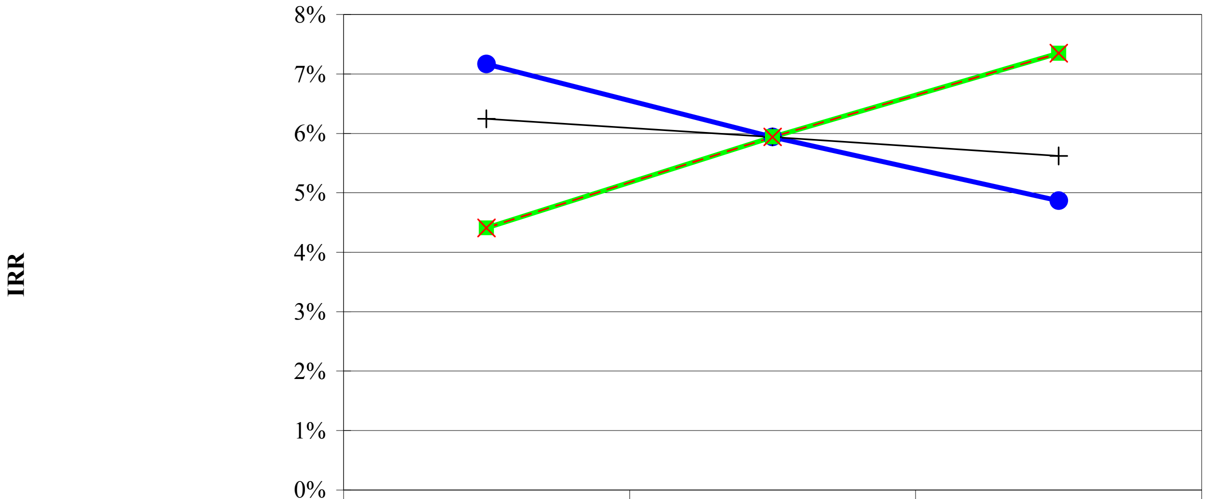
1) Investment costs;
2) Tariff;
3) Generation / plant load factor;
4) O&M costs;

[26] http://www.js-n-tax.gov.cn/Page1/StatuteDetail.aspx?StatuteID=8931, State Administration of Taxation, 50%-off discount on VAT for wind power projects.
[27] http://www.law-lib.com/law/law_view1.asp?id=99771.
[28] http://kljyxx.cn/zxfg/ShowArticle.asp?ArticleID=388.
[29] http://202.108.90.130/chinatax/jibenfa/jibenfa0401.htm.
[30] 'Guidelines on the Assessment of Investment Analysis' (version 05), EB 62 Annex 5, para 20.

In line with EB guidelines[31], the range of variations in the sensitivity analysis covers a range of +10% and –10%, which is also in line with the regulations in China[32]. Greater variations are unlikely, as discussed below, and in line with the regulations are not considered. The result of the sensitivity analysis is presented below, showing that the benchmark is not reached.

In line with normal practice, the key parameters above are subjected to the range of variations in the sensitivity analysis independently of each other, i.e. the other main parameters remaining the same. Therefore, for example, when the investment costs are varied, the estimated O&M costs remains as per the FSR values. But the loan amount, which is not one of the main parameters, is varied to maintain the same financing structure.

Figure 3 Sensitivity analysis



	-10%	0%	10%
Investment costs	7.17%	5.94%	4.87%
O&M costs	6.25%	5.94%	5.62%
Tariff	4.41%	5.94%	7.35%
Generation / load factor	4.41%	5.94%	7.35%

Variation

The financial analysis shows that the Proposed Project Activity is not economically or financially attractive, and the sensitivity analysis shows that without CER revenue IRR of the project will not reach the benchmark 8% for any reasonable variation in the main parameters.

Investment costs

When the investment costs varies by ±10%, the IRR ranges from 4.87% to 7.17%. For wind farm projects, the costs of turbines, engineering construction and related accessories comprise the main budget of static investment. As per China statistical yearbook (2007-2011) issued by the National Bureau of Statistics of China, the Price Index for Investment in Fixed Assets (PII) from 2006 to 2010 increased generally, and a significant decrease of the static investment costs is unlikely[33].Therefore, it was not realistic for the Developer to assume that the investment costs of the Proposed Project Activity could be 16.0% lower than estimated in the FSR in order to reach the benchmark, which is outside the realistic range used in the sensitivity analysis.

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[31] 'Guidelines on the Assessment of Investment Analysis' (version 05), EB 62 Annex 5, para 21.

[32] "Codes on Compiling Feasibility Study Report of Wind Farms", issued by NDRC on 25/05/2005, prescribes the –10% to +10% variation range (http://www.windpower.org.cn/news/links/js_2005_0508.htm).

[33] http://www.stats.gov.cn/tjsj/ndsj/

Tariff

When the tariff varies by ±10%, the IRR ranges from 4.41% to 7.35%. The expected on-grid tariff used for the financial analysis in the FSR refers to the most recent tariffs for wind farms in the same region, as available at the time of writing the FSR. Indeed, the FSR is after the NDRC tariff notification which clarified that future projects in these regions would automatically be awarded this tariff upon approval of their FSR.[34] Therefore, the FSR had to accept that the tariff would be fixed at 0.51 RMB/kWh. Any variation from this assumption, therefore, could not be considered credible.

According to the "Information note on the highest tariffs applied by the Executive Board in its decisions on registration of projects in the People's Republic of China (version 02)"[35], the highest historical tariff in Province is 0.54 RMB/kWh (incl. VAT). However, the proposed project requires a tariff of 0.585 RMB/kWh for the project life to reach the benchmark 8% (see IRR spreadsheet), which is higher than the highest historical tariff awarded. Therefore, the tariff used in the investment analysis is appropriate when taking the highest historical tariff into account. In conclusion, it was impossible for the developer to assume that on-grid tariff could increase by 14.8% in order to reach the benchmark 8%.

