CLEAN DEVELOPMENT MECHANISM
PROJECT DESIGN DOCUMENT FORM (CDM-PDD)
Version 03 - in effect as of: 28 July 2006

CONTENTS

A. General description of project activity

B. Application of a baseline and monitoring methodology

C. Duration of the project activity / crediting period

D. Environmental impacts

E. Stakeholders' comments

Annexes

Annex 1: Contact information on participants in the project activity

Annex 2: Information regarding public funding

Annex 3: Baseline information

Annex 4: Monitoring plan

SECTION A. General description of project activity

A.1 Title of the project activity:

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CGN Inner Mongolia Zhurihe Phase I Wind Farm Project
PDD version: 1.5
Completed on 12/03/2012

PDD revision history

PDD version	Time	Note
Version 1.0	15/04/2008	PDD for GSP
Version 1.3	12/02/2009	Submitted for registration
Version 1.4	18/11/2009	Registered PDD
Version 1.5	12/03/2012	Revised PDD according to EB48 Annex 66 and Annex 67

A.2. Description of the project activity:

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CGN Inner Mongolia Zhurihe Phase I Wind Farm Project (hereinafter referred to as the proposed project) is located in the Inner Mongolia Autonomous Region. The project is developed by CGN Wind Power Co., Ltd. The objective of the project is to generate renewable electricity using wind power resources and to sell the generated output to the North China Power Grid (NCPG) on the basis of a power purchase agreement (PPA).

The proposed project site has an abundant wind resource. A decision has been made to install a total of 25 wind turbines, each with a rated power output of 2000 kW. The total power capacity of the wind farm will be 50 MW. The expected net supplied power to the grid is 123,962 MWh per year. It is ex-ante estimated that the project will generate average annual emission reduction of about 130,755 tCO2e.

The project activity will generate greenhouse gas (GHG) emission reductions by avoiding CO_2 emissions from electricity generation by fossil fuel power plants that is supplied to the North China Power Grid. The proposed project will therefore help reduce GHG emissions versus the high-growth, coal-dominated business-as-usual scenario. Furthermore, the proposed project will improve air quality and local livelihoods and promote sustainable renewable energy industry development.

The baseline scenario, therefore, is the same as the scenario existing prior to the implementation of the project activity, i.e. generation of electricity by grid connected power plants.

The proposed project promotes local sustainable development through the following aspects:

- generate renewable electricity;
- reduce greenhouse gas emissions in China compared to a business-as-usual scenario;
- create local employment opportunity during the assembly and installation of wind turbines, and for operation of the wind farm;
- reduce other pollutants resulting from the power generation industry, compared to a business-as-usual approach, such as SO_2 and soot;

A.3. Project participants:

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Name of Party involved	Private and/or public entity(ies) project participants	Kindly indicate if the Party involved wishes to be considered as project participant
P.R. China (host)	CGN Wind Power Co., Ltd.	No
United Kingdom of Great Britain and Northern Ireland	Carbon Resource Management Ltd.	No

Please see Annex 1 for detailed contact information.

A.4. Technical description of the project activity:

A.4.1. Location of the project activity:

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A.4.1.1. Host Party(ies):

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People's Republic of China

A.4.1.2. Region/State/Province etc.:

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Inner Mongolia Autonomous Region

A.4.1.3. City/Town/Community etc:

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Zhurihe Town, Xilinguole City

A.4.1.4. Detail of physical location, including information allowing the unique identification of this project activity (maximum one page):

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CGN Inner Mongolia Zhurihe Phase I Wind Farm lies in the middle north part of Inner Mongolia Autonomy Region of People's Republic of China. It is located at the attitude 42°27'40'' North and latitude 112°46'30''. The average altitude of the project site is 1180 m above sea level. Figure 1 and 2 shows respectively the location of Xilinguole City in China map and the project site in the map of Inner Mongolia Autonomy Region.

Figure 1. The map of P. R. China showing the location of Xinlinguole City

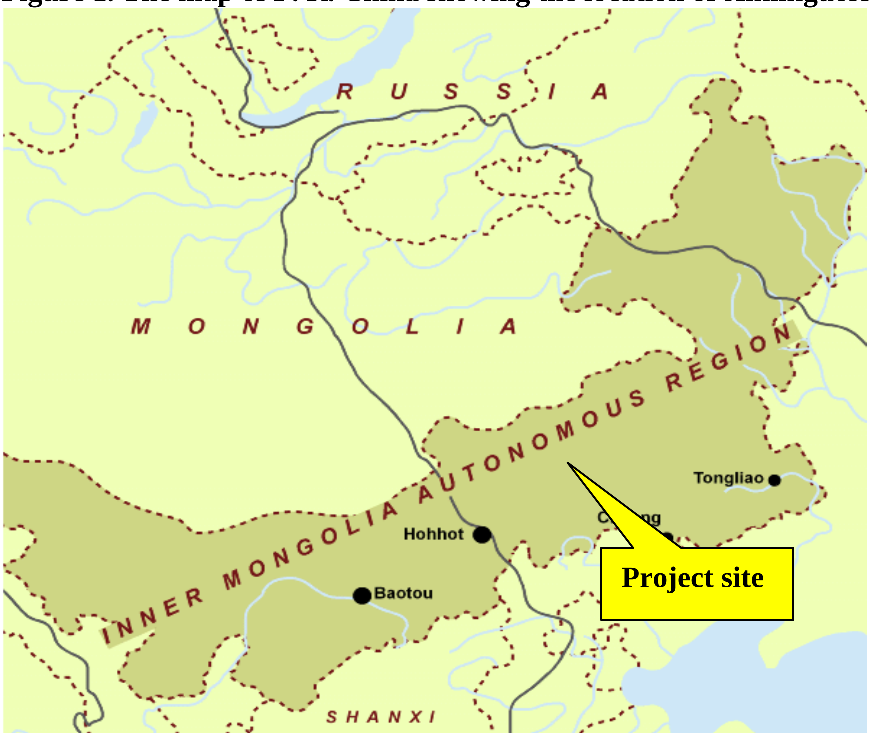

Figure 2. The map of Inner Mongolia Autonomy Region showing the project site

A.4.2. Category(ies) of project activity:

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Category: Grid connected electricity generation from renewable energy sources
Sector scope (1): Energy industries

A.4.3. Technology to be employed by the project activity:

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The 25 sets of 2000kW turbines manufactured by Beijing Beizhong Stream Turbine Generator Co., Ltd were selected. The technology used for the project is transferred from a developed country[1]. The technical design of the wind turbines is advanced and is deemed to reflect current good practice, and Key Technology Parameters are listed in Table1.

Table 1. Key technology parameters of the turbine

Key Technology Parameter	Value
Rotor diameter (m)	80
Swept area(m^2)	5027
Rotate speed (rpm)	18
Cut-in wind speed (m/s)	3.5
Rated wind speed (m/s)	13.5
Cut-out wind speed (m/s)	25
Hub height of the wind turbines (m)	80
Capacity(kW)	2000
Rated voltage(V)	690

The net supplied power to the grid is expected to be 123,962 MWh. The electricity generated from the project will be transmitted to the substation of NCPG via a 220kV transmission line. A 220kV transformer and transmission line from the wind farm to the substation of the grid company will be installed.

The project scenario is the installation of 33 wind turbines with an aggregate capacity of 50MW. The wind turbines are estimated by the Inner Mongolia Power Exploration & Design Institute, an independent professional technical design instate contracted by the project developer to carry out the feasibility study for the proposed project, to generate on average 123,962 MWh of electricity annually once fully operational, with an average load factor of 28.30%, in accordance with EB guidance on plant load factors (EB48 Annex 11). The power generation is monitored by the electronic control and monitoring system in sub-station of the wind farm.

Prior to the implementation of the project activity, the electricity was generated by grid-connected power plants. Without the implementation of the project, this scenario would have continued and is considered the baseline scenario.

A.4.4 Estimated amount of emission reductions over the chosen crediting period:

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The project will achieve an ex-ante estimated average emission reduction of 130,755 tCO_2 per year over the chosen 7-year renewable crediting period, as presented in Table 2 below.

[1] http://www.bzd.cn/newssystem/news_hbrowser.asp?id=16

The baseline emissions factor has been fixed for the first crediting period. In each year the amount of CERs actually generated by the project will depend on the metered electricity supplied by the project to the grid.

Table 2. Estimated amount of emission reductions over the chosen crediting period

Years*	**Annual estimation of emission reductions (in tonnes of CO_2e)**
2009	130,755
2010	130,755
2011	130,755
2012	130,755
2013	130,755
2014	130,755
2015	130,755
Total estimated reductions	915,285
Total number of first crediting years	7 years
Annual average over the crediting period of estimated reductions	130,755

*Note: * Using 12-monthly periods, not calendar years.*

A.4.5. Public funding of the project activity:

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There is no pubic funding from Annex I Parties for this project.

SECTION B. Application of a baseline and monitoring methodology

B.1. Title and reference of the approved baseline methodology applied to the project activity:

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- Approved consolidated baseline and monitoring methodology ACM0002 (version 07, valid from 14 Dec 07): "Consolidated baseline methodology for grid-connected electricity generation from renewable sources"
- Additionality tool (version 05.2, 26 August 2008) "Tool for the demonstration and assessment of additionality"
- "Tool to calculate the emission factor for an electricity system" (version 01.1, 29 July 2008)

B.2 Justification of the choice of the methodology and why it is applicable to the project activity:

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The approved methodology ACM0002 is applicable to the proposed project activity, because:

- The proposed project involves electricity capacity addition from wind sources; and
- The proposed project does not involve switching from fossil fuels to renewable energy at the site of the project activity; and
- The geographic and system boundaries for the North China Power Grid (NCPG) can be clearly identified and information on the characteristics of the grid is available.

B.3. Description of the sources and gases included in the project boundary

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Emission sources:

For the baseline determination only CO2 emissions from electricity generation by fossil fuel fired power plant that is displaced due to the project activity are taken into account.

Spatial boundary:

The spatial extent of the proposed project boundary includes proposed project site and all power plants connected physically to the project electricity system. The project site includes the wind farm and auxiliary installations that are used to support the project operation. North China Power Grid (NCPG) is the project electricity system, which is defined by the spatial extent of the power plants that can be dispatched without significant transmission constrains.

Using the boundary definitions of the Chinese DNA[2], NCPG consists of Beijing, Tianjin, Hebei, Shanxi, Shandong and Inner Mongolia power grids. The electricity transmission between different provinces in NCPG is very large and it is reasonable for the proposed project to regard NCPG as the project boundary.

The project electricity system is connected to Northeast Power Grid (NEPG) and electricity transfers from NEPG are taken into account.

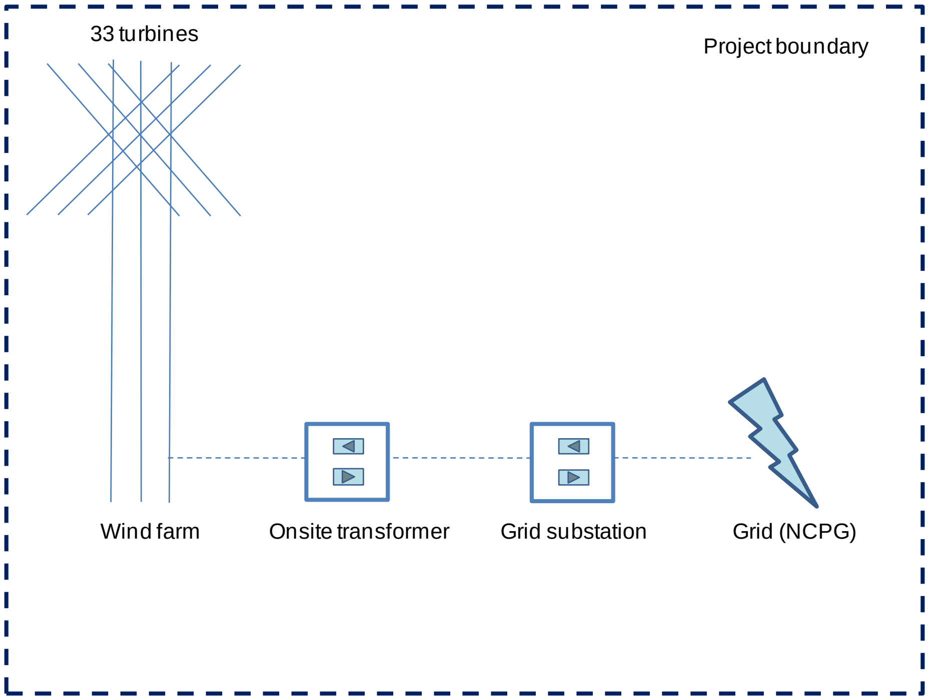
[2] http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/ File1875.pdf.

According to the approved methodology ACM0002, the emission sources and GHGs in the project boundary are as follows:

Table 3. Emission sources and GHG included in the project boundary

	Source	Gas	Included?	Justification / Explanation
Baseline	Grid	CO_2	Yes	Following ACM0002
		CH_4	No	Conservative/according to ACM0002
		N_2O	No	Conservative/according to ACM0002
Project Activity	Fossil fuel use	CO_2	No	According to ACM0002, the project emission of renewable energy project activity is not considered.
		CH_4	No	
		N_2O	No	

Figure 3 Flow diagram of the project boundary



B.4. Description of how the baseline scenario is identified and description of the identified baseline scenario:

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The project activity is the installation of a new grid-connected renewable power plant/unit, and is not a modification/retrofit of an existing plant/unit, thus, the baseline scenario, according to methodology ACM0002, is the following:

"Electricity delivered to the grid by the project 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 below."

