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

CONTENTS

SECTION A. General description of project activity

A.1 Title of the project activity:

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Hebei Yuxian Kongzhongcaoyuan 49.5MW Wind Farm Project
Version 04
Date 05/08/2008

Revision History

Version	01	02	03	04
Time	28/07/2007	14/02/2008	16/06/2008	05/08/2008
Reasons	GSP version	Amendments in response to validation	Amendments in response to validation	Amendments in response to validation

A.2. Description of the project activity:

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The objective of Hebei Yuxian Kongzhongcaoyuan 49.5MW Wind Farm Project (hereafter refer to the proposed project) is to generate renewable electricity using wind power resources and to sell the generated output through Hebei Southern Power Grid to the North China Power Grid. The project activity will generate greenhouse gas (GHG) emission reductions by avoiding CO_2 emissions from electricity generation by fossil fuel power plants that supply the North China Power Grid.

The proposed Project is located in Xiagongcun Village of Yuxian County, Zhangjiakou City, Hebei Province in North China. It involves the installation of 33 turbines, each of which have a capacity of 1500kW, providing a total installed capacity of 49.5MW. The proposed project is expected to generate approximately 111.61GWh per year that will be sold into the North China Power Grid. The electricity generation from this wind farm will contribute to annual GHG reductions estimated at 118,735tCO_2e.

Contribution to sustainable development:

The proposed project clearly fits into the development priority of the People's Republic of China, and will support China in stimulating and accelerating the commercialization of grid-connected renewable energy technologies and the green-power market developments. It will therefore help reduce GHG emissions resulting from the high-growth, coal-dominated business-as-usual scenario. The specific goals of the project are to:

- Reduce greenhouse gas emissions in China compared to a business-as-usual scenario;
- Help to stimulate the growth of the wind power industry in China;
- Create local employment during the assembly and installation of wind turbines, and for operation of the wind farm;
- Reduce other pollutants resulting from the power generation industry in China, compared to a business-as-usual approach.

A.3. Project participants:

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Name of Party involved (*) ((host) indicates a host Party)	Private and/or public entity(ies) project participants (*) (as applicable)	Kindly indicate if the Party involved wishes to be considered as project participant (Yes/No)
The People's Republic of China (Host)	Hebei Construction Investment Yuzhou Wind Energy Co., Ltd	No
The United Kingdom of Great Britain and Northern Ireland	Shell Trading International Limited	No
Netherlands	CEZ a.s.	No

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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The People's Republic of China

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

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Hebei Province

A.4.1.3. City/Town/Community etc:

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Yuxian County, Zhangjiakou 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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The proposed project is located in the Xiagongcun Village of Yuxian County, Zhangjiakou City, Hebei Province in North China，The site location's approximate coordinates are East Longitude of 114°30′45″～114°32′25″ and North Latitude of 39°36′32″～39°33′58.6″. The project site is about 30 kilometers far away from the town of Yuxian County.

The location of the proposed project in Hebei province is shown in the map of Figure 1.

Figure.1 The location of the proposed project

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

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This category would fall within sectoral scope 1: energy industries.

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

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Based on the public bidding, the project owner has signed a 33 × 1500kW wind power equipment purchase agreement with the winner of the wind generator supplier company, i.e.Dongfang Turbine Co., Ltd., which is a domestic manufacturer. The type of wind generator is determined as FD70B.
Key technical specifications of FD70B turbines are listed as the table below.

Key technical specifications of FD70B turbines

Parameters Name	Unit	Value
Type of Turbine		FD70B
Nominal output	kW	1500
Diameter	m	70
Hub height	m	65
Rated voltage	V	690
Nominal wind speed	m/s	13

According to the turbine layout, each turbine will be equipped with one transformer. The construction will also include the wind farm 110kV step-up substation. The wind power to be generated will be delivered to

Laiyuan County 110kV transformer station through a single 110kV loop-line which will be about 34km.

There is no technology transfer involved in this project.

The Training Schedule is described in the following table:

No.	Training Programs	Training Specialist	Numbers of Participant	Time	Location
1	The fundamental knowledge of wind farm	The technicians and the experts employed	30	April,2007	Zhangjiakou City
2	General practice in wind farm.	The technicians	30	May,2007	Kangbao wind farm
3	The operation and maintenance of wind turbine	The experts from Dongfang.	10	May,2007	In the factory of Dongfang.
4	The training of the protection and automatic system.	The technicians from the equipment providers.	10	June,2007	In the factory of equipments providers.
5	Transformer/ Breaker/ Switch-disconnector	The technicians from the equipment providers.	10	June,2007	In the factory of equipments providers.
6	The attendant learning in transformer station	The technicians of transformer station.	30	July,2007	In the transformer station.
7	On-site training of Wind farm.	The technicians from Dongfang.	30	September ,2007	Yuxian county
8	On-site training of Booster Station	The technicians from the equipment providers.	30	September ,2007	Yuxian county
9	Commission Procedure	The commissioners	30	November ,2007	Yuxian county
10	Supplement study in Guyuan Wind farm.		10	August,2007	Guyuan Wind farm.

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

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A crediting period of 7 (seven) years (renewable twice) is selected for the project activity. An estimation of emissions reductions expected over from Ocotober 8^{th},2008 to October 7^{th} ,2015 is provided in the table below.

Years	**Annual estimation of emission reductions in tonnes of CO_2 e**
2008	27,211
2009	118,735
2010	118,735
2011	118,735
2012	118,735
2013	118,735
2014	118,735
2015	91,524
Total estimated reductions (tonnes of CO_2e)	**831,145**
Total number of crediting years	**7**
Annual average over the crediting period of estimated reductions (tonnes of CO_2e)	**118,735**

A.4.5. Public funding of the project activity:

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There is no public funding from Annex I Parties involved in this project.