Generation / plant load factor

When the generation/plant load factor varies by ±10%, the IRR ranges from 4.41% to 7.35%. The generation / plant load factor determination was in line with EB guidelines, as shown above. The method of estimating power generation is also approved by the government and is widely used in China for wind energy. The estimate was based on onsite wind measurements, long-term wind assessment records for 1971 to 2009, and detailed information on the equipment, using professional software designed for the wind energy industry. The volume of annual generation therefore is expected to accurately represent the long-term average power supply during the lifetime of the wind farm, taking into account yearly variations in power generation, and it is not credible to assume that generation would be significantly higher over the lifetime of the Proposed Project Activity than that which can be expected from the long-term averages.

Therefore, it is not credible to assume that generation from the proposed project would increase by 14.8% each year on average over the lifetime of the project in order the reach the benchmark 8%.

O&M costs

When the O&M costs vary by ±10%, the IRR ranges from 5.62% to 6.25%. The operation and maintenance costs in the approved feasibility study were derived from the experience in the wind industry. Past trends show that costs have been rising: as prices, including those of the requirement equipment and commodities, have been increasing in recent years, a significant reduction in the level of costs is particularly unlikely.[36]As O&M costs would need to drop by 68.5% in order to reach the benchmark rate of 8%, this possibility can be ruled out.

Conclusion

The financial analysis shows that the Proposed Project Activity is not economically or financially attractive, and the sensitivity analysis shows that it is unlikely to be economically or financially attractive compared to the benchmark under any reasonable variations in the assumptions.

In conclusion, the Proposed Project Activity is not financially feasible without the revenue of CERs. Therefore, the analysis proceeds to step 4.

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[34] Fa Gai Jia Ge [2009] No. 1906, 20 July 2009.

[35] EB61, Para 78, 03 June 2011 (published 4 July 2011).

[36] *http://www.chinairn.com/doc/50180/498025.html*

Step 3. Barrier analysis

Not applied.

Step 4. Common practice analysis

The proposed project activity is not a first-of-its kind project, therefore the above test is complemented with an analysis of the extent to which the proposed project type has already diffused in the relevant sector and region, acting as a credibility check to the analysis above.

In line with the tool, if the Proposed Project Activity is one of four types of measures listed in paragraph 6, the common practice analysis is carried out in four steps identified in paragraph 47 of the tool:

(a) Fuel and feedstock switch;
(b) Switch of technology with or without change of energy source (including energy efficiency improvement as well as use of renewable energies);
(c) Methane destruction;
(d) Methane formation avoidance.

As a newly-constructed wind farm project, the proposed project is a type (b) measure.

Therefore, the existing common practice is identified and analysed though the steps below:

Step 1: Calculate applicable output range as +/-50% of the design output or capacity of the proposed project activity.

The total installed capacity of the Proposed Project Activity is 49.5 MW, therefore the applicable output range is 24.75 to 74.25 MW.

Step 2: In the applicable geographical area, identify all plants that deliver the same output or capacity, within the applicable output range calculate in Step 1, as the proposed project activity and have started commercial operation before the start date of the project. Note their number N_{all}. Registered CDM project activities and project activities undergoing validation shall not be included in this step.

The applicable geographical area covers the entire host country as a default; if the technology applied in the project is not country specific, then the applicable geographical area should be extended to other countries. Project participants may provide justification that the applicable geographical area is smaller than the host country for technologies that vary considerably from location to location depending on local conditions.

Grid connected power generation from wind varies considerably from location to location. In China, the regulatory framework and investment climate for grid-connected projects in the applicable output range are only similar and comparable for projects located in the same Province/Autonomous Region. Wind projects are approved by the provincial DRC, and the projects' EIAs by the provincial Environmental Protection Bureau. Thus it is reasonable to limit the analysis to projects located in the same Province/Autonomous Region. The project is located in Inner Mongolia Autonomous Region, the common practice analysis of the proposed project activity, therefore, covers projects located in Inner Mongolia Autonomous Region.

The proposed project activity has not started at the start of validation, therefore only projects which started commercial operation prior to the start of validation are considered.

Other CDM projects activities (registered project activities and project activities which have been published on the UNFCCC website for global stakeholder consultation as part of the validation process) are not to be included in this analysis, according to the EB guidance on the additionality tool.

The data on power generation projects other than wind are not publicly available. Therefore, no comprehensive assessment can be made of any non-wind projects in the applicable output range. However, in accordance with the approved clarification[37], it is conservative in Step 2 to only consider wind projects for N_{all}.

Using the statistics of installed wind power in China collated by Professor Shi Pengfei and Chinese Wind Energy Association[38], five projects can be identified within the applicable output range and applicable geographical area, which started the commercial operation before the start of validation of the Proposed Project Activity, which have not published a PDD on the UNFCCC website for global stakeholder consultation. For completeness the projects are listed below.

Table 5 Wind project activities identified in Inner Mongolia Autonomous Region

Name	Commissioning	Capacity	Note
Honiton Energy Bailingmiao Phase one Wind Farm Project	**12/2007**	**50 MW**	**GS VER[39]**
Honiton Energy Bailingmiao Phase two Wind Farm Project	**01/2008**	**50 MW**	**GS VER[40]**
Honiton Xiwu Phase one Wind Farm Project	**01/2010**	**50 MW**	**GS VER[41]**
Inner Mongolia Hexigten Qi Dali Phase III Wind Farm Project	**03/2004**	**30 MW**	**Demonstration project supported by national debt fund[42]**
Inner Mongolia Mangniuhai II Wind Power Project	**11/2009**	**49.5MW**	**Project rejected by EB[43] and till now no re-applying the CDM is found.**

Therefore N_{all}= 5

Step 3: Within plants identified in Step 2, identify those that apply technologies different than the technology applied in the proposed project activity. Note their number N_{diff}.