B.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered CDM project activity (assessment and demonstration of additionality):

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Prior consideration of the CDM

The CDM was taken into account from the very beginning of the project, as found out in the feasibility study report (FSR) by Inner Mongolia Power Exploration & Design Institute in August 2007 that the project was not financially attractive, with an IRR below the benchmark, without obtaining additional income from the sale of certified emission reductions, and therefore the CDM income was taken into account in the FSR to improve the IRR above benchmark. Therefore, the developer held a board meeting in October 2007, in which decision of applying for CDM registration and seeking for CERs buyer was made. On this basis, a CERs Sales contract was signed in January 2008, which was prior to the starting date of the project activity. The incentive from the CDM, therefore, had been fully taken into account prior to the starting date of the project activity, aiming to obtain the additional funding to secure the project financially.

The timeline of CDM development is shown below:

Table 4 timeline of CDM development

Milestone	Date
Feasibility Study Report (FSR) finds that the project is not financially attractive without CDM, and CDM revenue is taken into account in the FSR to make the project attractive	August 2007
CDM decision in boarding meeting	October 2007
Emission reduction purchase agreement signed (ERPA)	January 2008
Purchase contract for turbines signed (defined as the project start date)	March 2008
PDD for GSP	April 2008
Construction Launch	May 2008
Interview with validation DOE	July 2008
Due to the unavailability of the preferred 1.5MW wind turbines, the alternative 2.0MW turbines were selected. Modification agreement was signed with the turbine supplier (Beijing Beizhong Stream Turbine Generator Co., Ltd).	September 2008

Additionality

The approved methodology ACM0002 requires the use the latest version of the "Tool for the demonstration and assessment of additionality" agreed by the Executive Board to demonstrate and assess the additionality of the proposed project. Tool consists of 4 steps as described below.

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

Realistic and credible alternatives to the project activity that can be part of the baseline scenario are defined through the following sub-steps:

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

The demonstration about the alternative that provides outputs or services comparable with the proposed CDM project activity is as follows:

a) *The proposed project activity undertaken without being registered as a CDM project activity.*

- The proposed project is financially less attractive, as demonstrated as in sub-step1b, the proposed project activity undertaken without being registered as a CDM project activity is not a realistic alternative.

b) *A fossil fuel-fired power plant with the comparable capacity or electricity generation.*

- If taking the capacity with the same annual generation, according to the current laws and regulations, it is not realistic alternative (please refer to the analysis in sub-step 1b).

c) *A power plant using other source of renewable energy with the comparable capacity or electricity generation, such as PV, biomass and hydro, etc.*

- Besides wind energy, other kinds of energy like solar PV, geothermal, biomass and hydro are the possible grid-connected renewable energy technologies that could be applied in China. Due to the technology development status and the high cost for power generation, solar PV, geothermal and biomass of the similar installed capacity as the proposed project are alternatives far from being attractive investment in the grid in China[3]. However, due to dry climate and the lack of water resource recently years in project area, there is no commercially exploitable hydro power resource which can provide same electricity generation output of the proposed project activity[4]. Therefore they are not realistic alternatives.

d) *Continuation of the current situation: 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.*

- To meet the increase of the electricity demand, the power grid company can either increase the output generation from operating units or build some new power plants. Indeed, this is the current route followed by the industry to meet demand, as reflected in the baseline calculations data presented: more than 90% of recently added capacity is thermal power. Therefore, continuation of the current situation, with the electricity generated by the operation of grid-connected power plants and by the addition of new generation sources on North China Power Grid (NCPG) can be taken as a realistic alternative for the project activity and comply with the applicable laws and regulations.

From the above mentioned, alternative (d) is the baseline scenario of the project, in line with the methodology.

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

According to Chinese regulations, coal-fired power plants of less than 135MW are prohibited from being

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[3] The solar PV is hardly to be developed and applied due to its lack of policy-encouragement, poor technical innovation and experts, lack of financial support. http://www.newenergy.org.cn/html/0067/2006710_10767.html

Biomass is ruled out due to its lack of R&D competence, undeveloped market and bad management, etc. http://www.sdpc.gov.cn/zjgx/t20071123_174054.htm

[4] There is no hydro energy resource available in the project site: http://www.shuidianzhan.net/snzy/250.html

constructed in the areas covered by the large grids such as provincial grids[5]. A fossil fuel fired power plant with the same capacity as the proposed project activity, or with a capacity with comparable electricity generation, which would be 22MW[6], therefore, alternative b described in sub-step 1a, conflicts with Chinese laws and regulations.

Alternative b, therefore, is not a realistic alternative.

The other alternatives described in sub-step 1a are all in compliance with applicable legal and regulatory requirements and are not the mandatory laws scenario, as required by the methodology used. However, only alternative (d) continuation of the current situation, with the electricity generated by the operation of grid-connected power plants and by the addition of new generation sources on NCPG is a realistic alternative consistent with current laws and regulations. Indeed, it is very common in the power grid to increase the generation output of some operating units to satisfy the load demand.

→ Proceed to Step 2 (Investment analysis) or Step 3 (Barrier analysis). (Project participants may also select to complete both steps 2 and 3.)

The project participants chose to complete step 2.

Step 2. Investment analysis

The purpose of this step is to determine whether the proposed project activity is economically or financially less attractive than at least one other alternative, identified in step 1, without the revenue from the sale of certified emission reductions (CERs). To conduct the investment analysis, use the following sub-steps:

Sub-step 2a. Determine appropriate analysis method

Determine whether to apply the simple cost analysis, investment comparison analysis or benchmark analysis (sub-step 2b):

Following the EB guidance on the assessment of investment analysis[7], if the alternative to the 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.

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

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[5] Notice on Strictly Prohibiting the Installation of Fuel fired Generators with the Capacity of 135MW or below issued by the General Office of the State Council, Decree No. 2002-6.

[6] According to the *China Electric Power Yearbook, Page 626 (2007Edition)*, the average annual utilisation rate of thermal power units in China in 2006 was 5612 hours. A 22MW unit with average utilisation rate could generate the same electricity as the proposed wind farm.

[7] Paragraph 15, 'Guidance on the Assessment of Investment Analysis' (version 02), EB 41 Annex 45.

Identify the relevant benchmark value which represents standard returns in the market, and compare the financial indicators of the proposed CDM project with the benchmark value.

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 (IRR) of electric power industry is 8%, and only if the total investment IRR of the project is higher than or equivalent to this benchmark, the proposed project is financially feasible. Thus, 8% is adopted as the benchmark of the proposed project.

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

The investment estimation in the Feasibility Study Report, carried out by an independent design institute, Inner Mongolia Power Exploration & Design Institute, which has been awarded the highest grade, Grade A, in August 2007. The analysis is based on the national regulation and the material and equipment price level, in accordance with the prescription of the "Codes on Compiling Feasibility Study Report of Wind Farms" issued by NDRC.

The FSR was approved by Development and Reform Committee of Inner Mongolia Autonomous Region on 22 January 2008. The project start date is 29 March 2008, thus the time between the approval of FSR and the investment decision is only two months, and all the input values are valid and applicable at the time of the investment decision.

In accordance with EB Guidelines (EB48 Annex 67), the re-assessment of additionality for the changes from the project activity as described in the registered PDD are based on all original input data, thereby only modifying the changed key parameters in the original spreadsheet calculations. The FSR compared 3 turbines, 750kW, 1500kW and 2000kW, and recommended the use of the 1500kW turbine as the most economically attractive option of the 3 alternatives. The 2000kW turbine was second choice.

Therefore, all the input values and calculations used in the PDD are derived from the FSR, and the data is as follows:

Table 5. Relevant indicators for financial assessment

Item	Value
Net supplied power to the grid	123,962MWh
Static Investment	510.42 million RMB Yuan
Recovery of residual value of fixed assets	13.09 million RMB Yuan
Expected operational lifetime	20 Years
Debt ratio	67%
Expected On-grid tariff (incl. VAT)	0.51 RMB Yuan/kWh
Interest rate	7.56%
Value added tax	8.5%
Income tax	25%
Education tax	3%
City building tax	5%

Source: Feasibility Study Report, Inner Mongolia Power Exploration & Design Institute, August 2007.

Further detail on the input values

Investment costs
The total investment was estimated by an experienced design institute which has been awarded the highest certificate (grade A). In the FSR, the estimated static investment for the proposed project is 10,208 RMB/kW, which is comparable to the investment level of other wind projects. The total static investment of the proposed project and that of 7 other registered CDM projects in Inner Mongolia with the same unit capacity[8] were compared. It is shown that the specific investment costs of these projects range from 7,915 to 11,719 RMB/kW. Therefore, it can be concluded that the estimated investment costs in the FSR are reasonable.

Tariff
The expected on-grid tariff used for the financial analysis in the FSR refers to the most recent tariffs for wind farms installed on the same grid at the time of writing the FSR (August 2007).[9] The FSR referred to the tariff letter issued by NDRC in June 2007 (Fa Gai Jia Ge [2007]1260])[10], which indicated that the unified tariff was 0.51 RMB/kWh (incl. VAT). Therefore, given that 0.51 RMB/kWh was the most recent tariff approved at the time of writing the FSR it is appropriate and reasonable to use this value, and no other value could credibly be used.

Since June 2007, the tariff in West Inner Mongolia has been maintained at 0.51 Yuan/kWh in all tariff notifications issued by NDRC to other projects (Fa Gai Jia Ge [2007]3303 dated 3/12/2007 and Fa Gai Jia Ge [2008]1876 dated 23/07/2008). At the end of July 2009, (NDRC) released the “Circular on Improving Wind Power On-grid Tariff Policy” (Fagaijiage [2009]1906), which clarified the policy for wind farms tariff. The Circular explained that four different wind resource regions were defined based on wind resource status and project construction conditions with corresponding guiding tariffs. Tariff determination system for wind power projects finally stabilized due to this regulation. The tariff in western Inner Mongolia again was maintained at 0.51 RMB/kWh.

The tariff notifications issued for western Inner Mongolia since the entry into force of the Renewable Energy Law are presented in Table 5a below. In addition to the notifications listed, several concession projects had received tariff approvals at significantly lower levels.

Table 5a NDRC tariff notifications for western Inner Mongolia

Date	Document reference	Tariff (RMB/kWh, including VAT)
22 December 2006	Fa Gai Jia Ge [2006] No. 2908	0.548, 0.5497, and 0.579
9 June 2007	Fa Gai Jia Ge [2007] No. 1260	0.51
3 December 2007	Fa Gai Jia Ge [2007] No. 3303	0.51
23 July 2008	Fa Gai Jia Ge [2008] No. 1876	0.51
20 July 2009	Fa Gai Jia Ge [2009] No. 1906	0.51

Additionally, according to the tariff notifications by NDRC, the tariff of the wind farm projects officially

[8] UNFCCC Ref 2406, 2153, 2135, 2113, 2047, 1823, 1629, 1628

9 Section 14, page 14-2 of the FSR.
10 Notification of electricity tariff for wind power projects (Fa Gai Jia Ge [2007]1260) issued by NDRC on 09 June 2007.

approved were two-phase tariffs. The tariff for the first phase (the first 30,000 full load hours) will be fixed (i.e. 0.51 Yuan/kWh), the tariff after 30,000 full load hours will be set at the average tariff of the local grid which was 0.26276 Yuan/kWh (incl. VAT) in 2007[11], i.e. significantly below the tariff level granted for the initial period. The simplified tariff adopted in the investment analysis, using just one single tariff of 0.51 RMB/kWh for the lifetime of the project, therefore, is conservative.

The tariff of the proposed project has been approved as 0.51 RMB/kWh (incl. VAT) in the tariff notification Neifagaijiage [2009]2013 dated 4/09/2009[12].

Generation
The expected power generation of the proposed project is calculated by an independent qualified design institute with the highest grade (Grade A) in the FSR, based on wind assessment records for 1988 to 2006 and detailed information on the equipment. Therefore, the generation and plant load factor determination are in line with both options of the EB Guidelines for the reporting and validation of plant load factors (EB 48 Annex 11): (a) provided to the government while applying the project activity for implementation approval, and (b) determined by a third party contracted by the project participants.

Operating costs
The O&M costs were estimated by an experienced design institute which has been awarded the highest certificate (grade A). The estimated average annual O&M costs are 0.08 RMB/kWh, or 2.0% of investment. These costs are compared with the values presented by one of the most important wind energy studies in the World, “Wind Energy – The Facts” implemented by a consortium led by the European Wind Energy Association (EWEA) and published in March 2009.[13] According to the study, the O&M costs are generally estimated to be around 1.2 to 1.5 euro cents per kWh[14] (0.12 to 0.15 RMB/kWh[15]) of wind power produced over the total lifetime of a turbine. Therefore, it can be concluded that the estimated average annual O&M costs in the FSR are reasonable.