SECTION B. Application of a baseline and monitoring methodology

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

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The approved methodology applied in the proposed project activity is ACM0002 – "Consolidated methodology for grid-connected electricity generation from renewable sources (Version 6)". For more information regarding the methodology please refer to http://cdm.unfccc.int/metholdogies/approved.

The additionality of the proposed project was demonstrated and assessed by using the "Tool for the demonstration and assessment of additionality (version 5)". For more information regarding the tool please refer to http://cdm.unfccc.int/methodologies/PAmethodologies/approved.html

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

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The proposed project complies with the conditions of the approved baseline and monitoring methodology ACM0002(Version 6) as follows:

- The proposed project involves the electricity capacity additions from wind power;
- 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 can be clearly identified and the characteristics data of the grid is available.[1]

The proposed project meets all the conditions in the approved consolidated methodology ACM 0002(Version 6). The methodology ACM0002 (Version 6) is therefore applicable to the project.

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

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According to the approved consolidated methodology ACM0002 (Version 6), emission sources included and excluded in the project boundary are listed in the following table:

	Source	Gas	Included?	Justification / Explanation
Baseline	Emissions from fossil fuels fired power plants supplying to the North China Power Grid	CO_2	Included	Main emission source
		CH_4	Excluded	Excluded for simplification. This is conservative
		N_2O	Excluded	Excluded for simplification. This is conservative

[1] Detailed information of the grid in China can be obtained from the China Electric Power Yearbook, the China Energy Statistical Yearbook and the Notification on Determining Baseline Emission Factor of China's Grid made publicly available on the website of China's DNA (http://cdm.ccchina.gov.cn/) on August 9th, 2007.

Project activity	Emissions cause by the proposed project activity	CO_2	Excluded	According to ACM0002 (Version 6), project emission is excluded as a wind power project.
		CH_4	Excluded	
		N_2O	Excluded	

According to the methodology ACM0002 (Version 6), a project electricity system is defined by the spatial extent of the power plants that can be dispatched without significant transmission constraints. The proposed project is within the boundary of the North China Power Grid, which geographical range includes: Beijing City, Tianjin City, Hebei Province, Shanxi Province, Shandong Province and Inner Mongolia.

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

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To provide the same output or services comparable with the proposed project activity, these scenarios are to include:

Scenario 1) Construction of a fossil fuel-fired power plant with equivalent output.
Scenario 2) The proposed project not undertaken as a CDM project activity but as a commercial project.
Scenario 3) Construction of a power plant using other renewable energy with equivalent annual electricity generation.
Scenario 4) Provision of equivalent annual power generation by the North China Power grid which the proposed project is connected to.

According to the applicable laws and regulations of China, the scenario 1) should be eliminated, because it does not comply with the national regulation for controlling small-scale coal-fired power plant. To provide the same output as the proposed project, the alternative coal power plant will has the capacity less than 49.5 MW then will be categorized as the small scale coal power plant and should be shut down according to the regulations from The National Development and Reform Commission. According to this regulation, the construction of thermal power plant under 135 MW will be forbidden within the connected area.[2]
Therefore, Scenario 1) is not feasible.

Based on the Investment Analysis (**See B.5**), the total investment IRR of the proposed project is 5.85%, which is less than the benchmark 8%. So, the proposed project is not financially attractive without the revenues of CERs.
Scenario 2) is not feasible.

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 output as the proposed project are alternatives far from being attractive investment in the grid in China[3]. Only hydropower projects have the investment return rate that can compete over that of wind power projects in China. But there

[2] Notice on Strictly Prohibiting the installation of coal-fired generators with the capacity of 135MW or below issued by the general office the state council, decree no.2002-6

[3]< SCIENCE AND TECHNOLOGY IN CHINA> 2006,January,P38.

are no exploitable resources for hydropower development nearby or at the project site.
Therefore, Scenario 3) is not feasible.

Scenario 4) comply with the national regulation and without finance barrier and other barrier. So scenario 4) is feasible.

In conclusion, the baseline scenario is scenario 4), the provision of equivalent amount of annual electricity supply by the North China Power grid into which the proposed project is connected to.

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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Additionality

The additionality of the proposed project is demonstrated and assessed by using the "Tool for the Demonstration and Assessment of Additionality (Version 5)".It includes the following steps:

Step1. Identification of alternatives to the project activity consistent with current laws and regulations

The objective of this step is to identify realistic and credible alternatives to the proposed project that can be the baseline scenario through the following sub-steps:

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

To provide the same output or services comparable with the proposed CDM project activity, these alternatives are to include:

Alternative 1) Construction of a fossil fuel-fired power plant with equivalent output.
Alternative 2) The proposed project not undertaken as a CDM project activity but as a commercial project.
Alternative 3) Construction of a power plant using other renewable energy with equivalent annual electricity generation.
Alternative 4) Provision of equivalent annual power generation by the grid which the proposed project is connected to.

As mentioned in **B.4**, alternative 3) is technology unfeasible. So, the credible and realistic alternatives are as follow:

Alternative 1) Construction of a fossil fuel-fired power plant with equivalent output.
Alternative 2) The proposed project not undertaken as a CDM project activity but as a commercial project.
Alternative 4) Provision of equivalent annual power generation by the grid which the proposed project is connected to.

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

As mentioned in **B.4**, alternative 1) is not feasible.

Alternative 2) and alternative 4) are complying with the applicable laws and regulations.