In April 2002, China implemented power sector reform to establish a more commercialized power market

[37] CLA_Tool_0015, http://cdm.unfccc.int/methodologies/PAmethodologies/tools-clarifications/30494

[38] "Statistics of domestic wind farm installation capacity in 2006", Shi Pengfei, see http://www.cwea.org.cn/download/display_info.asp?cid=2&sid=&id=19, "Statistics of domestic wind farm installation capacity in 2007", Shi Pengfei, see http://www.cwea.org.cn/upload/20080324.pdf. "Statistics of domestic wind farm installation capacity in 2008", see http://www.cwea.org.cn/upload/20090305.pdf. Shi Pengfei. "Statistics of domestic wind farm installation capacity in 2009", CWEA see http://www.cwea.org.cn/upload/201006102.pdf. "Statistics of domestic wind farm installation capacity in 2010", CWEA, see http://www.cwea.org.cn/download/display_info.asp?cid=2&sid=&id=39, "Statistics of domestic wind farm installation capacity in 2011", http://www.cwea.org.cn/download/display_info.asp?cid=9&sid=&id=44.

[39] http://www.sgsqualitynetwork.com/tradeassurance/ccp/projects/project.php?id=423

[40] http://www.sgsqualitynetwork.com/tradeassurance/ccp/projects/project.php?id=554

[41] http://www.sgsqualitynetwork.com/tradeassurance/ccp/projects/project.php?id=557

[42] http://www.chifeng.gov.cn/html/2008-11/3130.shtml

[43] http://cdm.unfccc.int/Projects/DB/DNV-CUK1267706086.52/view

in China[44]. Therefore, the common practice analysis excludes projects prior to 2002, as these were not taking place in a comparable regulatory or investment climate.

In accordance with the approved clarification[45], it is conservative to only consider wind projects for N_{diff}. Among the 5 projects in the table above, Inner Mongolia Hexigten Qi Dali Phase III Wind Farm Project is a demonstration project supported by national debt fund. Honiton Energy Bailingmiao Phase one Wind Farm Project, Honiton Energy Bailingmiao Phase two Wind Farm Project and Honiton Xiwu Phase one Wind Farm Project receive carbon finance from VERs under the Gold Standard as shown above. Therefore these four projects are considered to apply different technology in accordance with para 9 (d).

Therefore $N_{diff} = 4$

Step 4: Calculate factor $F=1-N_{diff}/N_{all}$ representing the share of plants using technology similar to the technology used in the proposed project activity in all plants that deliver the same output or capacity as the proposed project activity.

Therefore, with the conservative assumption that the number of non-wind projects is 0:

$N_{all} - N_{diff} = 5 - 4 = 1$

Conclusion

The proposed project activity is common practice within a sector in the applicable geographical areas if both the following conditions are fulfilled:

(a) The factor F is greater than 0.2, and
(b) $N_{all} - N_{diff}$ is greater than 3.

Since the difference of N_{all} and N_{diff} is 1, not greater than 3, the Proposed Project Activity is not considered common practice within the sector in the applicable geographical area

In conclusion, all the steps above are satisfied, the proposed CDM project is not a common practice and the project activity is additional.

B.6. Emission reductions

B.6.1. Explanation of methodological choices

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Project emissions

According to the methodology, for most renewable energy project activities, $PE_y = 0$. However, the methodology prescribes project emission calculations for geothermal, solar thermal and hydro power plant. As a wind power plant, therefore, there are no project emissions according to the methodology:

$$PE_y = 0 \tag{1}$$

Baseline emissions

According to the methodology, the baseline emissions include only CO2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The

[44] Chinese National Development and Reform Commission, Separate Power Plants from Network and Compete in Price to Enter Network, April 11, 2002, http://www.ndrc.gov.cn/xwfb/t20050708_28096.htm.
[45] CLA_Tool_0015, 15/06/2012.

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 calculated as follows:

$$BE_y = EG_{PJ,y} \times EF_{grid,CM,y} \quad (2)$$

Where:
BE_y is the baseline emissions in year y ($tCO2/yr$).
$EG_{PJ,y}$ is 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/yr).
$EF_{grid,CM,y}$ is the combined margin CO2 emission factor for grid connected power generation in year y calculated using the "Tool to calculate the emission factor for an electricity system"[46] (tCO2/MWh).

Calculation of $EG_{PJ,y}$

(a) Greenfield renewable energy power plants

As the proposed 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 following applies:

$$EG_{PJ,y} = EG_{facility,y} \quad (3)$$

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

Baseline emission factor

In line with the methodology, the baseline emission factor is calculated as a combined margin ($EF_{grid,CM,y}$), consisting of the combination of operating margin ($EF_{grid,OM,y}$) and build margin ($EF_{grid,BM,y}$) factors according to the following steps defined in the "Tool to calculate the emission factor for an electricity system".

Details of the calculations and data follow the published data from the Chinese DNA[47] and official national statistics, and are presented in the enclosed EF calculation spreadsheet.

Step 1. Identify the relevant electricity systems

For determining the electricity emission factors, identify the relevant project electricity system. Similarly, identify any connected electricity system. If a connected electricity system is located partially or totally in Annex-I countries, then the emission factor of that connected electricity system should be considered zero. If the DNA of the host country has published a delineation of the project electricity system and connected electricity systems, these delineations should be used.

The DNA has published a delineation of the project electricity system and connected electricity systems,

[46] Version of the tool given in B.1.
[47] http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File2708.pdf, Department of Climate Change, NDRC, 2011-10-20.

therefore these delineations are used in accordance with the Tool[48]:

- The project electricity system is the North China Power Grid (NCPG), consisting of six provincial grids: Beijing, Tianjin, Hebei, Shanxi, Inner Mongolia and Shandong.
- The connected electricity systems are the Northeast Power Grid (NEPG), consisting of three provincial grids: Jilin, Liaoning and Heilongjiang, and the Central China Power Grid (CCPG), consisting of Jiangxi, Henan, Hubei, Hunan, Chongqing and Sichuan.

For the purpose of this tool, the reference system is the project electricity system. Hence electricity transfers from a connected electricity systems to the project electricity system are defined as electricity imports while electricity transfers from the project electricity system to connected electricity systems are defined as electricity exports.