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

a) Value Added Tax: The VAT rate in the FSR is 8.5%, which is half of the normal VAT rate in China of 17%. The reduced VAT rate is applicable to the wind power industry in accordance with National VAT Law issued by State Administration of Taxation (State council [1993]134)[16] and VAT policy on Comprehensive Utilization of Resource and Other Products (CaiShui[2001](198)) released by Ministry of Finance and State Administration of Taxation on 01/12/2001[17].

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[11] The tariff after 30,000h is referred to China Electricity Price executive report 2007 issued by State Electricity Regulatory Commission of People‘s Republic of China, which indicated that the average on-grid tariff of Western Inner Mongolia in 2007 was 0.26276 Yuan/kWh (adopted in other 7 years). http://www.serc.gov.cn/zwgk/jggg/200809/t20080912_10008.htm

[12] The tariff approval letter by Inner Mongolia DRC, dated 4 September 2009, Neifagaijiage [2009] 2013

[13] http://www.wind-energy-the-facts.org/en/home--about-the-project.html.

[14] Wind Energy – The Facts, Part III, The Economics of Wind Power, page 205, March 2009.

[15] Using the exchange rate of 22 Sep 2009, www.xe.com.

[16] http://www.chinatax.gov.cn/n480462/n480513/n480919/index.html, State Administration of Taxation, National VAT Law.

[17] http://www.chinatax.gov.cn/n480462/n480513/n480949/n644690/1013032.html, State Administration of Taxation, 50%-off discount on VAT for wind power projects.

b) 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%[18].
c) Education Tax: According to the Interim Provision on Education Tax Law, the education rate is 3% of VAT[19].
d) City Building Tax: According to the National City Tax Law, the city building tax rate is 5% of VAT[20].

Consideration of national/local/sectoral policies and measures

The financial indicators are calculated and compared below, taking into account all relevant costs and revenues, including *inter alia* subsidies/fiscal incentives, in accordance with the EB guidance on the consideration of national/local/sectoral policies and measures for baseline setting (EB22 Annex 3).

Feed in tariffs are E- policies

The feed in tariffs awarded to wind farm projects have been and still are above the price levels achieved by conventional thermal power plant. Therefore, the tariffs "give comparative advantages to less emissions-intensive technologies over more emissions-intensive technologies" which are so called E-policies according to paragraph 6(b) Annex 3 EB 22.

The feed in tariffs awarded to wind farm projects have no impact on the price levels for conventional thermal power plant, whichever level the feed in tariff is set at, whether higher or lower; the price levels for conventional power are set independently from any consideration on renewables. Therefore, for the avoidance of doubt, the feed in tariffs for wind can not be considered in anyway to "give comparative advantages to more emissions-intensive technologies or fuels over less emissions-intensive technologies or fuel" which are so called E+ policies according to paragraph 6(a) Annex 3 EB 22.

At whichever level the feed-in tariff is set, whether this is higher or lower than previously, as long as this level is above the price levels for conventional power plant, these tariffs are so called E- policies according to paragraph 6(b) Annex 3 EB 22; an increase in the tariff leads to a greater comparative advantage to less emissions-intensive technologies, and a reduction in the tariff is merely a smaller comparative advantage to less emissions-intensive technologies.

Feed in tariffs need not be taken into account

The feed in tariff policy for wind farm projects has been implemented after 11 November 2001. Prior to this time, the Chinese power sector was not reformed and was composed of large vertically integrated power companies. A handful of demonstration projects were implemented in China, often funded through overseas aid or domestic funds. Therefore, in accordance with paragraph 7(b) Annex 3 EB 22, all these feed in tariffs therefore need not be taken into account.

According to the Additionality Tool sub-step 2c, footnote 8, therefore, these feed in tariffs need not be taken into account when calculating the suitable financial indicator, IRR, for the proposed CDM project activity. If this was indeed used, the project IRR would therefore need to be calculated not on the basis of the feed in tariff but on the basis of an alternative price available to the project. Using the average grid price (0.2628 RMB/kWh) when calculating the financial indicators in the additionality assessment, the project IRR would be negative.

However, the project participants have not chosen to use this option to ignore the feed in and have proven the additionality of the proposed project activity in the established manner, using the actual expected feed

[18] http://www.chinagender.com/html/ZC/200809/25-132.html.
[19] http://www.law-lib.com/law/law_view1.asp?id=99771.
[20] http://202.108.90.130/chinatax/jibenfa/jibenfa0401.htm.

in tariff for the project.

Therefore, referring to the concern indicated in EB49 paragraph 48 (a), it is undeniable that any previous feed in tariffs were E- policies and have been implemented after 11 November 2001 and need not be taken into account. This therefore also addresses the concern of paragraph 48 (b) as these previous tariffs need not be taken into account, however, these concerns are addressed in more detail below.

The tariff is lower than some but higher than others
Four previous tariffs since 2002 were higher than the tariff applicable to the project activity at the time of writing the FSR. However, five previous tariffs since 2002 were lower. As shown in the Table 1 of the PP response regarding the review of this project, all nine projects receive or considered Carbon finance (as well as all subsequent projects).

The incentives for investment in renewable energy is not reduced
The IRR of the four projects receiving a higher tariff without carbon finance would also be below the benchmark 8%, just as the proposed project, as shown in Table 5b below.[21] Furthermore, if using the tariff and investment cost per kW of project No1, No2 and No3 into the IRR spreadsheet of the proposed project, the IRRs of the project would be 6.66%, 7.05%, 6.36%, respectively, which can quantitatively demonstrate that the incentives for investment in renewable energy has not been reduced.

Table 5b Project information for the four projects whose tariff is higher than the proposed project

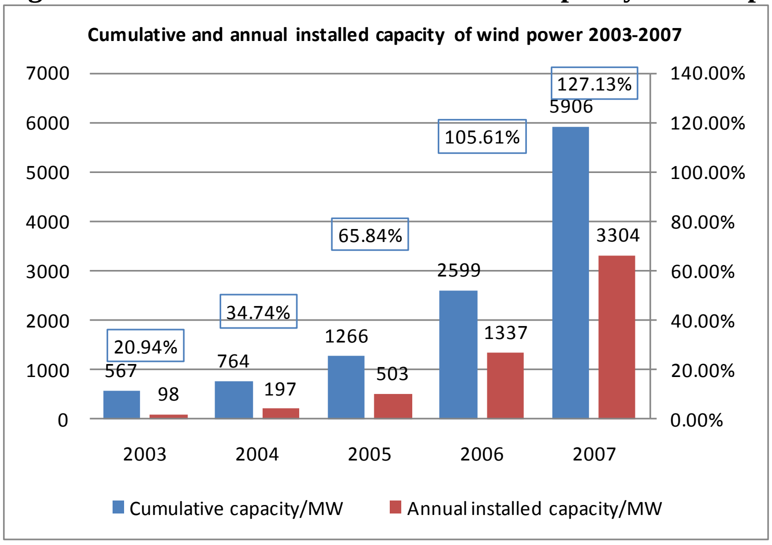
No.	Project Name	Tariff (RMB/kWh, incl. VAT)	Installed capacity (MW)	IRR without Carbon finance	Note
1	Inner Mongolia Ximeng Abag Wind Farm	0.579	49.5	7.53%	Registered CDM project, ref. 2135
2	Inner Mongolia Wulatezhongqi Wind farm	0.549	45	6.10%	At validation
3	Inner Mongolia Bailingmiao Wind-farm (West)	0.548	50	6.59%	GS-VER
4	Huitengxile Windfarm Project	0.55	25.8		Registered CDM project, ref. 0064 (first registered wind farm in China)
	Proposed project	0.51	49.5	6.11%	

China's wind industry has experienced rapid growth in recent years. The annual growth of installed capacity of wind reached 65.84% in 2005, followed by two consecutive years of over 100% growth. Despite the growth, wind power still only makes up about 1% of the total installed capacity in China. Figure 4 below shows the cumulative and annual installed capacity of wind power in China over the last few years. Such rapid expansion of the market is concrete evidence that the incentives for investment in

[21] http://cdm.unfccc.int/Projects/DB/RWTUV1218614638.67/view
http://cdm.unfccc.int/Projects/Validation/DB/HYI9HTA5OBDA0LC59LC1GWGAYBXEEV/view.html
http://www.sgsqualitynetwork.com/tradeassurance/ccp/projects/423/GS-VER(Retroactive)Honiton(1)-080111_GSP.pdf

renewable energy are not reduced.

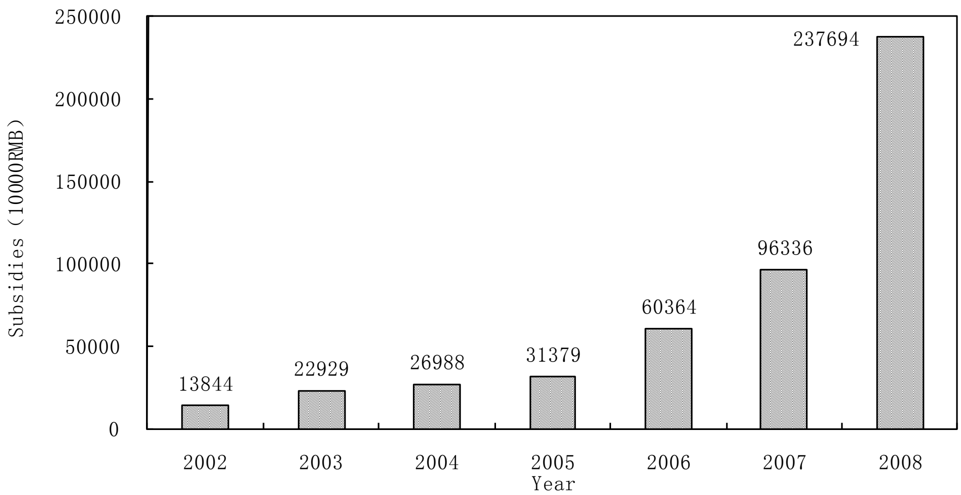
Figure 4 Cumulative and annual installed capacity of wind power 2003-2007



Source: China wind power report 2007, by Professor Li Junfeng, Shi Pengfei, etc., China environmental press.

The Chinese government has been supportive of the development of the wind power industry, and provides feed in tariffs for wind farm projects that are significantly higher than the prices that thermal power plant receive. Total subsidies provided to wind farms in China have increased dramatically, from RMB 138 million in 2002 to RMB 2.377 billion in 2008, as shown in Figure 5.

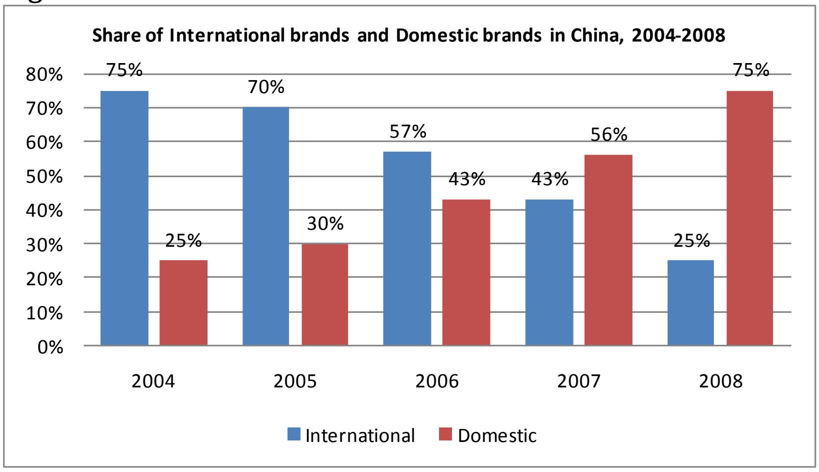
Figure 5 Subsidies provided to the wind industry in China, 2002-2008



Source: Study report of wind and feed in tariff of Chinese project, by Sino-Danish wind energy development program, and Chinese Renewable Energy Industries Association (CREIA), November 2009.

Two trends have helped reduce costs of installed capacity of wind power. First, both technology and experience are improving rapidly. The wind turbine size has increased significantly over the last few years. Before 2004 most installations used turbines with a capacity of 700kW or below, while new installations in 2007 were dominated by 1.5MW turbines.[22] The increase of turbine size and other improvements in design lead to an improved efficiency as well as reduced cost. In addition, experience has led to better siting, better control, and higher reliability. Secondly, a domestic wind power industry has grown and is increasing its market share, as shown in the Figure 6. Economies of scale and local manufacturing are reducing costs.

Figure 6 Share of international brands and domestic brands in China



Source: The study report of the global wind and feed in tariff, by Global Wind Energy Council, November 2009.

The Chinese government has continued to seek the most appropriate mechanism to set wind power tariff. The tendering price has been increasing, while the approved tariff has been mostly stable and in some regions slightly decreasing. The tariff setting mechanism has matured since the Power Sector Reform, is now stable, regulated and standardized. The tariff of western Inner Mongolia, where the proposed project is located, has been stable at 0.51 RMB/kWh (incl. VAT) since July 2007, which is the same as the level estimated in the PDD.