Step 2. Investment Analysis

The investment analysis was done in the following steps:

Sub-step2a.Determine appropriate analysis method

Tools for the demonstration and assessment of additionality suggest three analysis methods, which are simple, cost analysis (option I), investment comparison analysis (option II) and benchmark analysis (option III).

Since the proposed project not only obtains CDM revenue but also revenue through electricity sales, simple cost analysis method is not appropriate. Investment comparison analysis method is applicable to projects whose alternatives are similar investment projects. Only on such basis, comparison analysis can be conducted. The alternative baseline scenario of the proposed project is the North China Power Grid rather than new investment projects. Therefore option II is not an appropriate method either. The proposed project will use benchmark analysis method based on the consideration that benchmark IRR and total investment IRR of the power sector are both available.

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

With reference to Interim Rules on Economic Assessment of Electrical Engineering Retrofit projects, the financial benchmark rate of return (after tax) of Chinese power industries accounts for 8% of the total investment IRR[4]. The IRR is defined as a project IRR based on cash in and outflows only. Presently, the financial benchmark rate of return is used in the analysis of the majority of power projects in China including wind power.

On the basis of above benchmark, calculation and comparison of financial indicators are carried out in **sub-step 2c**.

Sub-step 2c.calculation and comparison of financial indicators

1) Basic parameters for calculation of financial indicators

Based on the feasibility study report[5] of the proposed project, basic parameters for calculation of financial indicators are as follows:

Table 1. Parameters for Calculation of Financial Indicators

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[4] Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects. issued by former State Power Corporation of China, China Electric Power Press, 2003

[5] The recommended installed capacity was 49.3MW (850kw*58) in the FSR which was also the basis of the economic analysis of the FSR, but the turbines purchased actually by tendering were 1500kw*33(49.5MW) because of the lack of 850kw wind turbines in the market. The small change in the installed capacity has been approved and regarded as immaterial by Hebei Development & Reform Commission. In addition, the Economic and technical comparison of the two types of turbines had been done in the FSR. According to the FSR, the static total investment with 49.5MW was 537.31 million yuan and was only 2.75% higher than the scenario of 49.3MW whose static total investment was 522.95million yuan. The annual power supply with 49.5MW was 112.91GWh and was barely 1.156% higher than the scenario of 49.3MW whose annual output was 111.61GWh. This level of fluctuation has been covered by the sensitivity analysis of the FSR. Therefore, the data in the FSR with the installed capacity 49.3MW being used in the proposed project is reasonable and conservative.

Parameters	Unit	Amount	Source	Note
Installed capacity	MW	49.5	FSR	
Annual output	GWh	111.61	FSR	
Project lifetime	year	20	FSR	
Total investment	million RMB	534.44	FSR	
Static Total Investment	million RMB	522.95	FSR	
The Annual Equivalent Utilization Time	Hour	2264	FSR	
Tariff(Exclude VAT)	yuan/kWh	0.553	FSR	Before the accumulated total utilization time will reach 30,000hours
	yuan/kWh	0.3229		After 30,000 hours
Annual operating cost	million RMB	10.75	FSR	
Value-added Tax	%	8.5	FSR	
Income tax	%	33	FSR	
Additional Education Tax	%	4	FSR	
Urban Maintenance and ConstructionTax	%	5	FSR	

2) Comparison of IRR for the proposed project and the financial benchmark

In accordance with benchmark analysis (Option III), if the financial indicators (such as IRR) of the proposed project are lower than the benchmark, the proposed project is not considered as financially attractive.

Based on the data above, the IRR of the total investment of the proposed project not undertaken as a CDM project is 5.85%, which is lower than the benchmark rate 8%. Thus the proposed project is not financially attractive.

Sub-step 2d.Sensitivity analysis

The objective of sensitivity is to show whether 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 only if it consistently supports (for a realistic range of assumptions) the conclusion that the project activity is unlikely to be the most financially attractive or is unlikely to be financially attractive.
For the proposed project, four financial parameters were taken as uncertain factors for sensitive analysis of financial attractiveness:

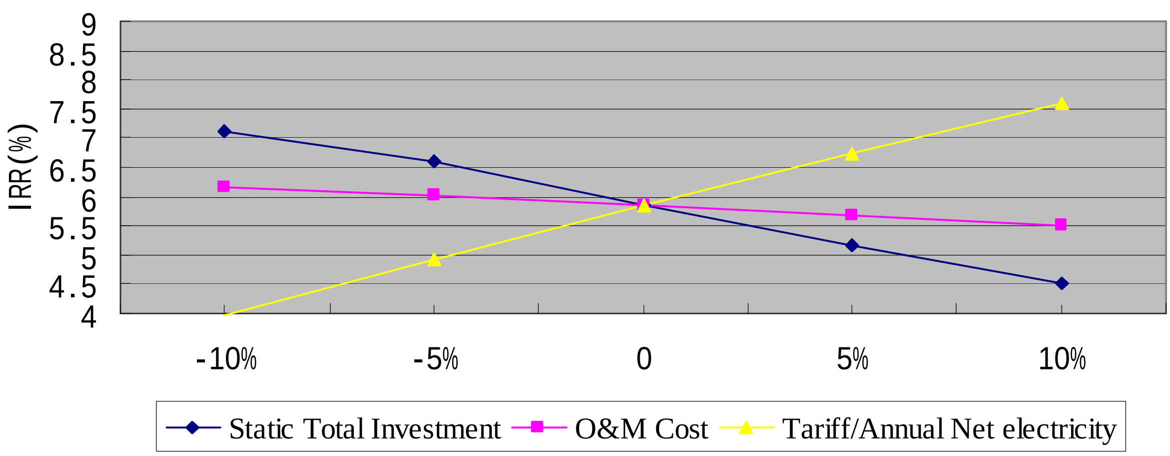
1) Static total investment
2) Annual O&M cost
3) Expected tariff
4)Annual net electricity

The impacts of static total investment, annual O&M cost, expected tariff and annual net electricity are selected to check out the impact of their reasonable variations on the project IRR. The results of sensitive analysis are shown in Table 2 and Figure 2 below.