For the purpose of determining the build margin emission factor, the spatial extent is limited to the project electricity system, except where recent or likely future additions to the transmission capacity enable significant increases in imported electricity. In such cases, the transmission capacity may be considered a build margin source.

- There are no recent or likely future additions to transmission capacity that would enable significant increases in imported electricity; the data in the enclosed EF calculation spreadsheet shows that imports are relatively small and have not changed significantly in the period covered. Therefore, the transmission capacity is not considered a build margin source.

For the purpose of determining the operating margin emission factor, use one of the following options to determine the CO2 emission factor(s) for net electricity imports from a connected electricity system:

0 tCO_2/MWh; or

(a) The weighted average operating margin (OM) emission rate of the exporting grid, determined as described in Step 4 (d) below; or

(b) The simple operating margin emission rate of the exporting grid, determined as described in Step 4 (a), if the conditions for this method, as described in Step 3 below, apply to the exporting grid; or

(c) The simple adjusted operating margin emission rate of the exporting grid, determined as described in Step 4 (b) below.

- Following the calculations of the DNA, the simple operating margin (option (b) is used to calculate the CO2 emission factors for net electricity imports ($EF_{grid,import,y}$).

For imports from connected electricity systems located in Annex-I country(ies), the emission factor is 0 tonnes CO2 per MWh.

- There are no imports from Annex-I country(ies).

Electricity exports should not be subtracted from electricity generation data used for calculating and monitoring the electricity emission factors.

- Electricity exports from the project electricity system to the connected electricity system are not subtracted from electricity generation data used for calculating and monitoring the electricity emission factors.

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

Project participants may choose between the following two options to calculate the operating margin and build margin emission factor:

[48] http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File2720.pdf, Department of Climate Change, NDRC, 20-10-2011.

Option I: Only grid power plants are included in the calculation.
Option II: Both grid power plants and off-grid power plants are included in the calculation.

Following the calculations of the DNA, and the statistical data available, Option I is chosen.

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

According to the tool, the calculation of the operating margin emission factor ($EF_{grid,OM,y}$) is based on one of the following methods:

(a) Simple OM; or
(b) Simple Adjusted OM; or
(c) Dispatch data analysis OM; or
(d) Average OM

According to the Tool, the simple OM method (option a) can only be used if low-cost/must-run resources constitute less than 50% of total grid generation in: 1) average of the five most recent years, or 2) based on long-term averages for hydroelectricity production.

- Low-cost/must-run resources constitute less than 50% of total grid generation in: 1) average of the five most recent years, or 2) based on long-term averages for hydroelectricity production (see enclosed EF calculation spreadsheet). Therefore, the project participants chose to use the simple OM method (option a).

The simple OM emissions factor can be calculated using either ex-ante or ex-post data vintages. The project participants have chosen to use the ex-ante option, and $EF_{grid,OM,y}$ is fixed for the duration of the first crediting period.

Ex ante option: If the ex-ante option is chosen, 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. For grid power plants, use a 3-year generation-weighted average, based on the most recent data available at the time of submission of the CDM-PDD to the DOE for validation.

The date of the submitted CDM-PDD for validation is 14/05/2012. The date of the publication of the most recent data for the calculation of the emission factor was 20/10/2011.[49]

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

<u>(a) Simple OM</u>

The simple OM emission factor is calculated as the generation-weighted average CO2 emissions per unit net electricity generation (tCO2/MWh) of all generating sources serving the system, not including low-cost/must-run power plants/units.

The simple OM may be calculated by one of the following options:

Option A: Based on the net electricity generation and a CO2 emission factor of each power 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.

[49] http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File2708.pdf, Department of Climate Change, NDRC, 2011-10-20.

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 (i.e. if Option I has been chosen in Step 2).

The criteria for Option B are met, as (a) the necessary data for Option A is not available as indicated in the calculations of the DNA, (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) Option I is chosen in Step 2.

Option B – Calculation based on total fuel consumption and electricity generation of the system

According to the Tool, where Option B is used, 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 total fuel consumption of the project electricity system, as follows:

$$EF_{grid,OMsimple,y} = \sum_i (FC_{i,y} \times NCV_{i,y} \times EF_{CO2,i,y}) / EG_y \qquad (4)$$

Where:
$EF_{grid,OMsimple,y}$ is the simple operating margin CO2 emission factor in year y (tCO2/MWh)
$FC_{i,y}$ is the amount of fossil fuel type i consumed in the project electricity system in year y (mass or volume unit)
$NCV_{i,y}$ is the net calorific value (energy content) of fossil fuel type i in year y (GJ/mass or volume unit)
$EF_{CO2,i,y}$ is the CO2 emission factor of fossil fuel type i in year y (tCO2/GJ)
EG_y is the 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 is all fossil fuel types combusted in power sources in the project electricity system in year y
y is the relevant year as per the data vintage chosen in Step 3

For this approach (simple OM) to calculate the operating margin, the subscript m refers to the power plants/units delivering electricity to the grid, not including low-cost/must-run power plants/units, and including electricity imports[50] to the grid. Electricity imports should be treated as one power plant m.

On the basis of the data available, the three-year average operating margin emission factor is calculated as a full-generation-weighted average of the emission factors:

$EF_{grid,OMsimple,y}$ =0.9803 tCO2/MWh

Step 5. Calculate the build margin (BM) emission factor

In terms of vintage of data, the project participants chose the ex-ante option (as for the OM calculation), and $EF_{grid,BM,y}$ is fixed for the duration of the first crediting period:

Option 1: ex-ante. 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

[50] As described above, an import from a connected electricity system should be considered as one power source.

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.

Following the deviation[51], the latest statistical data available (from the China Power Yearbook) is used by the DNA to determine the most recent year from which the added generation capacity is equal to or just exceeds 20% of the latest statistical year. The added generation capacity is the sample group of power units m used to calculate the build margin. This option comprises larger annual generation than the five units built most recently.