The feed in tariffs do not create a comparative advantage for more emissions intensive technology
The feed in tariffs awarded to wind farm projects “give comparative advantages to less emissions-intensive technologies over more emissions-intensive technologies”. The feed in tariffs have no impact on the price levels for conventional thermal power plant. Therefore, the feed in tariffs for wind can not be construed in any way to “give comparative advantages to more emissions-intensive technologies or fuels over less emissions-intensive technologies or fuel”. At whichever level the feed-in tariff is set, these tariffs are E-policies according to paragraph 6(b) Annex 3 EB 22. An increase in the tariff leads to a greater comparative advantage to less emissions-intensive technologies, and a reduction in the tariff is merely a smaller comparative advantage to less emissions-intensive technologies.[23]

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[22] The study report of the global wind and feed in tariff, by Global wind energy council, November 2009.

[23] Indeed, gradually reducing tariffs over time is widely believed to stimulate innovation and cost cutting within the supported industry, which is a benefit for the growth of that industry. “Reducing the annual per kWh tariff rate for plants qualifying for connectivity to the grid under the [Feed In Tariff] law encourages innovation and cost cutting. In Germany, for example, the 2005 tariff rates per kWh for PV plants connected to the grid were reduced by 6.5% in 2006.

Therefore, referring to the concern indicated in EB49 paragraph 48 (b), as shown above, previous feed in tariffs were E- policies implemented after 11 November 2001 and need not be taken into account, the incentives for the wind industry are not reduced as evidenced from the rapid growth of the sector, and whichever level the feed in tariffs are they give a comparative advantage to less emissions-intensive technology and not to more emissions-intensive technologies.

Nearly all wind power projects in western Inner Mongolia implemented since 2002 have received the same tariff, 0.51 RMB/kWh. While a few projects which were installed in the early years received slightly higher levels of feed in tariffs, the tariff has now been stable for several years. The stated policy of encouraging increased competitiveness, the maturing of the sector and the tariff mechanism, as well as the introduction of domestic turbines mean that small change in the tariff has not reduced the incentive for investment in renewable energy projects.

In conclusion, the applied tariff in the investment analysis in the FSR and PDD is appropriate, taking into account national/local/sectoral policies and measures in line with EB guidance.

Comparison of financial indicators

Table 6 shows the IRR of the project without and with revenue from CER sales. It can be seen that the IRR without CER revenue is below the benchmark 8%. With revenue from CDM registration the proposed project would be more financially attractive.

Table 6. IRR analysis of the proposed project

IRR	
without CDM	**with CDM**
6.11%	**8.04%**

Sub-step 2d. Sensitivity analysis

A sensitivity analysis is included to show that the conclusion regarding the financial attractiveness is robust to reasonable variations in the critical assumptions. The investment analysis provides a valid argument in favour of additionality as this sensitivity analysis consistently supports (for a realistic range of assumptions) the conclusion that the project activity is unlikely to be economically or financially attractive.

According to EB Guidance, only variables that constitute more than 20% of either total project costs or total project revenues should be subjected to reasonable variation. The key variables in the sensitivity analysis therefore are:

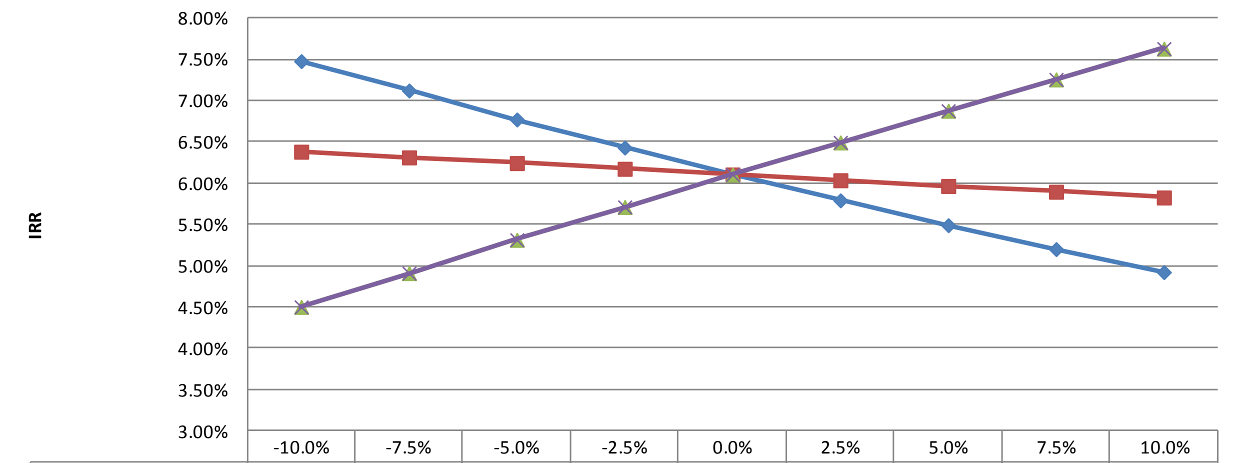
1) Static investment;
2) Annual O&M cost;
3) On-grid tariff.
4) Net supplied power

This annual digression of tariff rates has spurred on innovation and encouraged very rapid growth in the renewable energy sector". Source: "Success story: Feed-In Tariffs Support renewable energy in Germany" by *E-Parliament, Climate and Energy Network*, see http://www.e-parl.net/eparlimages/general/pdf/080603%20FIT%20toolkit.pdf.

In terms of the guidance on the assessment of investment analysis from EB41, Annex 45, paragraph 17, as a general point of departure variations in the sensitivity analysis should at least cover a range of +10% and -10%, unless this is not deemed appropriated in the context of the specific circumstances, and past trend may be a guide to determine the reasonable range. A 10% variation is also in line with normal practice in the Chinese electricity industry.

The outcome of the sensitivity analysis is presented in Table7.

Table7: Sensitivity analysis for the proposed project activity



	-10.0%	-7.5%	-5.0%	-2.5%	0.0%	2.5%	5.0%	7.5%	10.0%
Investment	7.48%	7.12%	6.77%	6.43%	6.11%	5.79%	5.49%	5.20%	4.92%
Annual O&M cost	6.38%	6.31%	6.25%	6.18%	6.11%	6.04%	5.97%	5.90%	5.83%
Tariff	4.50%	4.91%	5.32%	5.71%	6.11%	6.50%	6.88%	7.26%	7.63%
Net Supplied Power	4.50%	4.91%	5.32%	5.71%	6.11%	6.50%	6.88%	7.26%	7.63%

	-70.5%	**-13.6%**	**0.0%**	**12.5%**
Static Investment		8.00%	6.11%	
Annual O&M cost	8.00%		6.11%	
On-grid tariff			6.11%	8.00%
Net generation			6.11%	8.00%

The sensitivity analysis shows that without CER revenue the IRR for the project will not reach the benchmark under +/-10% variation, which shows that the sensitivity analysis regarding the financial attractiveness is robust to +/-10% variations in the critical assumptions.

The IRR calculation spreadsheet shows the variations at which the benchmark would be reached: if the investment would need to decreases by 13.6%, the tariff or generation would need to increase by 12.5%; the annual O&M costs would need to decrease by 70.5%. None of these scenarios are likely to happen.

Static Investment

If the static investment decreases by 13.6%, the project would reach the benchmark. For a wind farm project, the cost of turbines, engineering construction and related accessories make up the main investment.

As prices of turbines and other related equipment have been increasing in recent years,[24] a decrease of the static investment is unlikely and there's a much greater likelihood of the static investment to go up.

O&M cost

The O&M costs would need to decrease by 70.5% before the project may reach the benchmark. However, such a scenario is not credible. As prices, including those of equipment and commodities, have been increasing in recent years, a significant reduction of O&M cost is unlikely[24].

Tariff

As stated above, the tariff used in the PDD was taken directly from the FSR, which used the most recent approved tariffs of other nearby wind farms installed on the same grid at the time of writing the FSR, August 2007[25]. The FSR referred to the tariff letter issued by NDRC in June 2007 (Fa Gai Jia Ge [2007]1260])[26], which indicated that the unified tariff was 0.51 RMB/kWh (incl. VAT). Therefore, given that 0.51 RMB/kWh was the most recent tariff approved at the time of writing the FSR it is appropriate and reasonable to use this value. Additionally, the tariff in West Inner Mongolia has been maintained at 0.51 Yuan/kWh in all tariff notifications issued by NDRC to other projects (Fa Gai Jia Ge [2007]1260 dated 9/06/2007, Fa Gai Jia Ge [2007]3303 dated 3/12/2007, Fa Gai Jia Ge [2008]1876 dated 23/07/2008, and Fagaijiage [2009]1906 dated 20/06/2009). Therefore, it is not credible to assume that the tariff would increase by any margin. Indeed, the tariff of the proposed project has been approved as 0.51 RMB/kWh (incl. VAT) in the tariff notification Neifagaijiage [2009]2013 dated 4/09/2009[27].

Additionally, according to the tariff notifications by NDRC, the tariff of the wind farm projects officially approved were two-phase tariffs. The tariff for the first phase (the first 30,000 full load hours) will be fixed (i.e. 0.51 Yuan/kWh), the tariff for the second phase (after 30,000 full load hours) will be set at the average tariff of the local grid which was 0.26276 Yuan/kWh (incl. VAT) in 2007[28], i.e. significantly below the tariff level granted for the initial period. The simplified tariff adopted in the investment analysis, using just one single tariff of 0.51 RMB/kWh for the lifetime of the project, therefore, is conservative.

If it were to be assumed that the tariff would be awarded for the whole project life time of the project, the tariff would need to be increased by 12.5%, to 0.574 RMB/kWh (incl. VAT), to reach the benchmark IRR. This is not credible, as this would be higher than any other project has received since 2002: one single

[24] In the last 2 years, the demands for the turbines and its accessories exceeded the supply. Moreover the price of the raw material such as steel and cooper is increasing, which results in the price of wind turbines and equipments increasing, as demonstrated in *The Development of Wind Power*, published by People's Daily, pls. refer to: http://energy.people.com.cn/GB/5720709.html

[25] Section 14, page 14-2 of the FSR.

[26] Notification of electricity tariff for wind power projects (Fa Gai Jia Ge [2007]1260) issued by NDRC on 09 June 2007.

[27] The tariff approval letter by Inner Mongolia DRC, dated 4 September 2009, Neifagaijiage [2009] 2013

[28] The tariff after 30,000h is referred to China Electricity Price executive report 2007 issued by State Electricity Regulatory Commission of People's Republic of China, which indicated that the average on-grid tariff of Western Inner Mongolia in 2007 was 0.26276 Yuan/kWh (adopted in other 7.7 years). http://www.serc.gov.cn/zwgk/jggg/200809/t20080912_10008.htm

project received a tariff of 0.579 RMB/kWh but limited to the first phase of 30,000h only, the two other projects that received tariffs at the same time were only awarded 0.548 and 0.5497 RMB/kWh (the first phase of 30,000h only).

If the two phase tariff structure is adopted, the tariff value at which IRR reaches the benchmark of 8% is 0.651 RMB/kWh (incl. VAT), calculated as follows:

- The tariff in the first 30,000 full load hours is calculated (according to the estimated annual operation hours of 2479 h in the FSR, it will be adopted in 12.1 years).
- The local average on-grid tariff of 0.26276 RMB/kWh (incl. VAT) in 2007[29] is used for the tariff after 30,000h (adopted in the remaining 7.7 years).

This tariff of 0.651 RMB/kWh is much higher than has been awarded to any project since the power sector reform in 2002.

Also 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)"(EB61, Para 78, 03 June 2011) the highest historical tariff in Inner Mongolia is 0.54 RMB/kWh (incl VAT). If 0.54 RMB/kWh is applied to the proposed project, the IRR of the project is 7.01%, which is below the benchmark. Therefore, the project is additional when taking the highest historical tariff into account.

Generation

The annual power output is assessed by the FSR author, the Inner Mongolia Power Exploration & Design Institute, which is an independent qualified design institute with the highest grade, Grade A, using scientific methods as applied internationally. The generation from the FSR is carried out by using professional software WAsP (www.wasp.dk) designed for wind energy, which is used by developers, consultants and turbine manufacturers worldwide. Besides, the expected net supplied power from FSR is based on long term meteorological data of the wind resource in local area (from 1988 to 2006) and onsite wind resources measurement. Therefore, it is not credible to assume that the average net supplied power over the lifetime of the project could be significantly higher than that estimated in the FSR (and accepted in the PDD).

However, the revenue from the CERs will greatly improve the financial feasibility of the proposed project, and it will also improve the ability to hedge risks caused by other factors. In conclusion, the proposed project is not financially feasible without the revenue of CERs and thus is additional.

→ If after the sensitivity analysis it is concluded that (1) the proposed CDM project activity is unlikely to be the most financially/economically attractive (as per step 2c para 11a) or is unlikely to be financially/economically attractive (as per step 2c para 11b), then proceed to Step 4 (Common practice analysis).

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[29] The tariff after 30,000h is referred to China Electricity Price executive report 2007 issued by State Electricity Regulatory Commission of People's Republic of China, which indicated that the average on-grid tariff of Western Inner Mongolia in 2007 was 0.26276 Yuan/kWh (adopted in other 7 years). http://www.serc.gov.cn/zwgk/jggg/200809/t20080912_10008.htm

Step 4. Common practice analysis

Sub-step 4a. Analyze other activities similar to the proposed project activity:

In line with the EB guidance on the additionality tool, the common practice analysis is carried out on similar projects in the same region and taking place in a comparable environment with regards to regulatory framework, investment climate, access to technology, access to financing, etc.