Table 2 Sensitivity of total investment IRR （%） to different financial parameters

Range[6] / Parameter	-10%	-5%	0%	5%	10%
Static Total investment	7.12	6.60	5.85	5.15	4.51
O&M cost	6.17	6.01	5.85	5.69	5.52
Tariff /Annual net electricity	3.95	4.92	5.85	6.75	7.61

Figure 2.Sensitivity Analysis



From Table 2 and Figure2, we can find that the project IRR of the proposed project varies to different degrees in accordance with the fluctuation of four parameters within the range of ±10%.

When the Static Total Investment drops by 10%, the project IRR is below the benchmark rate. Only when the Static Total Investment has a drop of 13.5%, the project IRR can reach the benchmark rate. However, as the prices, including those of the requirement equipment and commodities, have been increasing in recent years, a significant reduction in the level of investment is unlikely, in particular a reduction greater than 13.5%.

When the Tariff/Annual Net electricity increase by 10%, the project IRR is still below the benchmark rate, Only when the Tariff/Annual Net electricity increase by 12.2%, the project IRR can reach the benchmark. But according to the approval letter of tariff by National Development and Reform Commission, the tariff

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[6] We have applied variations of +10%/-10% in the main parameters following the common practice of wind farm feasibility studies in China. The +10%/-10% interval is also in accordance with guidance provided by the Measures for Feasibility Study Preparation of Wind Farms issued by the National Development and Reform Commission.

is 0.553yuan/kWh(exclude VAT)which will be fixed before the accumulated total utilization time reach 30,000hours and will be declined after 30,000hours.So, the tariff increasing by 12.2% is not likely to happen.

Moreover, the statistical data of wind speed (1975-2004) from Laiyuan meteorological station[7] show that wind speed has gradually declined in the local area. In the last 10 years, there has not been a single year in which the annual average wind speed exceeded the average (as measured since 1975) with more than 12.2%. Thus, it is improbable that the annual power supply would consistently exceed the 12.2% interval over the complete lifetime of the proposed project.

Compared with the static total investment and Tariff/annual net electricity, the annual O&M cost has little impact on the project of IRR. Only when the O&M costs has a drop of 70%, the project IRR can nearly reach the benchmark rate. But the O&M costs drops unlikely by 70%.

In a word, when financial indicators change within reasonable range, the proposed project is not financially feasible without CDM support.
Based on the Investment Analysis above, the proposed project is not financially attractive without the revenues of CERs. Alternative 2) is not feasible, thus not the baseline scenario.

Step 4.Common practice analysis

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

The common practice analysis is conducted to compare the project activity with the installed capacity from 20MW to 60MW and operated in Hebei Province since 2002.

According to the Statistics of Chinese Wind Energy Installed Capacity in 2006, the install capacity of the similar activities are identified from 20MW to 60MW. There is a comparable environment with respect to regulatory framework, investment climate etc. in Hebei province, therefore, the site of similar activities is identified in Hebei province.The Plant-Grid seperation began to be implemented in china power industry from 2002[8]. So the operation date of similar activities are identified since 2002. Similar activities identified with such criteria are listed in Table 3 below.

Table 3 Other activities similar to the proposed project activity in Hebei province[9]

Project Title	Commisioning Date	Capacity (MW)	Notes
Chengde Hongsong	Dec,2004	50.1	Carbon financed
Shangyi Damanjing	July,2005	34.5	Carbon financed
Zhangbei Manjing	Dec,2005	45	CDM Project
Shangyi Manjing East	Sep,2006	49.5	CDM Project
Chengde Songshan	Nov,2006	49.5	CDM Project
Kangbao	Oct,2006	30	CDM project

[7] The wind speed data have been measured by Laiyuan meteorological station since 1975 and are provided in the Feasibility Study Report of the proposed project

[8] The State Council, Issue of the Power System Reform Plan Circular (Guo Fa [2002] No.5)
[9] Shi Pengfei, Statistics of Chinese Wind Energy Installed Capacity in 2006.

Wolongtushan			
Zhangbei Mijiagou	Dec,2006	49.5	CDM Project
Chengde Huifeng[10]	Under construction	49.5	Applying for being a CDM project
Guyuan	Under construction	30.6	CDM project
Haixing[11]	Under construction	49.5	Applying for being a CDM project

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

Chengde Hongsong and Shangyi Damanjing met the standards of Voluntary Carbon Standards and have gotten the carbon financing from the Voluntary market. The other projects listed in the table 2 were developed as CDM projects. Chengde Huifeng and Haixing are applying for being CDM projects. Chengde Songshan [12] 、 Shangyi Manjing East [13] , Zhangbei Manjing [14] , Zhangbei Mijiagou [15] , Kangbao Wolongtushan[16] and Guyuan[17] project have been registered in EB successfully.

The similar wind farms in Hebei province are carbon financed or being the CDM projects. The existence of these projects in Table 3 does not contradict the claim that the proposed project activity is financially unattractive .Therefore, the proposed project activity is not the common practice.