The build margin 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:

$$EF_{grid,BM,y} = \sum_m (EG_{m,y} \times EF_{EL,m,y}) / \sum_m EG_{m,y} \quad (5)$$

Where:
$EF_{grid,BM,y}$ is the build margin CO2 emission factor in year y (tCO2/MWh)
$EG_{m,y}$ is the net quantity of electricity generated and delivered to the grid by power unit m in year y (MWh)
$EF_{EL,m,y}$ is the CO2 emission factor of power unit m in year y (tCO2/MWh)
m is the power units included in the build margin
y is the most recent historical year for which electricity generation data is available

The CO2 emission factor of each power unit m ($EF_{EL,m,y}$) should be determined as per the guidance in Step 4 (a) for the simple OM, using options A1, A2 or A3, using for y the most recent historical year for which electricity generation data is available, and using for m the power units included in the build margin.

Due to the limited availability of data on individual power units, the DNA uses the deviation above to calculate the build margin emission factor and the CO2 emission factor of thermal power units as follows (with more detail presented in Annex 3 and the EF calculation spreadsheet):

- The added generation capacity is taken instead of generation in formula (5) above, as with the determination of the group of plant included in the build margin. Therefore, the calculation following the deviation is as follows:

$$EF_{grid,BM,y} = \sum_m (CAP_{m,y} \times EF_{EL,m,y}) / \sum_m CAP_{m,y} = \sum_m Share_{CAP,m,y} \times EF_{EL,m,y} \quad \text{(5-dev)}$$

Where:
$EF_{grid,BM,y}$ is the build margin CO2 emission factor in year y (tCO2/MWh)
$CAP_{m,y}$ is the added generation capacity by plant type m in year y (MW)
$EF_{EL,m,y}$ is the CO2 emission factor of plant type m in year y (tCO2/MWh)
$Share_{CAP,m,y}$ is the share of added generation capacity by plant type m in year y (%)
m is the plant type included in the build margin (thermal, hydro, nuclear, other)
y is the most recent historical year for which electricity generation data is available

- The CO2 emission factor of plant types other than thermal power plants is taken as zero.
- The CO2 emission factor of thermal power plants is the weighted average emission factor of the best thermal power plant technologies commercially available in China, as required by the approved deviation, using option A2.

[51] Deviation for projects in China (DNV, 7 Oct 05), see http://cdm.unfccc.int/Projects/Deviations.

Using the equation of option A2, the CO2 emission factor of advanced (best commercially available) power plants using fuel type i can be calculated as follows:

$EF_{m,Adv,y} = EF_{CO2,m,y} \times 3.6 / \eta_{m,y}$

Where:
$EF_{m,Adv,y}$ is the CO2 emission factor of advanced power plants using fuel m in year y (tCO2/MWh)
$EF_{CO2,m,y}$ is the average CO2 emission factor of fuel type m in year y (tCO2/GJ)
$\eta_{m,y}$ is the average net energy conversion efficiency of advanced power plants using fuel type m in year y (%)
m is the fuel type of thermal plant (coal/solid, oil/liquid, gas)
y is the relevant year as per the data vintage chosen

The weighted average CO2 emission factor of thermal power plants is weighted on the basis of the emissions from each of these fuel types in the latest year for which data is available, and using the average net energy conversion efficiency for each fuel type of the best technologies commercially available in China.

$EF_{thermal,y} = \sum_m (EF_{m,Adv,y} \times \lambda_{m,y})$

Where:
$EF_{thermal,y}$ is the weighted average CO2 emission factor of thermal power plants in year y (tCO2/MWh)
$EF_{m,Adv,y}$ is the CO2 emission factor of advanced power plants using fuel type m in year y (tCO2/MWh)
$\lambda_{m,y}$ is the share of emissions of fuel type m in year y (%)
m is the fuel type of thermal plant (coal/solid, oil/liquid, gas)
y is the relevant year as per the data vintage chosen

The build margin emission factor is calculated using this methodology:

$EF_{grid,BM,y} = 0.6426$ tCO2/MWh

Step 6. Calculate the combined margin emission factor

The calculation of the combined margin (CM) 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:

- The project activity is located in a Least Developed Country (LDC) or in a country with less than 10 registered CDM projects at the starting date of validation; and
- The data requirements for the application of step 5 above cannot be met.

Option a is the preferred option. Option b can not be used as the proposed project activity does not take place in an LDC or in a country with less than 10 registered projects. Therefore option a is chosen.

(a) <u>Weighted average CM</u>

The combined margin emissions factor is calculated as follows:

$$EF_{grid,CM,y} = EF_{grid,OM,y} \times w_{OM} + EF_{grid,BM,y} \times w_{BM} \quad (6)$$

Where
$EF_{grid,OM,y}$ is the operating margin CO2 emission factor in year y (tCO2/MWh)
w_{OM} is the weighting of operating margin emissions factor (%)
$EF_{grid,BM,y}$ is the build margin CO2 emission factor in year y (tCO2/MWh)
w_{BM} is the weighting of build margin emissions factor (%).

According to the Tool, the default values for w_{OM} and w_{BM} for the wind projects in the first crediting period and the subsequent crediting period are: w_{OM} = 0.75 and w_{BM} = 0.25 (owing to their intermittent and non-dispatchable nature).

On the basis of these weights for the first crediting period, the combined margin emission factor is calculated, and fixed ex-ante for the duration of the first crediting period (conservatively rounded down to the fourth digit) as given below and presented in the enclosed EF calculation spreadsheet.

	CO2 emission factor (tCO2/MWh)	Weighting (%)
Operating margin (see step 4)	0.9803	75%
Build margin (see step 5)	0.6426	25%
Combined margin	0.8958	

These parameters will be recalculated at any renewal of the crediting period.

Baseline emissions (BE_y) now can be calculated as the annual net generation of the Proposed Project Activity (EG_y) multiplied by the combined margin CO2 emission factor ($EF_{grid,CM,y}$).

Leakage

According to the methodology, no leakage emissions are considered. The main emissions potentially giving rise to leakage in the context of electric sector projects are emissions arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, and transport). These emissions sources are neglected.