In China, the general environment of projects of this type of wind farm such as the wind resources[30], on-grid tariff, investment climate are only similar and comparable in the same province (Autonomous Region). On this basis, the common practice region and comparable framework is provincial and the project is compared to other projects in the Inner Mongolia Autonomous Region.

Taking note of that the proposed project is a large scale project, small scale projects less than 15MW are excluded. Using the statistics of installed capacity of wind power in China in 2006, by Professor Shi Pengfei[31], the wind farm projects listed are in the same region (Inner Mongolia) and are of similar scale (large scale). CDM project activities are not included in this analysis. Only the non-CDM wind farms that have been commissioned with similar scale are listed in Table 8.

Table 8. Similar-scale wind farm projects located in Inner Mongolia

Name	**Commissioning date**	**Capacity (MW)**	**Note**
Huitengxile	Oct, 1997	19.8	Supported as Shuangjia Demonstration Project and received financial support from government of China and developed countries[32].
Dali phase III	Mar, 2004	30.0	Demonstration Project Supported by national debt fund[33]

Sources: http://www.cwea.org.cn/download/display_list.asp?cid=2

Sub-step 4b. Discuss any similar options that are occurring:

From the table above it can be found that there are only two earliest projects constructed not under CDM. Huitengxile (19.8MW) wind project was supported as Shuangjia Demonstration Project by State Economic and Trade Commission and received financial support from government of China, and Dali phase III wind project was also Demonstration Project supported by national debt fund. However, such support is no longer given in Inner Mongolia.

[30]Wind resource distribution map: http://cwera.cma.gov.cn/upload/b_2_left_02.jpg

[31] Cumulative wind installation in China till 2006, http://www.cwea.org.cn/download/display_info.asp?cid=&sid=&id=19

[32] This project is supported by Shuangjia Demonstration and soft loan from developed contries: http://www.nwtc.cn/Article/ShowArticle.asp?ArticleID=814

[33] This project is supported by national debt fund: http://www.chifeng.gov.cn/article/ReadNews.asp?NewsID=4141&BigClassID=1&SmallClassID=2&SpecialID=0

In addition to these two early government-supported projects, listed in Table8, other wind farms are all applying for, or have already received, CDM registration. Many project developers have been encouraged by the positive news on the CDM registration of the first projects, and are now taking the CDM revenue into account in their decisions before construction and are applying for CDM registration.

→ If Sub-steps 4a and 4b are satisfied, i.e. (i) similar activities cannot be observed or (ii) similar activities are observed, but essential distinctions between the project activity and similar activities can reasonably be explained, then the proposed project activity is additional.

In conclusion, all the steps above are satisfied, the proposed CDM project is not the baseline scenario, and the project activity is additional.

B.6. Emission reductions:

B.6.1. Explanation of methodological choices:

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1. Baseline Emission Calculation

According to ACM0002**,** the baseline emissions include only CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity, calculated as follows:

$$BE_y = (EG_y - EG_{baseline})EF_{grid,CM,y} \qquad (1)$$

Where:
BE_y = Baseline emissions in year y (tCO_2/yr).
EG_y = Electricity supplied by the project activity to the grid (MWh).
$EG_{baseline}$ = Baseline electricity supplied to the grid in the case of modified or retrofit facilities (MWh). For new power plants this value is taken as zero. The proposed project is a new power plant, so this value is 0.
$EF_{grid,CM,y}$ = Combined margin CO_2 emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system".

The baseline emission factor (EF_y) is calculated as a combined margin ($EF_{grid,CM,y}$), consisting of the combination of operating margin ($EF_{grid,OM,y}$) and build margin ($EF_{grid,BMy,}$) factors according to the following six steps defined in the "Tool to calculate the emission factor for an electricity system". The calculations follow the published data from the Chinese DNA[34], and are based on official national statistics books: *China Energy Statistical Yearbook* and *China Electric Power Yearbook*. (see Annex 3).

Step 1. Identify the relevant electric power system

The power generated from the proposed project activity will be supplied to the grid. As the DNA has published a delineation of the project electricity system and connected electricity systems, these delineations are used.

[34] http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/ File1875.pdf.

Following the DNA delineation, 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 system is the Northeast Power Grid (NEPG), consisting of three provincial grids: Jilin, Liaoning and Heilongjiang. There is electricity transferring from the connected electricity systems to the project electricity system, so the CO_2 emission factor for net electricity imports ($EF_{grid,import,y}$) from the connected electricity system should be determined using one of the following options for the purpose of determining the operating margin emission factor:

(a) 0 tCO_2/MWh, or
(b) The weighted average operating margin (OM) emission rate of the exporting grid; or
(c) The simple operating margin emission rate of the exporting grid; or
(d) The simple adjusted operating margin emission rate of the exporting grid.

The option (b) is selected to calculated the CO_2 emission factor(s) for net electricity imports ($EF_{grid,import,y}$) according to the delineation.

The electricity imports from the Northeast Power Grid to the North China Power Grid has not changed significantly from 2003 to 2006 (see Annex 3), and the electricity from Central China Power Grid to North China Power Grid just started from 2006 and the imported electricity is negligible compared to the power generated from NCPG (see annex 3 - 497,060MWh / 669,506,473MWh, 0.072%). So for the purpose of determining the build margin emission factor, the spatial extent is limited to the project electricity system according to the tool.

Step 2. Select an operating margin (OM) method

According to the tool, four various methods are provided for calculating the operating margin emission factor ($EF_{grid,OM,y}$), including:

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

According to the tool, the Simple OM method (a) is applicable to the project if the low-cost 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

Since generation from all sources (including hydro power) other than thermal plants were less than 1% of total generation in the North China Power Grid and this percentage has not changed significantly in recent years, with the statistic data from China Electric Power Yearbook 2003-2007 listed in the table below, the Simple OM method is applicable to the proposed project.

Table 9 Power generation in the North China Power Grid from 2002 to 2006

Year	Low-cost/must-run generation (10^8 kWh)	Total Generation (10^8 kWh)	Share	Source* (edition/page)

2002	36.25	4,075.45	0.89%	2003/p585
2003	39.79	4,616.53	0.86%	2004/p709
2004	40.32	5,308.04	0.76%	2005/p474
2005	45.51	6,077.82	0.75%	2006/p568
2006	45.89	6,079.11	0.75%	2007/p638
Total	207.76	26,156.95		
Average	41.552	5231.39	0.80%	

Note: China Electric Power Yearbook*

The Simple OM emissions factor can be calculated using either ex-ante or ex-post data vintages. The project proponents 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: 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, without requirement to monitor and recalculate the emissions factor during the crediting period.

Step 3. Calculate the operating margin emission factor according to the selected method

The Simple Operating Margin emission factor $EF_{\mathrm{grid},OM,y}$ is defined as the generation-weighted average emissions per unit net electricity generation (tCO_2/MWh) of all generating sources serving the system, not including low-operating cost and must-run power plants. Three options can be selected to calculate the simple OM:

- Based on data on fuel consumption and net electricity generation of each power plant / unit (Option A); or
- Based on data on net electricity generation, the average efficiency of each power unit and the fuel type(s) used in each power unit (Option B); or
- Based on data on the total net electricity generation of all power plants serving the system and the fuel types and total fuel consumption of the project electricity system (option C).

As data for options A and B are not available, the published DNA data uses option C for the calculation of the operating margin emission factor.

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

$$EF_{grid,OMsimple,y} = \frac{\sum_i FC_{i,y} \times NCV_{i,y} \times \mathrm{E}F_{co_2,i,y}}{EG_y} \qquad (2)$$

Where

$EF_{grid,OMsimple,y}$ is the simple operating margin CO_2 emission factor in year y (tCO_2/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 (tCO_2/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, when using the ex-ante option, is the three most recent years for which data is available at the time of submission of the CDM-PDD to the DOE for validation

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

$EF_{grid,OMsimlpe,y}$ = 1.1169 tCO_2/MWh

Step 4. Identify the cohort of power units to be included in the build margin

The sample group of power units m used to calculate the build margin consists of the set of power capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently.[35] This option is chosen as it comprises larger annual generation than the five units built most recently. Following the deviation[36], 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 statistic year 2006. The added generation capacity is the sample group of power units *m* used to calculate the build margin.

In terms of vintage of data, project participants can choose between option 1 ex-ante, and option 2 ex-post data vintages. The project proponents have chosen to use the ex-ante option, and $EF_{grid,BM,y}$ is fixed for the duration of the first crediting period.

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

Step 5. Calculate the build margin emission factor

The build margin emissions factor is the generation-weighted average emission factor (tCO_2/MWh) of all power units *m* during the most recent year *y* for which power generation data is available, calculated as follows:

[35] If 20% falls on part capacity of a unit, that unit is fully included in the calculation.

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

$$EF_{grid,BM,y} = \frac{\sum_{m} EG_{m,y} \times EF_{EL,m,y}}{\sum_{m} EG_{m,y}} \quad (3)$$

$EF_{grid,BM,y}$ is the Build margin CO_2 emission factor in year y(t CO_2/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 CO_2 emission factor of power unit m in year y (tCO_2/MWh);
m is the power units included in the build margin;
y is the most recent historical year for which power generation data is available.

The CO_2 emission factor of each power unit m ($EF_{EL,m,y}$) should be determined as per the guidance in step 3 (a) for the simple OM. However, due to the limited availability of publicly available data, the DNA uses the accepted deviation mentioned in Step 4 to calculate $EF_{BM,y}$, as follows:

- Use of capacity additions for estimating the build margin emission factor for grid electricity.
- Use of weights estimated using installed capacity in place of annual electricity generation.
- Using the latest statistical data available from China Energy Statistical Yearbook 2007 to calculate the different CO_2 emission percentage (λ_i) of solid, liquid and gas fuel in the total emission from thermal generation in the North China Power Grid in 2006.
- Based the emission percentage (λ_i) of different kind fossil fuels and the corresponding emission factor (EF_i) according to the best technology commercially available in the China, the weighted emission factor of thermal power ($EF_{thermal}$)is calculated.
- Using the latest statistical data available (from the China Electric Power Yearbook) determine the year from which the added generation capacity is equal to or just exceeds 20% of the capacity of the latest statistic year 2006. Regarding the added generation capacity above 20%, calculate the Build Margin through multiply the weighted emission factor of thermal power ($EF_{thermal}$) by the capacity percentage of the thermal power among the about 20% new capacity of 2006.

And the $EF_{grid,BM,y}$ of North China Power Grid is 0.8687 tCO_2/MWh. (see Annex 3 for more details)

Step 6. Calculation of the combined margin emission factor

The combined margin emission factor is calculated as follows:

$$EF_{grid,CM,y} = w_{OM} \bullet EF_{grid,OM,y} + w_{BM} \bullet EF_{grid,BM,y} \quad (4)$$

Where
$EF_{grid,BM,y}$ is the build margin CO_2 emission factor in year y (tCO_2/MWh)
$EF_{grid,OM,y}$ is the operating margin CO_2 emission factor in year y (tCO_2/MWh)
w_{OM} is the weighting of operating margin emissions factor (%)
w_{BM} is the weighting of build margin emissions factor (%).

The default weights are used, i.e. for the wind farm projects in the first crediting period and the subsequent crediting period, w_{OM} = 0.75 and w_{BM} = 0.25.

On the basis of these weights for the first crediting period, the combined margin emission factor is calculated, and fixed ex-ante:

$EF_{grid,CM,y}$ = 1.0548 tCO_2/MWh

Using Operating Margin and Build Margin emission factors that are fixed for the duration of the first crediting period, the baseline emissions factor is also fixed for the first crediting period. These parameters will be recalculated at any renewal of the crediting period using the same steps 1-6 in the tool and the latest data available at that time.

Table 10 Values obtained when calculating the baseline emission factor using ACM0002

Variable	Value
Operating Margin Emissions Factor ($EF_{grid,OM,y}$)in tCO_2/MWh)	1.1169
Build Margin Emissions Factor ($EF_{grid, BM,y}$ in tCO_2/MWh)	0.8687
Baseline Emissions Factor ($EF_{grid,CM,y}$ in tCO_2/MWh)	1.0548

Baseline emissions (BE_y) now can be calculated as the combined margin CO_2 emission factor ($EF_{grid,CM,y}$)multiplied by the annual net generation of the Proposed Project (EG_y):

2. Project emission

According to ACM0002, the proposed project is a wind farm, belongs to renewable energy activity, and PE_y of the proposed project is zero.

3. Leakage

According to ACM0002, no leakage is considered for the proposed project.