Impact of CDM registration

The CDM registration will create an additional income stream from the sale of CERs, substantially increasing the economic attractiveness of the project. With the revenues of CERs, the total investment IRR of the proposed project activity is 8.67% (the assumed CERs price is EURO8.00, the exchange rate is10.32EURO/RMB). This is sufficient to make the wind farm more attractive proposition for the investors.

Hebei Construction Investment Yuzhou Wind Energy Co., Ltd.(HCIYWE) was established in January, 2007. At this time, HECIC New Energy Co., Ltd., the parent company of HCIYWE, was very knowledgeable about the possibilities offered by CDM and had developed two wind farms as CDM Projects.(Project 0873:Guyuan 30.6MW Wind-farm Project [18] and Project 0878:Hebei Kangbao Wolongtushan 30MW Wind Farm Project[19], Registration Date :5th April,2007).These show distinctly that

[10] http://cdm.unfccc.int/Projects/Validation/DB/ILFAWUAM6UWI96GU9AZQZJWPGPIFC8/view.html

[11] http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File1568.pdf No.779

[12] http://cdm.unfccc.int/Projects/DB/DNV-CUK1169551806.17/view.html

[13] http://cdm.unfccc.int/Projects/DB/DNV-CUK1167911701.87/view.html

[14] http://cdm.unfccc.int/Projects/DB/DNV-CUK1136989231.92/view.html

[15] http://cdm.unfccc.int/Projects/DB/DNV-CUK1167997490.52/view.html

[16] http://cdm.unfccc.int/Projects/DB/DNV-CUK1169559890.44/view.html

[17] http://cdm.unfccc.int/Projects/DB/DNV-CUK1169475281.64/view.html

[18] http://cdm.unfccc.int/Projects/DB/DNV-CUK1169475281.64/view

[19] http://cdm.unfccc.int/Projects/DB/DNV-CUK1169559890.44/view

the incentive from the CDM was seriously considered in the decision to proceed with the project activity. The above analyses clearly demonstrate that the proposed project activity is not the baseline scenario. Without the support from CDM, the proposed project scenario would not occur. Thus the proposed project is additional.

The Implementation schedule of the proposed project

Progress	Time(dd/mm/yy)	Note
The Feasibility Study Report(FSR)	16/12/2006	Produced by Hebei Electric Power Design & Research Institute
The Approval letter of FSR	31/12/2006	Authorized by Hebei Development and Reform Commission
The decision of the Board	21/11/2006	The board of Hebei Construction Investment Yuzhou Wind Energy Co., Ltd
Construction Date	20/05/2007	
Equipment Purchasing	31/03/2007	The manufacturer is Dongfang Turbine Co.,Ltd.
Equipment Installation	07/01/2008	
The expected Operation Date	15/07/2008	

Note: Because the board of HCIYWE was very knowledgeable about the CDM from its parent company. Kangbao ,Guyuan and the proposed project are all located in Zhangjiakou City,Hebei Province.The projects have the similar installed capacity and belong to the same parent company. The finial validation reports of Kangbao and Guyuan were nearly finished on November 21,2006. So they made its decision to develop the proposed project as CDM project during the early days of the foundation of Board.

B.6. Emission reductions:

B.6.1. Explanation of methodological choices:

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The proposed project activity is grid-connected electricity generation from renewable energy sources, according to the approved consolidated baseline methodology ACM0002(Version 6), the emission reductions of the proposed project are determined as following steps:

The method [20] announced by the DNA of China on 9th August, 2007 is adopted in the proposed project.

Step 1 – Calculation of the Operating Margin emission factor (OM)

The consolidated methodology ACM0002 (Version 6) provides four options to calculate the operating margin, they are:

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

[20] http://cdm.ccchina.gov.cn/web/main.asp?ColumnId=25

The preferred methodological choice, as provided in the methodology ACM0002 (Version6), for the calculation of the OM emission factor is dispatch analysis, option (c). However the method (c) requires the detailed operation and dispatch data of power plants in the grid. But there is no publicly available dispatch data for the North China Power Grid. Therefore, the method (c) is not applicable.

Also option (b), Simple adjusted OM can not be applied, because the detailed information necessary to construct a load curve is not available.

If low cost/must resources account for more than 50% of grid generation, option (d) should be chosen, whereas if low cost/must resources account for less than 50% of grid generation, option (a) should be chosen. The simple OM can be used in the case of the proposed project activity since low-cost/must-run sources constitute less than 50% of the total grid .The share of low-cost/must run resources in the North China Power Grid are 0.75％（2005),0.76% (2004), 0.86% (2003), 0.89% (2002) and 0.81% (2001) [21]respectively. Therefore, it is reasonable to select the method (a) to calculate the OM emission factor of the North China Power Grid.

The Simple OM emission factor can be calculated using either of the two following data vintages for years(s) y:
- (*ex-ante*) the full generation-weighted average for the most recent 3 years for which data are available at the time of PDD submission, if or,
- the year in which project generation occurs, if $EF_{OM,y}$ is updated based on *ex-post* monitoring.

The choice of *ex-ante* vintage is specified in this PDD, and will not be changed during the crediting period.
The OM is calculated as the generation-weighted emissions per electricity unit of all generating units serving the system, excluding low-operating cost and must-run power plants. Low operating cost and must run power plants include typically hydro, low cost biomass and geothermal. The OM is calculated as follows, using a 3-year average:

$$EF_{OM,simple,y} = \frac{\sum_{i,j} F_{i,j,y} \cdot COEF_{i,j}}{\sum_{j} GEN_{j,y}} \qquad (3)$$

Where,

$F_{i,j,y}$ is the amount of fuel ***i*** (mass or volume) consumed by province j in year(s) y,

$COEF_{i,j}$ is the CO_2 emission coefficient (tCO2e/mass or volume) of fuel i taking into account the carbon content and the percent oxidation of the fuels(Raw coal, Oil and Gas) used by province j in year(s) y. and

$GEN_{i,j}$ is the electricity (MWh) delivered to the grid by province j.