Emission reductions

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y \quad (7)$$

Where
ER_y is the emission reductions in year y (tCO2e/yr)
BE_y is the baseline emissions in year y (tCO2/yr)
PE_y is the project emissions in year y (tCO2e/yr)

B.6.2. Data and parameters fixed ex ante
(Copy this table for each piece of data and parameter.)

Data / Parameter	**$FC_{i,y}$**
Unit	Mass or volume.
Description	The amount of fossil fuel i consumed in the project/connected electricity system in year y.
Source of data	China Energy Statistical Yearbook (2008,2009,2010)
Value(s) applied	See enclosed ER calculation spreadsheet.
Choice of data or Measurement methods and procedures	Data accepted and used by the DNA for the official emission factor calculations.
Purpose of data	Calculation of baseline emissions.
Additional comment	–

Data / Parameter	**$NCV_{i,y}$**
Unit	GJ/mass or volume unit
Description	Net caloric value of fossil fuel type i consumed in the project/connected electricity system in year y
Source of data	China Energy Statistical Yearbook (2008,2009,2010)
Value(s) applied	See enclosed ER calculation spreadsheet.
Choice of data or Measurement methods and procedures	National average default values, accepted and used by the DNA for the official emission factor calculations.
Purpose of data	Calculation of baseline emissions.
Additional comment	–

Data / Parameter	**$EF_{CO2,i,y}$**
Unit	tCO2/GJ
Description	CO2 emission factor of fossil fuel type i in year y
Source of data	2006 IPCC Guidelines for National Greenhouse Gas Inventories
Value(s) applied	See enclosed ER calculation spreadsheet.
Choice of data or Measurement methods and procedures	The IPCC default values at the lower level of 95% confidence interval are accepted and used by the DNA for the official emission factor calculations, and are the default value in the tool.
Purpose of data	Calculation of baseline emissions.
Additional comment	–

Data / Parameter	EG_y
Unit	MWh
Description	Net electricity generated and delivered in the project electricity system in year y
Source of data	China Electric Power Yearbook (2008,2009,2010)
Value(s) applied	See enclosed ER calculation spreadsheet.
Choice of data or Measurement methods and procedures	Data accepted and used by the DNA for the official emission factor calculations
Purpose of data	Calculation of baseline emissions.
Additional comment	–

Data / Parameter	$\eta_{fuel\text{-}type,y}$
Unit	%
Description	Average net energy conversion efficiency of the best technologies commercially available in China using solid, liquid and gas fuels
Source of data	Chinese DNA
Value(s) applied	See enclosed ER calculation spreadsheet.
Choice of data or Measurement methods and procedures	Data accepted and used by the DNA for the official emission factor calculations
Purpose of data	Calculation of baseline emissions.
Additional comment	–

Data / Parameter	$Share_{CAP,m,y}$
Unit	%
Description	Share of added generation capacity by plant type m in year y
Source of data	Chinese DNA
Value(s) applied	See enclosed ER calculation spreadsheet.
Choice of data or Measurement methods and procedures	Data accepted and used by the DNA for the official emission factor calculations
Purpose of data	Calculation of baseline emissions.
Additional comment	–

Following EB guidance, data that is calculated with equations provided in the methodology or default values specified in the methodology are not included in this compilation.

B.6.3. Ex ante calculation of emission reductions
>>
In accordance with the methodology, emission reductions are calculated as follows:

$ER_y = BE_y – PE_y$

Using the formulae presented in Section B.6.1., the baseline emissions are calculated from the net electricity supplied by the Proposed Project Activity to the grid and the combined margin emission factor of the grid. The annual net generation is estimated on the basis of long-term averages in the Feasibility Study Report; the combined margin emission factor is calculated in section B.6.1. above. The ex-ante calculations of baseline emissions and emission reductions, therefore, are as follows:

$BE_y = EG_{facility,y} \times EF_{grid,CM,y}$ = 111,879 MWh × 0.8958 tCO2/MWh = 100,221 tCO_2
$ER_y = BE_y – PE_y$ = 100,221 – 0 = 100,221 tCO_2
The ex-ante calculations of estimated emission reductions are included in the ER calculation spreadsheet.

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

Year	Baseline emissions (t CO_2e)	Project emissions (t CO_2e)	Leakage (t CO_2e)	Emission reductions (t CO_2e)
01/10/2013 -31/12/2013	25,055	0	0	25,055
2014	100,221	0	0	100,221
2015	100,221	0	0	100,221
2016	100,221	0	0	100,221
2017	100,221	0	0	100,221
2018	100,221	0	0	100,221
2019	100,221	0	0	100,221
01/01/2020 – 30/09/2020	75,166	0	0	75,166
Total	701,547	0	0	701,547
Total number of crediting years	7 years			
Annual average over the crediting period	100,221	0	0	100,221

B.7. Monitoring plan

B.7.1. Data and parameters to be monitored

(Copy this table for each piece of data and parameter.)

Data / Parameter	$EG_{facility,y}$
Unit	MWh
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y
Source of data	Electricity meters installed in the onsite substation
Value(s) applied	111,879 MWh/yr once fully operational
Measurement methods and procedures	The following parameters will be measured: (i) The quantity of electricity supplied by the project plant/unit to the grid; and (ii) The quantity of electricity delivered to the project plant/unit from the grid.
Monitoring frequency	Continuous measurement and at least monthly recording
QA/QC procedures	A backup meter is installed at the onsite substation. The main and backup electricity meters are calibrated annually by a qualified third party in accordance with industry standards. Measurement results are cross-checked with records for sold electricity. The error resulting of the meters will not exceed 0.5%.
Purpose of data	Calculation of baseline emissions
Additional comment	/

B.7.2. Sampling plan

>>

Not applicable. None of the data and parameters monitored in section B.7.1 above is to be determined by a sampling approach.

B.7.3. Other elements of monitoring plan

>>

Overall responsibility for monitoring and carrying out the monitoring following this monitoring plan lies with Inner Mongolia North Longyuan Wind Power Co., Ltd.