4. Calculate Emission Reduction

The emission reduction ER_y by the project activity during a given year *y* is the difference between baseline emission (BE_y), project emissions (PE_y) and emission due to leakage (LE_y), as follows:

$$ER_y = BE_y - PE_y - LE_y \quad (5)$$

Where the baseline emissions (BE_y in tCO_2) are the product of the baseline emissions factor (EF_y in tCO_2/MWh) times the annual net electricity supplied by the project activity to the grid (EG_y in MWh). The calculation formula is as follows:

$$BE_y = EG_y \times EF_{grid,CM,y} \quad (6)$$

B.6.2. Data and parameters that are available at validation:

Data / Parameter:	$F_{i,j,y}$ and $F_{i,m,y}$
Data unit:	tonne or m^3
Description:	OM: Fuel use of type i in plant j (only included plant) in year y BM: Fuel use of type i in plant m (includes all generating plant) in year y
Source of data used:	China Energy Statistical Yearbook
Value applied:	See Annex 3
Justification of the choice of data or description of measurement methods and procedures actually applied :	This is the most accurate data presenting fuel use in the electricity generating sector for each province. More than 10 different fossil fuel types are identified in the Yearbook.
Any comment:	To calculate EF_{OM} and EF_{BM}

Data / Paramter:	$\boldsymbol{GEN_{j,y}}$
Data unit:	MWh
Description:	OM: Electricity generation by plant type j in year y
Source of data used:	China Electric Power Yearbook
Value applied:	See Annex 3
Justification of the choice of data or description of measurement methods and procedures actually applied :	This is the most accurate data presenting electricity generation by fuel type for each province. Generation is presented as gross generation, a self-use (own consumption) percentage is also given. Total net generation is calculated from gross generation and self-use share.
Any comment:	Calculated from gross generation and self use listed in the Yearbook

Data / Parameter:	$\boldsymbol{NCV_i}$
Data unit:	kJ/kg or kJ/m^3
Description:	Net caloric value (energy content) per mass or volume unit of fuel i
Source of data used:	China Energy Statistic Yearbook (2005), p366
Value applied:	See Annex 3.
Justification of the choice of data or description of measurement methods and procedures actually applied :	ACM0002 states that, where available, local values of NCV_i should be used.
Any comment:	Some fuels are presented in tonnes of standard coal equivalent units (tce), the NCV of standard coal equivalents is 29.27 GJ/tce.

Data / Parameter:	$\boldsymbol{CEF_i}$
Data unit:	tC/TJ
Description:	Carbon emission factor per unit of energy for fuel i
Source of data used:	2006 IPCC Guidelines, Volume 2, page 1.20-24
Value applied:	See Annex 3.
Justification of the choice of data or description of measurement methods	According to ACM0002, if the local or national value is not available, the IPCC value can be applied.

and procedures actually applied :	
Any comment:	To be conservative, *EF* for the undefined category "other fuels" is considered zero, thus emissions from this source is also zero.

Data / Parameter:	**C_n, $C_{thermal}$**
Data unit:	MW
Description:	Installed capacity of NCPG (in year n)
Source of data used:	China Electric Power Yearbook
Value applied:	See Annex 3.
Justification of the choice of data or description of measurement methods and procedures actually applied :	To determine the year since when newly added capacity in NCPG constituting 20% or more of the currently installed capacity.
Any comment:	The year selected is 2005. The share of added thermal capacity is 95.64% of total added capacity during this period.

Data / Parameter:	EF_{CM}
Data unit:	tCO_2/MWh
Description:	Combined margin emission factor of the grid
Source of data used:	Calculated & Chinese DNA
Value applied:	1.0548
Justification of the choice of data or description of measurement methods and procedures actually applied :	Data used from Chinese DNA, http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/ File1875.pdf.
Any comment:	

Data / Parameter:	EF_{OM} (also $EF_{grid,OMsimple,y}$)
Data unit:	tCO_2/MWh
Description:	Operating Margin Emission Factor
Source of data used:	Calculated
Value applied:	1.1169
Justification of the choice of data or description of measurement methods and procedures actually applied :	Data used from Chinese DNA, http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/ File1875.pdf.
Any comment:	

Data / Parameter:	EF_{BM}
Data unit:	tCO_2/MWh
Description:	Build Margin Emission Factor
Source of data used:	Calculated

Value applied:	0.8687
Justification of the choice of data or description of measurement methods and procedures actually applied :	Data used from Chinese DNA, http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/ File1875.pdf.
Any comment:	

B.6.3 Ex-ante calculation of emission reductions:

>>

Based on the Feasible Study Report, the proposed project will generate 123,962 MWh electricity to the NCPG annually. The emission reduction ER_y by the project activity is calculated as follows:

$BE_y = EG_y \times EF_y$ = 123,962MWh × 1.0548 tCO_2/MWh = 130,755 tCO_2

$ER_y = BE_y - PE_y - L_y$ = 130,755 - 0 - 0 = 130,755tCO_2

The emission reduction ER_y by the project activity during a giving year *y* is 130,755 tCO_2 and the total emission reduction in the first crediting period is 915,285 tCO_2.

B.6.4 Summary of the ex-ante estimation of emission reductions:

>>

Emission reduction of the proposed project in the first crediting period is as follows:

Table 10: Ex-ante estimation of emissions and emission reductions

Year*	Estimated value of emission of the proposed project activity (tCO_2e)	Estimated value of emission of the baseline (tCO_2e)	Estimated value of emission of leakage (tCO_2e)	Estimated value of total emission (tCO_2e)
2009	0	130,755	0	130,755
2010	0	130,755	0	130,755
2011	0	130,755	0	130,755
2012	0	130,755	0	130,755
2013	0	130,755	0	130,755
2014	0	130,755	0	130,755
2015	0	130,755	0	130,755
Total	**0**	**915,285**	**0**	**915,285**

*Note: * Using 12-monthly periods, not calendar years.*

B.7 Application of the monitoring methodology and description of the monitoring plan:

B.7.1 Data and parameters monitored:

Data / Parameter:	**Electricity generation (EG_y)**
Data unit:	MWh

Description:	Net electricity supplied to the grid by the project in period y
Source of data to be used:	Electricity meter, monitoring electricity supply to the grid and imports from the grid (bi-directional, i.e. recording generation and consumption)
Value of data applied for the purpose of calculating expected emission reductions in section B.5	123,962 MWh
Description of measurement methods and procedures to be applied:	Grid-connected electricity generated by the proposed project will be monitored through metering equipment at the substation. This main meter has two-way metering, recording both exports to the grid (TEG_y) and imports from the grid (CEG_y); net electricity supplied to the grid (EG_y) is calculated as exports minus imports. The data will be continuously measured and monthly recorded, and the results will be supplied by the Grid Company to the Developer on a monthly basis.
QA/QC procedures to be applied:	Monthly net generation data will be approved and signed off by CDM manager before it is accepted and stored. The metering data will be double checked by receipt of sales or commercial data. Back-up meters will also be installed at the on-site substation and can be used for cross checking. The metering equipments will be calibrated and checked periodically by qualified third party for accuracy according to the appropriate industry standards. The metering equipments shall have sufficient accuracy so that any error resulting from such equipment shall not exceed 0.5% of full-scale rating.
Any comment:	

B.7.2 Description of the monitoring plan:

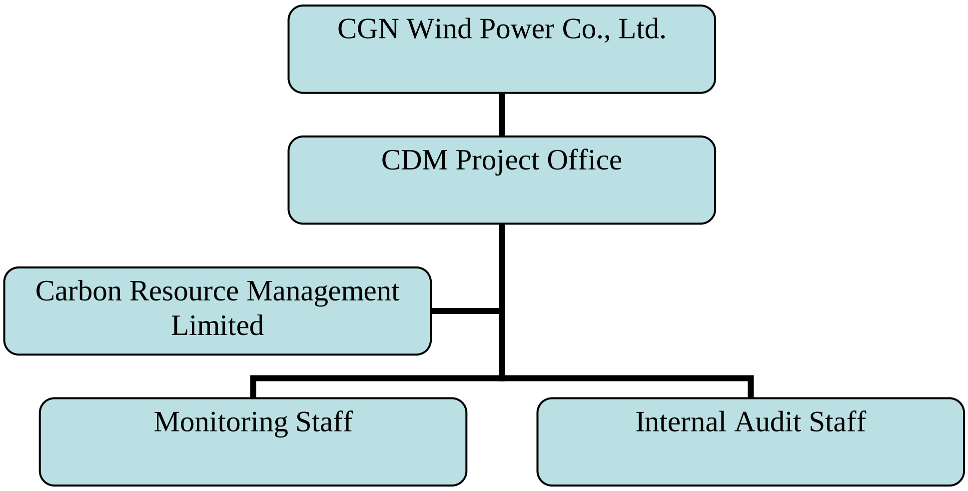
>>

Overall responsibility for monitoring and carrying out the monitoring following this monitoring plan lies with CGN Wind Power Wind Power Co., Ltd.

CDM manager of CGN Wind Power Co., Ltd is responsible for the monitoring and reporting of the wind farm.

The monitoring plan is presented in Annex 4.

The operating and management structure of monitoring is illustrated as follows:



B.8 Date of completion of the application of the baseline study and monitoring methodology and the name of the responsible person(s)/entity(ies)

>>

Date of completion of the baseline study and monitoring methodology: 12 February 2009.

Contact information of the person(s)/entity(ies) responsible:

- Carbon Resource Management (CRM) prepared the PDD. CRM is a project participant. Contact information is given in Annex 1.
- The persons preparing the documentation were:
  - Ms. Li Ning, Mr. Shi Xiangfeng, Mr. Sun Cuiqing, Ms. Qian Yiwen, ln@carbonresource.com, Tel: +86 10 8447 5246/8
  - Mr. Christiaan Vrolijk, cv@carbonresource.com, Tel: +44 20 7016 1426

SECTION C. Duration of the project activity / crediting period

C.1 Duration of the project activity:

C.1.1. Starting date of the project activity:

>>

29/03/2008 (purchase contract of turbine date)

C.1.2. Expected operational lifetime of the project activity:

>>

20y

C.2 Choice of the crediting period and related information:

C.2.1. Renewable crediting period

C.2.1.1. Starting date of the first crediting period:

>>
01/05/2009 (or the date of registration, whichever is later)

C.2.1.2. Length of the first crediting period:

>>
7y

C.2.2. Fixed crediting period:

C.2.2.1. Starting date:

>>
Not applicable.

C.2.2.2. Length:

>>
Not applicable.

SECTION D. Environmental impacts

D.1. Documentation on the analysis of the environmental impacts, including transboundary impacts:

>>
An Environmental Impact Assessment (EIA) for the CGN Inner Mongolia Zhurihe Phase I Wind Farm has been completed by Inner Mongolia Power Exploration & Design Institute assigned by the Project owner, and has been approved by the Environmental Protection Bureau of Inner Mongolia Autonomous Region. The EIA is summarised as follows:

1 The analysis of the environment impact in the construction period

- Construction machinery and construction activity will generate noise. Since the local residential area is far away from the wind farm site, the impact of construction noise to the local region is light.
- The waste water from the construction site is mainly the waste water generated by the construction workers. This small quantity of sewage will be treated by deposition in a septic tank, avoiding the impact on the environment. The waste water during the construction period, therefore, will have no impact on the local environment.
- The project temporarily uses and disturbs the grass for construction use. The occupied land will be restored according to its characteristics after construction and will ensure its reutilization. Overall, land use impact on the local residents arising from the Project is considered to be insignificant.

2 The analysis of the environment impact in operation period

- The noise from the wind turbines is reduced mainly by the selection of low noise equipment. Furthermore the resident regions are far away from the wind farm, so the noise does not influence the residential districts nearest to the site.

- Solid waste and liquid waste will be produced by operation staff during operation period. The emitted waste quantity is very small and might have no interference with the environment after treatment.

3. Conclusion

The Wind Farm does not put the much pressure on the local environment when generating renewable power. However it will bring great environmental benefit as well as the social benefit.

D.2. If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party:

>>
Environmental impacts are not considered significant. The Environmental Protection Bureau of Inner Mongolia Autonomous Region has approved the EIA.

SECTION E. Stakeholders' comments

>>

E.1. Brief description how comments by local stakeholders have been invited and compiled:

>>
In Dec 2007, the staff from CGN Wind Power Co., Ltd. carried out a survey of the local villagers and residents in the area. 1 page questionnaire was designed to fill in and has the following sections

E.2. Summary of the comments received:

>>
Following is a summary of the local survey. The survey forms are available from the project owner.

1 page questionnaire was designed to be easy to fill in and has the following sections:

Project introduction
Respondent's basic information and education level
Questions on:

1. Do you agree with the development of the Project?
2. Will the Project raise effects on your environment of living, studying and working?
3. Will construction, operation or decommissioning of the Project affect natural resources or ecosystems, such as water, habitats, etc?
4. Will the Project cause noise, vibration or release of electromagnetic radiation that could adversely affect your health?
5. Do you think the proposed project will have promotion in local economic development?
6. Do you have any suggestion about the project?

The survey had a 100% response rate and the following is a summary of the key findings (the questionnaires were sent to 30 households):

The people being surveyed

Item	Content	Vote	Proportion

Gender	Male	6	20%
	Female	24	80%
Education	Elementary school	2	7%
	Junior high school	15	50%
	Senior high school	10	33%
	University or above	3	10%
Occupation	Officer	3	10%
	Worker	7	23%
	Farmer	16	54%
	Merchant	1	3%
	Others	3	10%

Their opinions

1. Will the Project raise effects on your environment of living, studying and working?	Yes	No	Not Sure
	0	97%	3%
2. Will construction, operation or decommissioning of the Project affect natural resources or ecosystems, such as water, habitats, etc?	Yes	No	Not Sure
	0	97%	3%
3. Will the Project cause noise, vibration or release of electromagnetic radiation that could adversely affect your health?	Yes	No	Not Sure
	0	93%	7%
4. Do you think the proposed project will have promotion in 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

Conclusions from the survey

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

E.3. Report on how due account was taken of any comments received:

>>

The villagers and local government are all supportive of the proposed project and to date there has been no need to modify the project design according to the comments received.