The CO_2 emission coefficient $COEF_i$ is obtained as:

$$COEF_{i.j} = NCV_{i,j} \times EF_{CO2,i} \times OXID_i \qquad (4)$$

Where,

[21] China Electric Power Yearbook, 2001-2006

$NCV_{i,j}$ is the net calorific value (energy content) per mass or volume unit of a fuel i, country-specific values;

$EF_{CO2,i}$ is the CO_2 potential emission factor per unit of energy of the fuel i, the IPCC default value;

$OXID_i$ is the oxidation factor of the fuel i, the IPCC default value.

The North China Power Grid have been imported the electricity from the Northeast China Power Grid, and the net imports do not exceed 20% of the total generation in the North China Power Grid. Therefore, the average emission rate of the Northeast China Power Grid has been chosen.

Step 2 – Calculation of the Build Margin emission factor (BM)

According to ACM0002, ***$EF_{BM,y}$*** is determined by the formula as follow:

$$EF_{BM,y} = \frac{\sum_{i,m} F_{i,m,y} \cdot COEF_{i,m}}{\sum_{m} GEN_{m,y}} \qquad (5)$$

Where

$F_{i,m,y}$, is the amount (tce) of fuel i consumed by plant m in year y;

$COEF_{i,m}$ is the emission factor（tCO_2/tce）of fuel i taking into account the carbon content and the percent oxidation of the fuel i consumed by plant m in year y; and

$GEN_{m,y}$ is the electricity (MWh) delivered to the grid by plant m in year y.

According to the announcement of emission factor by DNA of China,

The choice of *ex-ante* vintage is specified in this PDD, and will not be changed during the crediting period.

According to the **EB**'s guidance on DNV deviation request, "Request for clarification on use of approved methodology AM0005 for several projects in China", the EB accepted the following deviation[22]:

- Use of capacity additions during last 1 - 3 years for estimating the build margin emission factor for grid electricity;
- Use the efficiency level of the best technology commercially available in the provincial/regional or national grid of China, as a conservative proxy, for each fuel type in estimating the fuel consumption to estimate the build margin (BM).

Because we cannot divide the share of incremental installed capacity of coal-fired power, gas-fired power and fuel-fired power from the thermal plant in the statistics, the following method is used: Firstly, we calculate the proportion between CO_2 emissions by burning coal, fuel, gas, separately and the total emission based on the newly available energy balance table. Secondly we take the proportion as weighted factor to calculate the emission factor of thermal plant based on the efficiency level of the best technology commercially available in the regional grid of China. At last, we multiply the emission factor of thermal plant and proportion between the capacity of thermal plants and the 20% capacity additions from the most recent built power plants. The result is the BM emission factor of the region power grid.

The process and formulas are as follow:

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[22] http://cdm.unfccc.int/Projects/Deviations

Sub-Step1. Calculating the ratio of CO_2 emission by burning coal, fuel, gas to the total emission, separately.

$$l_{Coal} = \frac{\sum_{i \in Coal, j} F_{i,j,y} \times COEF_{i,j}}{\sum_{i,j} F_{i,j,y} \times COEF_{i,j}} \quad (6)$$

$$l_{Oil} = \frac{\sum_{i \in Oil, j} F_{i,j,y} \times COEF_{i,j}}{\sum_{i,j} F_{i,j,y} \times COEF_{i,j}} \quad (7)$$

$$l_{Gas} = \frac{\sum_{i \in Gas, j} F_{i,j,y} \times COEF_{i,j}}{\sum_{i,j} F_{i,j,y} \times COEF_{i,j}} \quad (8)$$

Where:

$F_{i,j,y}$: the amount of fuel (mass) i consumed by relevant power sources i in year(s) y;

$COEF_{i,j,y}$ the emission factor of fuel i（tCO_2/tce）.

COAL, OIL and GAS is subscript.

Sub-Step 2.Calculating the emission factor of thermal plant.

$$EF_{Thermal} = l_{Coal} \times EF_{Coal,Adv} + l_{Oil} \times EF_{Oil,Adv} + l_{Gas} \times EF_{Gas,Adv} \quad (9)$$

Where:

$EF_{Coal,Adv}$, $EF_{Oil,Adv}$ and $EF_{Gas,Adv}$ is emission factor of the best technology commercially available in the regional grid of China, separately. The key information and data can be found in the tables of Annex 3.

Sub-Step 3.Calculating the BM emission factor of the power grid.

$$EF_{BM,y} = \frac{CAP_{Thermal}}{CAP_{Total}} \times EF_{Thermal} \quad (10)$$

Where:

CAP_{Total}: the total newly additional capacity;

$CAP_{Thermal}$: the newly additional thermal capacity

STEP 3 – Calculate the Combined baseline emission factor EF_y

The $\mathbf{EF_y}$ are calculated as the weighted average of the Operating Margin emission factor ($EF_{OM,y}$) and the Build Margin emission factor ($EF_{BM,y}$):

$$EF_y = w_{OM} \times EF_{OM,y} + w_{BM} \times EF_{BM,y} \qquad (11)$$

The latest version of ACM0002 (version 6) provides the following default weights for wind and solar projects: Operating Margin, w_{OM} = 0.75; Build Margin, w_{BM} = 0.25

Applying the default weights, we calculate a Baseline Emission Factor as follows:
EF_y=1.1208×0.75+0.9397×0.25=1.0755 tCO_2e/MWh.