The monitoring plan is presented in Appendix 5.

SECTION C. Duration and crediting period

C.1. Duration of project activity

C.1.1. Start date of project activity

>>

01/03/2013 (expected date)

The starting date of a CDM project activity is the earliest of the date(s) on which the implementation or construction or real action of a project activity begins/has begun. The starting date of the proposed project activity is estimated as the expected date of the first contract (Wind turbines contract).

C.1.2. Expected operational lifetime of project activity

>>

20y-0m from commissioning.

C.2. Crediting period of project activity
C.2.1. Type of crediting period
>>
Renewable crediting period (first).

C.2.2. Start date of crediting period
>>
01/10/2013.

C.2.3. Length of crediting period
>>
7y-0m.

SECTION D. Environmental impacts
D.1. Analysis of environmental impacts
>>
An Environmental Impact Assessment (EIA) for the proposed project activity has been completed by the Consultant in 09/2008, and was approved by the Inner Mongolia Environmental Protection Bureau on 28/10/2008.

The main impacts identified in the EIA are summarised below.

Impacts during the construction period

- **Noise:** The noise from construction machines has some impact on the immediately surrounding area. Noise attenuation calculations show the noise drop down to the national standard Class 1 requirement of *Quality Standard of Noise Environment (GB3096-1993).* Furthermore there are no residential areas within 600m to the project site. Therefore, the negative impact is insignificant.
- **Waste water:** Both domestic waste water and process waste water will be produced from the project site. The main pollutant in the process waste water is suspended solids (SS), which is not harmful to the surrounding environment. Domestic waste water will be treated through a septic tank and discharged into the surrounding grassland as gardening water, which will not cause negative impact to the local environment.
- **Solid Wastes:** The industrial wastes produced onsite are mainly waste soil and rock and construction wastes, which will be used for backfilling. Domestic solid wastes produced by onsite workers will be collected and be transferred to landfill for final treatment. Therefore, the negative impact is insignificant.
- **Ecosystem:** After the construction period, the Developer will re-plant the area in order to restore the ecosystem as quickly as possible. It is expected that the vegetation in the project site will have recovered gradually.

Impacts during operational period

- **Noise:** The wind turbines and power substation will generate noise during operation period. At a distance of 600m, the noise from blades of wind power machine rotating during project construction drop down to the national standard Class 1 requirement of *Quality Standard of Noise Environment (GB3096-1993).* Furthermore there is no residential area within 600m to the project site; therefore, the negative impact is insignificant.
- **Domestic waste water and solid wastes:** The waste water produced will be treated through a septic tank, and discharged into the grassland surrounded. Onsite domestic garbage will be collected and transferred to a landfill for final treatment. Therefore, the negative impact is

insignificant.

- **Ecosystem:** During normal daily operation, vehicles will be prohibited from driving on the grassland onsite. Daily maintenance and inspections in the wind farm will be carried out on foot to avoid any damage to the pasture land. The operating staff will monitor the condition of the grassland onsite and do vegetation recoveries work in time. On-site maintenance and inspection work shall be done in the daytime, and high noise levels will be avoided, so as to avoid normal activity of the animals in the area around the site. Therefore, the daily operation of the project will not make a significant impact on the living of the animals in the area.

Conclusion

Wind power is renewable energy and the impacts caused by wind farms on the surrounding ecosystem, water, noise, and atmosphere environment is insignificant.

D.2. Environmental impact assessment

>>

Environmental impacts are not considered significant. The Inner Mongolia Environmental Protection Bureau has approved the EIA on 28/10/2008.

SECTION E. Local stakeholder consultation

E.1. Solicitation of comments from local stakeholders

>>

In November 2011, staff from the Developer carried out a survey of the residents near the project site. Questionnaires were sent to 50 stakeholders and the survey had a 100% response rate. As the project area is rural, far away from urban areas, and sparsely populated, the number of stakeholders is representative for a large area. The result of the survey indicated the support to the project.

The questionnaire was designed to be understandable and easy to fill in for the local stakeholders. The questionnaire included a short summary of the proposed project activity, questions about the responding stakeholder and a number of specific questions and the opportunity for further comments.

E.2. Summary of comments received

>>

Stakeholders surveyed

Stakeholder information		Number	Proportion
Gender	Male	35	70%
	Female	15	30%
Education	Elementary school	25	50%
	Junior high school	17	34%
	Senior high school	8	16%

Questions and responses

1. Will the project affect your environment of living, studying and working?	Yes	No	Not Sure
	0%	100%	0%
2. Will construction, operation or decommissioning of the project affect natural resources or ecosystems, such as water, habitats, etc?	Yes	No	Not Sure
	0%	94%	6%

3. Will the project help to reduce GHG emissions, comparing to conventional thermal power plant?	Yes	No	Not Sure
	96%	0%	4%
4. Do you think the proposed project will have a positive impact on local economic development?	Yes	No	Unclear
	100%	0%	0%
5. Do you agree with the development of the Project?	Yes	No	No Concern
	100%	0%	0%

No further comments were given.

Conclusions from the survey

The survey shows that the proposed project has strong support among the local stakeholders. They all believe the proposed project will promote the local economic development and agree the project construction.

E.3. Report on consideration of comments received

>>

The local stakeholders are supportive of the proposed project activity, and there have been no comments to be taken in account that could affect the project design.

SECTION F. Approval and authorization

>>

The letters of approval from Parties for the project activity are enclosed with this submission.

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Appendix 1: Contact information of project participants

Organization name	Inner Mongolia North Longyuan Wind Power Co., Ltd.
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Mobile	/
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Appendix 2: Affirmation regarding public funding

Not applicable.

Appendix 3: Applicability of selected methodology

The applicability of the selected methodology is described in B.2.

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

The information on the ex ante calculation of emission reductions is described in B.6 and the enclosed ER calculation spreadsheets.

Appendix 5: Further background information on monitoring plan

1. Introduction

The proposed Project adopts the approved consolidated monitoring methodology ACM0002 "Consolidated monitoring methodology for grid-connected electricity generation from renewable sources" (version 13.0.0) to determine the emission reductions from the net electricity generation from the wind farm.