The project owner has an overall environment-friendly plan to guarantee that the project has the minimum negative impact on the environment during the project construction and operation.

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

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Annex 2

INFORMATION REGARDING PUBLIC FUNDING

There is no public funding from Annex I Parties for the CGN Inner Mongolia Zhurihe Phase I Wind Farm Project.

Annex 3

BASELINE INFORMATION

Step 1. Identify the relevant electric power system

Following the DNA delineation, 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 system is the Northeast Power Grid (NEPG), consisting of three provincial grids: Jilin, Liaoning and Heilongjiang.

Step 2. Select an operating margin (OM) method

According to Tool to calculate the emission factor for an electricity system, the Simple OM method is applicable to the project if the low-cost resources constitute less than 50% of total grid generation on average in the five most recent years or based on long-term normals for hydroelectric production. The Simple OM method, therefore, is applicable to the proposed project as the share of low-cost/must-run generation does not exceed 1% in the most recent last 5 years, with the average being 0.8% as presented below.

The most recent year for which data is available in the yearbook is the year 2006. Table A1 presents the shares of generation from all sources including hydro power, other than thermal plants. The table shows that over the last five years generation from these sources has been consistently less than 1%.

Table A1 Power generation in the North China Power Grid from 2002 to 2006

Year	Low-cost/must-run generation (10^8 kWh)	Total Generation (10^8 kWh)	Share	Source* (edition/page)
2002	36.25	4,075.45	0.89%	2003/p585
2003	39.79	4,616.53	0.86%	2004/p709
2004	40.32	5,308.04	0.76%	2005/p474
2005	45.51	6,077.82	0.75%	2006/p568
2006	45.89	6,079.11	0.75%	2007/p638
Total	207.76	26,156.95		
Average	41.552	5231.39	0.80%	

Note: China Electric Power Yearbook*

Step 3. Calculate the operating margin emission factor according to the selected method

Table A2 Emission Factors of Fuels

Fuel types	Carbon Emission Factor (tC/TJ)	Oxidation rate (%)	Net Caloric value (MJ/unit)
Raw coal	25.8	100	20908
Cleaned coal	25.8	100	26344
Other washed coal	25.8	100	8363
Moulding coal	26.6	100	20908
Coke	29.2	100	28435
Coke oven gas	12.1	100	16726
Other coal gas	12.1	100	5227
Crude oil	20	100	41816
Gasoline	18.9	100	43070
Diesel	20.2	100	42652
Fuel oil	21.1	100	41816
LPG	17.2	100	50179
Refinery gas	15.7	100	46055
Natural gas	15.3	100	38931
Other petroleum products	20	100	38369
Other coking products*	25.8	100	28435
Other fuel*	0	100	0

* not defined, conservative emission factor used: 0
* not defined, conservative emission factor used: 0

Sources: Low calorific value from "China energy statistical yearbook 2007", p287;
Carbon coefficient from the Chinese DNA (also from Table 1.3 and Table 1.4 of Chapter 1 (p1.21-1.24) "2006 IPCC Guidelines for National Greenhouse Gas Inventories" Volume 2 (Energy).

Fossil fuel consumption

Fuel consumption is taken from the latest China Energy Statistical Yearbook editions. The yearbooks present a range of more than 10 fuels for each province. Data is presented in Table A3 below. The share of emissions from coal consumption is also given in the table.

Table A3 Energy consumption and CO_2 emissions of NCPG in 2004-2006

2004

Fuels type	Beijing	Tianjin	Hebei	Shanxi	Inner Mongolia	Shandong	Fuel consumption (Mt,Mm^3)	CO_2 emission （$MtCO_2e$）
Raw coal	8.2309	14.1	62.998	52.132	49.322	85.5	272.2829	538.5475
Cleaned coal	0	0	0	0	0	0.4	0.4	0.9969
Other washed coal	0.0648	0	1.0104	3.5417	0	2.8422	7.4591	5.9012
Coke	0	0	0	0	0.0022	-	0.0022	0.0059
Coke oven gas	55	0	54	532	40	873	1,554.00	1.1532
Other coal gas	1774	0	2425	820	1647	141	6,807.00	1.5786
Crude oil	0	0	0	0	0	0	0	0.0000
Gasoline	0	0	0	0	0	0	0	0.0000
Diesel	0.0039	0.0084	0.0466	0	0	0	0.0589	0.1861
Fuel oil	0.1466	0	0.0016	0	0	0	0.1482	0.4795
LPG	0	0	0	0	0	0	0	0.0000
Refinery gas	0	0.0055	0.0142	0	0	0	0.0197	0.0605
Natural gas	0	37	0	19	0	0	56	0.1223
Other oil	0	0	0	0	0	0	0	0.0000
Other coke	0	0	0	0	0	0	0	0.0000
Other energy	0.0941	0	0.3464	1.0973	0.0448		1.5826	0.0000
Total CO_2 emission								**549.0316MtCO2**

Source: China Energy Statistical Year Book (2005)

2005

Fuels type	Beijing	Tianjin	Hebei	Shanxi	Inner Mongolia	Shandong	Fuel consumption(Mt,Mm^3)	CO_2 emission （$MtCO_2e$）
Raw coal	8.9775	16.752	67.265	61.7645	62.7723	104.054	321.5853	636.0625
Cleaned coal						0.4218	0.4218	1.0512
Other washed coal	0.0657		1.6745	3.7365		1.0869	6.5636	5.1927
Coke					0.21	0.11	0.32	0.0086
Coke oven gas	64	75	62	2108	39		2,348	1.7424
Other coal gas	1609	786	3883	988	1837		9,103	2.1110
Crude oil					0.0073		0.0073	0.0224
Gasoline			0.0001				0.0001	0.0003
Diesel	0.0048		0.0354		0.0012		0.0414	0.1308
Fuel oil	0.1225		0.0023		0.0006		0.1254	0.4057
LPG							0	0.0000
Refinery gas			0.0902				0.0902	0.2772
Natural gas	28	8		276			312	0.6814
Other oil							0	0.0000
Other coke							0	0.0000
Other energy	0.0858		0.3235	0.6931	0.0727	1.189	2.3641	0.0000
Total CO_2 emission								**647.6863MtCO2**

Source: China Energy Statistical Year Book (2006)

2006

Fuel Type	Beijing	Tianjing	Hebei	Shanxi	Neimeng	Shandong	Fuel Consumption (Mt,Mm3)	CO_2 Emission ($MtCO_2$)
Coal	7.9663	16.392	68.6799	69.6888	84.0405	109.3066	356.0741	704.2778
Cleaned coal						0.3977	0.3977	0.9911
Other washed coal	0.0636		2.1413	3.7114	0.6177	5.446	11.98	9.4779
Shape coal	0.0797				0.2777		0.3574	0.7288
Coke						0.0323	0.0323	0.0983
Coke oven gas	38	63	580	2232	64	579	3556	2.6388
Other coal gas	2066	658	6972	1379	2276	722	14073	3.2636
Crude oil					0.0074		0.0074	0.0227
Gasoline			0.0001				0.0001	0.0003
Diesel	0.0021		0.0301		0.0007	0.0632	0.0961	0.3036
Fuel oil	0.0638		0.0008			0.041	0.1056	0.3416
LPG						0.0001	0.0001	0.0003
Refinery gas			0.0243			0.0232	0.0475	0.1259
Natural gas	341	73		53			467	1.0199
Other petro products						0.0028	0.0028	0.00788
Other coke products							0	0
Other energy	0.0683		0.4711	2.3076	0.1251	1.3229	4.295	0
$MtCO_2$				CO_2 Emission				723.2987

Source: China Energy Statistical Year Book (2007)

Calculation of net generation from included sources

Gross generation for each province is presented in the yearbooks. The data is also broken down into three categories: thermal, hydro and other sources. For the OM calculations, only thermal generation is included. Gross generation and own consumption are used to calculate net generation from included sources. The calculations are presented in Table A4 below.

Table A4 Thermal generation, own consumption rate, and net supply in NCPG

Provincial Grid	2004			2005			2006		
	Generation (MWh)	Self use rate (%)	On-grid generation (MWh)	Generation (MWh)	Self use rate (%)	On-grid generation (MWh)	Generation (MWh)	Self use rate (%)	On-grid generation (MWh)
Beijing	18579000	7.94	17103827	20880000	7.73	19265976	20705000	7.51	19150055
Tianjing	33952000	6.35	31796048	36993000	6.63	34540364	35924000	6.86	33459614
Hebei	124970000	6.5	116846950	134348000	6.57	125521336	143888000	6.63	134348226
Shanxi	104926000	7.7	96846698	128785000	7.42	119229153	150250000	7.45	139056375
Neimeng	80427000	7.17	74660384	92345000	7.01	85871616	139593000	7.58	129011851
Shandong	163918000	7.32	151919202	189880000	7.14	176322568	230922000	7.12	214480354
Total			489173110			560751013			669506473

Source：China Power Year Book (2005, 2006, 2007)

Imports

The connected electricity system is the Northeast Power Grid (NEPG), consisting of three provincial grids: Jilin, Liaoning and Heilongjiang and the Central China Power Grid (CCPG), consisting of six provincial grids: Jiangxi, Henan, Hubei, Hunan, Chongqing and Sichuan. According to the tool, there is electricity transferring from the connected electricity systems to the project electricity system, so the CO_2 emission factor for net electricity imports ($EF_{grid,import,y}$) from the connected electricity system should be determined to use "The weighted average operating margin (OM) emission rate of the exporting grid".

The average emission rate is calculated using the same steps as above for NCPG, namely fuel consumption and net generation as indicated in Table A5 – A8 below.

Fuel consumption in NEPG is taken from the latest China Energy Statistical Yearbook editions. The yearbooks present a range of more than 10 fuels for each province.

Table A5 Fuel consumption and CO_2 emissions of NEPG in 2004-2006(connected system)

2004

Fuel type	Liaoning	Jilin	Heilongjiang	Fuel consumption (Mt,Mm^3)	CO2 emission ($MtCO_2$)
Raw coal	41.442	23.109	30.848	95.399	188.6894
Cleaned coal	0.8475	0.0109	0.0488	0.9072	2.2609
Other washed coal	5.7767	0.1426	0.61	6.5293	5.1656
Coke	0	0	0	0	0
Coke oven gas	483	291	0	774	0.5744
Other coal gas	5733	419	0	6152	1.4267
Crude oil	0	0	0	0	0.0000
Diesel oil	0.0204	0.0116	0.0024	0.0344	0.1087
Fuel oil	0.1281	0.0178	0.0286	0.1745	0.5645
LPG	0.0219	0	0	0.0219	0.0693
Refinery gas	0.0979	0	0.0114	0.1093	0.3359
Natural gas	0	3	253	256	0.5591
Other oil	0	0	0	0	0.0000
Other coke	0	0	0	0	0.0000
Other energy	0.2697	0.0507	0	0.3204	0.0000
	Total CO_2 emission			**195.9587$MtCO_2$**	

Source: China Energy Statistical Year Book (2005)

2005

Fuel type	Liaoning	Jilin	Heilongjiang	Fuel consumption (Mt,Mm^3)	CO2 emission ($MtCO_2$)
Raw coal	43.0541	24.4613	33.8321	101.3475	200.4549
Cleaned coal				0	0.0000
Other washed coal	5.2474	0.1926	0.2416	5.6816	4.4949
Coke	0	0	0	0	0.0000
Coke oven gas	103	357	68	528	0.3918
Other coal gas	1262	837		2099	0.4868
Crude oil	0.0116			0.0116	0.0356
Diesel oil	0.0118	0.0148	0.0057	0.0323	0.1020
Fuel oil	0.0932	0.0246	0.0155	0.1333	0.4312
LPG	0.0012			0.0012	0.0038
Refinery gas	0.0548		0.0132	0.068	0.2090
Natural gas		84	224	308	0.6727
Other oil				0	0.0000
Other coke				0	0.0000
Other energy	0.1618			0.1618	0.0000
	Total CO_2 emission			**207.2827$MtCO_2$**	

Source: China Energy Statistical Year Book (2006)

2006

Fuel type	Liaoning	Jinlin	Heilongjiang	Fuel Consumption (Mt,Mm^3)	CO_2 Emission ($MtCO_2$)
Coal	46.8199	27.3824	36.9829	111.1852	200.4548959
Cleaned coal	0.0003			0.0003	0.000748
Other washed coal	6.7474	0.1783	0.96	7.8857	6.2387
Coke	0.00332			0.00332	0.1011
Coke oven gas	268	16	144	428	0.3176
Other coal gas	5526	143		5669	1.3147
Crude oil	0.0049			0.0049	0.015
Gasoline				0	0
Diesel	0.0075	0.0039	0.003	0.0144	0.0455
Fuel oil	0.1173	0.0045	0.0144	0.1362	0.4406
LPG				0	0.003797547
Refinery gas	0.0855		0.0427	0.1282	0.3399
Natural gas		19	210	229	0.5001
Other petro products				0	0
Other coke products				0	0
Other energy	0.1216	0.176	0.8277	1.1253	0
		CO_2 Emission		**229.2268 $MtCO_2$**	

Source: China Energy Statistical Year Book (2007)

Net generation is calculated from gross generation and own consumption data presented.