Step 4. The Emission reductions of the proposed project ER_y

Emissions from the proposed project activity (PE_y)

The proposed project is a zero-emission electricity generating activity; therefore no emissions from the project activity were identified. **i.e. PE_y=0**

Leakage(L_y)

According to the requirements of methodology applied, the project does not consider leakage.
i.e. L_y=0

Emission Reductions

The proposed project activity mainly reduces carbon dioxide through substitution of grid electricity generation with fossil fuel fired power plants by renewable electricity. The emission reduction **ER_y** by the project activity during a given year *y* is the difference between baseline emissions (**BE_y**), project emissions (**PE_y**) and emissions due to leakage (**L_y**), as follows:
$ER_y = BE_y - PE_y - L_y$

Where the baseline emissions (**BE_y** in tCO_{2e}) are the product of the baseline emissions factor (**EF_y** in tCO_2/MWh) calculated in Step 3, times the electricity supplied by the project activity to the grid (**EG_y** in MWh) .According to ACM0002, **PE_y** and **L_y** are both zero.

Therefore,
$ER_y = EG_y \times EF_y$

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

>>

Data / Parameter:	**$GEN_{m,j,y}$**
Data unit:	MWh
Description:	The generation of power sources j of province m in year(s) y.
Source of data used:	China Electric Power Yearbook (2003-2006)
Value applied:	See Annex 3 for details
Justification of the choice of data or description of measurement methods and procedures actually applied :	The data obtained from the official statistical data is reliable.
Any comment:	To calculate the power delivered to the grid

Data / Parameter:	**$F_{i,j,y,m}$**
Data unit:	Mtons, Mm^3
Description:	The amount of fuel *i* (in a mass or volume unit) consumed by relevant power sources j of province m in year(s) *y*
Source of data used:	China Energy Statistical Yearbook（2000~2006）
Value applied:	See Annex 3 for details
Justification of the choice of data or description of measurement methods and procedures actually applied :	Official statistical data
Any comment:	To calculate the OM and BM

Data / Parameter:	**EF_{OM}**
Data unit:	tCO2e/MWh
Description:	The operation Margin Emission Factor of Grid
Source of data used:	Data published by Chinese DNA on 9th August,2007
Value applied:	1.1208
Justification of the choice of data or description of measurement methods and procedures actually applied :	The official data.
Any comment:	

Data / Parameter:	**EF_{BM}**
Data unit:	tCO2e/MWh
Description:	The Build Margin Emission Factor of Grid
Source of data used:	Data published by Chinese DNA on 9th August,2007

Value applied:	0.9397
Justification of the choice of data or description of measurement methods and procedures actually applied :	The official data.
Any comment:	

Data / Parameter:	**$EF_{CM,y}$**
Data unit:	tCO2e/MWh
Description:	The baseline Emission Factor of Grid
Source of data used:	Data published by Chinese DNA on 9th August,2007
Value applied:	1.0755
Justification of the choice of data or description of measurement methods and procedures actually applied :	Calculated according to the official data.
Any comment:	

Data / Parameter:	**$COEF_{,i}$**
Data unit:	tCO2/TJ
Description:	The CO2 emission factor per unit of energy of the fuel i.
Source of data used:	2006 IPCC Guidelines for National Greenhouse Gas Inventories, Workbook
Value applied:	See Annex 3 for details.
Justification of the choice of data or description of measurement methods and procedures actually applied :	The data obtained from the IPCC is reliable.
Any comment:	To calculate the OM and BM.

Data / Parameter:	**$EF_{CO2,i}$**
Data unit:	tC/TJ
Description:	The carbon emission coefficient per unit of energy of the fuel i.
Source of data used:	Fuel emission coefficients are national values for coal, see China Climate Change Country Study, p.57-58 and IPCC default values for the other fuels, see 2006 IPCC Guidelines for National Greenhouse Gas Inventories
Value applied:	See Annex 3 for details.
Justification of the choice of data or description of	The official data and IPCC default data.

measurement methods and procedures actually applied :	
Any comment:	

Data / Parameter:	**$NCV_{i,}$**
Data unit:	TJ/ mass or volume unit of a fuel
Description:	The net calorific value (energy content) per mass or volume unit of a fuel *i*
Source of data used:	China Energy Statistical Yearbook（2006）P287
Value applied:	See Annex 3 for details
Justification of the choice of data or description of measurement methods and procedures actually applied :	Official statistical data
Any comment:	To Caculate the OM and BM

Data / Parameter:	**$OXID_i$**
Data unit:	%
Description:	The oxidation factor of the fuel *i*
Source of data used:	2006 IPCC Guidelines for National Greenhouse Gas Inventories
Value applied:	See Annex 3 for details
Justification of the choice of data or description of measurement methods and procedures actually applied :	IPCC default value.
Any comment:	To calculate the OM and BM.

Data / Parameter:	**$PR_{m,y}$**
Data unit:	%
Description:	The rate of electricity consumption of thermal power plants of Province m in year (s) y
Source of data used:	China Energy Statistical Yearbook（2000~2006）
Value applied:	See Annex 3 for details
Justification of the choice of data or description of measurement methods and procedures actually applied :	Official statistical data
Any comment:	To calculate the power delivered to the grid.