2. Responsibility

Overall responsibility for monitoring and carrying out the monitoring following this monitoring plan lies with Inner Mongolia North Longyuan Wind Power Co., Ltd.

3. Training

The CDM project management office will assign and train the dedicated people carrying out the monitoring work. The CDM project manager will complete the monitoring personnel training before the registration, further training work will be completed with the preliminary verification.

4. Installation of meter

The net electricity supplied to the grid by the proposed project activity ($EG_{facility,y}$) will be monitored through the bi-directional meters installed in the onsite substation at the project activity, recording exports to the grid and imports from the grid. A backup meter will be installed at the onsite substation. The error resulting of the metering equipment will not exceed 0.5%. The main meter monitor the flow continuously and are reported monthly.

The main meter will be read by the qualified operating staff of the wind farm. A monthly report of the net on-grid electricity from the main meter installed at the onsite substation will be established on the basis of the data.

4.1 Procedure for potential additions to the proposed generating capacity

Additional capacity may in future be added to the grid at the same point as the proposed project activity. Such additional capacity may share transmission facilities.

If in the future, such additional capacity shares transformer, substation or transmission line and metering equipment at the substation with the proposed project activity, net generation recorded by the main and backup meters at the substation will be allocated between the proposed project activity and any such added capacity on the basis of records of the meters onsite or appropriate additional meters.

Therefore, if such additional capacity is installed, the data from the onsite or additional meters are used to calculate the share of the project in the overall net output, and the net electricity supplied by the project activity ($EG_{facility,y}$) will be calculated as follows:

$$EG_{facility,y} = EG_{export,y} * E_{project,y} / (E_{project,y} + E_{additional\_capacity,y}) - EG_{import,y}$$

Where:
$EG_{export,y}$ is the electricity supplied to the grid by the project activity and additional capacity based on the data metered by the meters in the onsite substation. The error resulting of the meters will not exceed 0.5%;
$EG_{import,y}$ is the electricity imported from the grid by the project activity and additional capacity based on the data metered by the meters in the onsite substation. The error resulting of the meters will not exceed 0.5%;
$E_{project,y}$ is the electricity generated by the proposed project activity based on the data metered by the separate meters installed in the wind farm project. The error resulting of the meters will not exceed 0.5%;
$E_{additional\_capacity,y}$ is the electricity generated by the additional installed capacity based on the data metered

by the separate meters for the additional capacity installed in the wind farm project. The error resulting of the meters will not exceed 0.5%;

If such additional capacity is installed and does share the transmission facilities, then this is described in the Monitoring Report. The method of attribution will be described clearly in the Monitoring Report.

The attributed supply and imports are cross-checked with records of sold electricity and the data from the onsite meter.

5. Calibration

The metering equipments, including the main meter, the backup meter, and the separate meters of the project and the other project will be annually calibrated and checked for accuracy in accordance with industry standards. The error resulting of the meters will not exceed 0.5%. The relevant electricity data monitored by the main meter, the backup meter, and the separate meters of the project and the other project will suffice for the purpose of emission reduction verification as long as the error in the meter is within the agreed limits.

All the relevant meters, including the main meter, the backup meter, and the separate meters of the project and the other project shall be jointly inspected and sealed on behalf of the parties concerned and shall not be interfered with by either party except in the presence of the other party or its accredited representatives.

Calibration is carried out by the qualified entity with the records being supplied to the Developer and these records will be maintained by the Developer.

The metering equipment installed shall be tested by qualified entity after: the detection of a difference larger than the allowable error in the readings of main meter; the repair of all or part of meter caused by the failure of one or more parts to operate in accordance with the specifications.

If any errors are detected the party owning the meter shall repair, recalibrate or replace the meter giving the other party sufficient notice to allow a representative to attend during any corrective activity.

6. Monitored data

During the operating years, the on-site net electricity supplied by the project activity will be monitored and recorded following the procedures above. Data variables to be monitored are presented in Section B of the PDD.

Should any previous months reading of the main meter be inaccurate by more than the allowable error, or otherwise functioned improperly, the net generation output shall be determined by:

(a) first, by reading backup meter, unless a test by either party reveals it is inaccurate;
(b) if the backup system is not within acceptable limits of accuracy or operation is performed improperly the Developer and North China Power Grid Company shall jointly prepare an reasonable and conservative estimate of the correct reading, and provide sufficient evidence that this estimation is reasonable and conservative when DOE undertakes verification; and
(c) if the North China Power Grid Company and the Developer fail to agree then the matter will be referred for arbitration according to agreed procedures.

7. Quality control

Monthly net generation data will be approved and signed off by CDM manager before it is accepted and stored. This audit will check compliance with operational procedures in this monitoring plan.

This internal audit will also identify potential improvements to procedures to improve monitoring and reporting in future years.

8. Data management system

Physical document such as paper-based maps, diagrams and environmental assessments will be collated in a central place, together with this monitoring plan. In order to facilitate auditors' reference of relevant literature relating to the proposed project, the project material and monitoring results will be indexed. All paper-based information will be stored by the technology department of the Developer and all the material will have a copy for backup.

And all data including calibration records is kept until 2 years after the end of the total crediting period of the CDM project.

9. Reporting and verification

- The Developer records readings from the main meter monthly.
- The Developer carries out an internal audit on the readings and calculations.
- The Developer after the internal audit, reports the readings, grid data and calculations to the DOE for verification.

Appendix 6: Summary of post registration changes

Not applicable.

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History of the document

Version	Date	Nature of revision
04.1	11 April 2012	Editorial revision to change version 02 line in history box from Annex 06 to Annex 06b.
04.0	EB 66 13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the project design document form for CDM project activities" (EB 66, Annex 8).
03	EB 25, Annex 15 26 July 2006	
02	EB 14, Annex 06 14 June 2004	
01	EB 05, Paragraph 12 03 August 2002	Initial adoption.
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