Table A6 Power generation, own consumption and net supply in NEPG (2004-2006)

2004

Province	Thermal Power generation (MWh)	Losses (%)	Thermal power supply (MWh)	Hydropower supply (MWh)	Others (100 million kWh)	Other Power generation (MWh)	Total (MWh)
Liaoning	84543000	7.21	78,447,450	3,894,505	2.64	264000	
Jilin	33242000	7.68	30,689,014	6,100,898	0.81	81000	
Heilongjiang	53482000	7.84	49,289,011	1,321,007	0.46	46000	
Total（MWh）			158,425,475	11,316,410		391000	170,132,885

Source: China eletricity statistical yearbook 2005

2005

Province	Total generation (MWh)	Losses (%)	Total supply electricity (MWh)	Total (MWh)
Liaoning	89668000	7.03	83,364,340	
Jilin	43395000	6.59	40,535,270	
Heilongjiang	59900000	7.96	55,131,960	
Total（MWh）			179,031,569	179,031,569

Source: China eletricity statistical yearbook 2006

2006

Province	Total generation (MWh)	Losses (%)	Total supply electricity (MWh)
Liaoning	101100000	6.62	94,407,180
Jilin	45600000	6.78	42,508,320
Heilongjiang	64600000	7.85	59,528,900
Total（MWh）			196,444,400

Source: China eletricity statistical yearbook 2007

Net generation is calculated from gross generation and self consumption data presented.

Table A7 Fuel consumption and CO_2 emissions of CCPG in 2006(connected system)

Fuel type	Jiangxi	Henan	Hubei	Hunan	Chongqing	Sichuan	Fuel Consumption (Mt, Mm^3)	CO_2 Emission ($MtCO_2$)
Coal	19.2602	80.9801	31.7979	24.5448	11.843	32.8522	201.2782	398.1075
Cleaned coal					0.0579		0.0579	0.1443
Other washed coal	0.0451	1.0412		0.0859	0.7921		1.9643	1.5540
Shape coal					0.0001		0.0001	0.00002
Coke		0.1723		0.0032			0.1755	0.5343
Coke oven gas		52	107	424	38	1	622	0.4616
Other coal gas	1269	395		170	436	1	2271	0.5267
Crude oil		0.0049					0.0049	0.0150
Gasoline		0.0001					0.0001	0.00003
Diesel	0.0091	0.0223	0.0141	0.0178	0.0096		0.0729	0.2303
Fuel oil	0.0051	0.0126	0.0131	0.008	0.0057	0.0349	0.0794	0.2569
LPG							0	0.0003
Refinery gas	0.0086	0.081	0.01	0.0097			0.1093	0.2898
Natural gas			28		16	1863	1907	4.1649
Other petro products							0	0.00788
Other coke products						0.0001	0.0001	0.00003
Other energy	0.1745	0.3736	0.3155	0.1829	0.2935		1.34	0
				CO_2 Emission			**406.2861 $MtCO_2$**	

Source: China Energy Statistical Year Book (2007)

Table A8 Power generation, own consumption and net supply in CCPG (2006)

Provincial grids	Generation (MWh)	Self use rate (%)	On-grid generation (MWh)

Jiangxi	34449000	6.17	32323497
Henan	151235000	7.06	140557809
Hubei	54841000	2.75	53332873
Hunan	46408000	4.95	44110804
Chongqing	23487000	8.45	21502349
Sichuan	44193000	4.51	42199896
Total			334027226

Source: China Power Year Book (2007)

Operating Margin Emission Factor calculations

The Operating Margin Emissions Factor is now calculated from the data presented above using the formula below, including adjustment for imports from NEPG. The calculation is shown in Table A8.

$$EF_{grid,OMsimple,y} = \frac{\sum_i FC_{i,y} \times NCV_{i,y} \times EF_{co_2,i,y}}{EG_y}$$

Table A9 Operating margin emission factor calculation

	Unit	2004	2005	2006	3-year total/average
NCPG					
Emission	$MtCO_2$	549.02	647.65	723.3	1919.97
Generation	TWh	489.17	560.75	669.51	1719.43
Import from NEPG	TWh	4.51	3.93	2.618	11.06155
EF NEPG	tCO_2/MWh	1.17384	1.15764	1.16688	
Emissions from imports	$MtCO_2$	5.30	4.55	3.05	12.90261877
Import from CCPG	TWh	-	-	0.497	0.497
EF CCPG	tCO_2/MWh	-	-	0.87599	
Emission from imports	$MtCO_2$	-	-	0.43536703	0.43536703
Total					
Emissions	$MtCO_2$	554.32	652.20	726.79	1933.31
Generation supply	TWh	493.68	564.68	672.63	1730.99
Operating margin Emission Factor		**1.1169 tCO_2/MWh**			

Based on above data, the simple OM emission factor of NCPG is calculated ex-ante using a 3-year generation-weighed average is 1.1169 tCO_2e/MWh.

Step 4. Identify the cohort of power units to be included in the build margin

The sample group of power units m used to calculate the build margin consists of the set of power capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently. This option is chosen as it comprises larger annual generation than the five units built most recently. Following the deviation, the latest statistical data available (from the China Power Yearbook 2007) 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 statistic year 2006. The added generation capacity is the sample group of power units *m* used to calculate the build margin.

Step 5. Calculate the build margin emission factor

As described in step4, because of the limited availability of publicly available data, this proposed project uses a substitute method accepted by EB to calculate $EF_{BM,y}$

Sub-step 1: calculate the thermal emission factor

Calculate the different CO_2 emission percentage of solid, liquid and gas fuel in the total emission of North China Power Grid in 2006 using new latest statistical data available from China Energy Statistical Year Book 2007.

Table A10 Calculation of CO_2 Emission of North China Power Grid in 2006

Fuel type	CO_2 Emission (tCO_2)	Share
Coal	715573958	98.932%
Oil	676091	0.093%
Gas	7048610	0.975%
Total	**723298659**	**100%**

Source: China Energy Statistical Year Book (2007).

λ_{Coal} = 98.932%;

λ_{Oil} = 0.093%;

λ_{Gas} = 0.975%.

Sub-step 2:

Based the emission percentage (λ_i) of different kind fossil fuels and the corresponding emission factor (EF_i) according to the best technology commercially available in the China, the weighted emission factor of thermal power ($EF_{thermal}$) is calculated.

Table A11 Calculation of CO_2 Emission Factor of Coal, Oil and Gas Fuel Power Plant with the Best Commercial Efficiency in China

Power plant type	Parameter	Best efficiency	Carbon factor (tC/TJ)	Oxidizing rate	CO_2 emission factor (tCO_2/MWh)
		A	B	C	D=3.6/A/1000*B*C*44/12
Coal	$EF_{Coal,Adv}$	37.28%	25.8	100%	0.9135
Gas	$EF_{Gas,Adv}$	48.81%	15.3	100%	0.4138
Oil	$EF_{Oil,Adv}$	48.81%	21.1	100%	0.5706

Source: http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/ File1875.pdf.

So, emission factor of thermal plant is:

$$EF_{Thermal} = \lambda_{Coal} \times EF_{Coal,Adv} + \lambda_{Oil} \times EF_{Oil,Adv} + \lambda_{Gas} \times EF_{Gas,Adv} = 0.9083 tCO_2/MWh$$

Sub-step3:

Using the latest statistical data available (from the China Electric Power Yearbook) determine the year from which the added generation capacity is equal to or just exceeds 20% of the latest statistic year 2005.

Table A12 Identify the year from which the added generation capacity is equal to or just exceeds 20% of the latest statistic year 2006

Power plant type	Capacity 2004 A	Capacity 2005 B	Capacity 2006 C	Added Capacity 2005-2006 D=C-A	Share
Thermal（MW）	93594.9	111068.7	141538	30469.3	95.64%
Hydro（MW）	3250.7	3216.2	4004	787.8	2.47%
Nuclear（MW）	0	0	0	0	0.00%
Wind（MW）	137.5	335.5	937	601.5	1.89%
Total（MW）	96983.1	114620.4	146479	31858.6	100.00%
The ratio to C	66.21%	78.25%	100.00%		

Source: China Power Year Book (2005, 2006, 2007).

$EF_{BM} = (CAP_{Thermal} / CAP_{Total}) * EF_{Thermal}$

$CAP_{Thermal}$ is the thermal capacity among the new capacity from 2005 to 2006, and CAP_{Total} is the total capacity from 2005 to 2006.

$EF_{BM} = 0.9083 \times 95.64\% = 0.8687\ tCO_2/MWh$

Step 6. Calculation of the combined margin emission factor

The combined margin emission factor is calculated as follows:

$EF_{grid,CM,y} = w_{OM} \bullet EF_{grid,OM,y} + w_{BM} \bullet EF_{grid,BM,y} = 0.75 \times 1.1169 + 0.25 \times 0.8687 = 1.0548 tCO_2/MWh$

Annex 4

MONITORING PLAN

1. Introduction

CGN Inner Mongolia Zhurihe Phase I Wind Farm Project adopts the Revision to the approved consolidated monitoring methodology ACM0002 “Consolidated monitoring methodology for zero-emissions grid-connected electricity generation from renewable sources” (version 07) to determine the emission reductions from the net electricity generation from the wind farm. This plan describes in more detail the process.

2. Responsibility

Overall responsibility for monitoring and carrying out the monitoring following this monitoring plan lies with CGN Wind Power Co., Ltd.

CDM manager of CGN Wind Power Co., Ltd is responsible for the monitoring and reporting of the wind farm.

CGN Wind Power Co., Ltd, in co-operation with Xilinguole Power Grid Company and existing wind farm experienced experts will train the staff carrying out the monitoring work.

3. Training

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

4. Installation of meters

The net electricity supplied by the proposed project activity to the grid will be monitored through the main meter installed in the substation, recording the electricity exports to the grid (TEG_y) and imports from the grid (CEG_y). Net generation (EG_y) is calculated as exports minus imports. The back-up meters will be installed also installed at the substation.

Every month the wind farm will obtain the net on-grid electricity supplied from the substation. The net generation monitored by these meters will suffice for the purpose of billing and emission reductions, as long as the error in the meters is within the agreed limits. The primary meter used for billing (at the substation) will also be the primary meter used for emission reduction calculations.

In addition, at the project site, electricity from the turbines and the transmission lines connected to the turbines is monitored, and these data will be the references to the net power supply to the grid.

If in the future, some other wind farms share the same transformer, substation or transmission line with this wind farm, the appropriate separate meters will also be installed in the project site so that the electricity generation can be monitored respectively to calculate the share of this wind farm of the net supply to the grid.

5. Calibration

The metering equipments are calibrated and checked for accuracy in accordance with industry standards. The metering equipments shall have sufficient accuracy so that any error resulting from such equipment shall not exceed 0.5% of full-scale rating. The net generation output registered by the meters alone will suffice for the purpose of billing and emission reduction verification as long as the error in the meters is within the agreed limits.

Both meters 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 CGN Wind Power Co., Ltd, and these records will be maintained by CGN Wind Power Co., Ltd and the entity appointed by DOE.

All the meters installed shall be tested by qualified entity after: the detection of a difference larger than the allowable error in the readings of both meters; 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

Grid-connected electricity generated by the proposed project will be monitored through metering equipment at the substation (interconnection facility connecting the facility to the grid). Every month CGN Wind Power Co., Ltd will obtain the on-grid electricity generation from the substation.

6.1 Meter failure

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 CGN Wind Power Co., Ltd and the North China Power Grid 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 and CGN Wind Power Co., Ltd fail to agree then the matter will be referred for arbitration according to agreed procedures.

6.2 Additions to the proposed generating capacity

Should any additional generating capacity be installed, sharing transmission and transformer facilities as well as the metering equipment at the substation with the proposed project activity, net generation recorded by the main meter at the substation will be allocated between the proposed project activity and any such added capacity on the basis of generation as recorded by meters onsite.

If such additional capacity is installed, the output data from turbines and other relevant data will be monitored and be used to calculate the share of the project in the overall net output, and the net electricity supplied by the project activity ($EG_{project}$) will be calculated as follows:

$$EG_{project} = EG_{total} * E_{project} / (E_{project} + E_{others})$$

EG_{total} is the total net electricity supplied to the grid based on the data metered by the main meter;
$E_{project}$ is the electricity generation from the project activity metered by the separate meter;
E_{others} is the electricity generation from other projects metered by the other separate meters.

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. If such improvements are proposed these will be reported to the DOE and only operated after approval from the DOE.

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 CGN Inner Mongolia Zhurihe Phase I Wind Farm project, the project material and monitoring results will be indexed. All paper-based information will be stored by the technology department of CGN Wind Power Co., Ltd 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

- Xinlinguole Power Grid Company supplies reading to CGN Wind Power Co., Ltd monthly.
- CGN Wind Power Co., Ltd records readings from the backup meter monthly.
- CGN Wind Power Co., Ltd carries out an internal audit on the readings and calculations.
- CGN Wind Power Co., Ltd, after the internal audit, reports the readings, grid data and calculations to the DOE for verification.

CGN Wind Power Co., Ltd will facilitate the verification through providing the DOE with all required necessary information at any stage.