Data / Parameter:	**$GEN_{import,y}$**
Data unit:	MWh
Description:	The Power Transmitted from the Northeast China Power Grid to the North China Power Grid in(years) y
Source of data used:	China Electric Power Yearbook (2003-2006)
Value applied:	See Annex 3 for details
Justification of the choice of data or description of measurement methods and procedures actually applied :	Official statistical data
Any comment:	To calculate OM

Data / Parameter:	**S-Eff**
Data unit:	%
Description:	The optimum commercial, thermal power supply efficiency
Source of data used:	China DNA: Bulletin on Baseline Emission Factor of China Region Grid-the calculation of baseline Build Margin emission factor for China Grid
Value applied:	Coal-fired: 36.53%; Oil-fired and Gas-fired: 45.87%
Justification of the choice of data or description of measurement methods and procedures actually applied :	The official data.
Any comment:	To calculate BM

Data / Parameter:	**$CAP_{m,j,y}$**
Data unit:	MW
Description:	The Installed Capacity of Power Sources j of Province m in (years) y
Source of data used:	China Electric Power Yearbook 2002-2006
Value applied:	See Annex 3 for details
Justification of the choice of data or description of measurement methods and procedures actually applied :	Official Statistical Data
Any comment:	To calculate the BM.

B.6.3 Ex-ante calculation of emission reductions:

>>

The annual net power supply to the North China Power Grid is estimated to be 110,400 MWh. **i.e** $\mathbf{EG_y}$=110,400MWh.

According to the approved consolidated methodology ACM0002, the project emissions of the proposed project PE_y=0, the leakage of the proposed project L_y=0.

As mentioned in Section B.6.1, calculation process is shown below:

$$\mathbf{ER_y = BE_y - PE_y - L_y}$$
$$\mathbf{= EG_y \times EF_y - 0 - 0}$$
$$= 110{,}400 \times 1.0755$$
$$= 118{,}735 tCO_2e$$

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

>>

Year	Estimation of Project activity Emission (tonnes of CO_2e)	Estimation of baseline emission (tonnes of CO_2 e)	Estimation of leakage (tonnes of CO_2e)	Estimation of Emission reductions (tonnes of CO_2 e)
2008	**0**	**27,211**	**0**	**27,211**
2009	**0**	**118,735**	**0**	**118,735**
2010	**0**	**118,735**	**0**	**118,735**
2011	**0**	**118,735**	**0**	**118,735**
2012	**0**	**118,735**	**0**	**118,735**
2013	**0**	**118,735**	**0**	**118,735**
2014	**0**	**118,735**	**0**	**118,735**
2015	**0**	**91,524**	**0**	**91,524**
Total (t CO_2e)	**0**	**831,145**	**0**	**831,145**

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

B.7.1 Data and parameters monitored:

>>

The net electricity supplied to the grid by the project will not be measured directly , it is the difference of $\mathbf{EG_{s,y}}$, $\mathbf{EG_{c,y}}$ and $\mathbf{EG_{backupline,y}}$which have been listed in the following table.

Data / Parameter:	$\mathbf{EG_{s,y}}$
Data unit:	MWh
Description:	Electricity supplied to the grid by the project.
Source of data to be used:	Directly measured.
Value of data applied for the purpose of	

calculating expected emission reductions in section B.5	
Description of measurement methods and procedures to be applied:	Measured hourly and recorded on a monthly basis. Data record will be archived for a period of 2 years after the crediting period
QA/QC procedures to be applied:	The meter will be annually calibrated according to the relevant national electric industry standards and regulations. Billing receipts from the grid company will serve as a cross-check
Any comment:	

Data / Parameter:	**$EG_{c,y}$**
Data unit:	MWh
Description:	Electricity consumed from the grid by the project through the main power line.
Source of data to be used:	Directly measured.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	
Description of measurement methods and procedures to be applied:	Measured hourly and recorded on a monthly basis. Data record will be archived for a period of 2 years after the crediting period
QA/QC procedures to be applied:	The meter will be annually calibrated according to the relevant national electric industry standards and regulations. Billing receipts from the grid company will serve as a cross-check
Any comment:	

Data / Parameter:	**$EG_{backup\ line,y}$**
Data unit:	MWh
Description:	Electricity consumed from the grid by the project. through the backup line
Source of data to be used:	Directly measured.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	
Description of measurement methods and procedures to be applied:	Measured hourly and recorded on a monthly basis. Data record will be archived for a period of 2 years after the crediting period
QA/QC procedures to be applied:	The meter will be annually calibrated according to the relevant national electric industry standards and regulations. Billing receipts from the grid company will

	serve as a cross-check
Any comment:	

B.7.2 Description of the monitoring plan:

>>

The monitoring plan is established according to the request of approved monitoring methodology ACM0002 (version 06), which is consistent with ACM0002 baseline methodology.

1. Data and Parameters monitored

The net electricity (EG_y) supplied to the grid by the project will not be measured directly. It is the difference of the following parameters.

①$EG_{s,y}$ is the electricity supplied to the Grid by the project

②$EG_{c,y}$ is the electricity consumed from the grid by the project through the main power line.

③$EG_{backupline,y}$is the electricity delivered to the project through the backup line.

2. Project Integrate Management

This monitoring plan will be implemented by Hebei Construction Investment Yuzhou Wind Energy Co., Ltd, the project owner, and consultants that appointed by the project owner.

The monitoring activity involves 8 employments including 1 project manager. The project manager is responsible for the implementation and monitoring of the monitoring activity. There are 3 departments organized for data report, quality control and training. There is 1 manager responsible for data report and quality control department by 1 of each. There is also 4 staffs work in these two departments by 2 of each. The manager will take charge of the employment administration, as well as the operation implementation and monitoring; staffs will carry on the concrete assignment based on the guide of their manager. The training department has 1 manager who is responsible for the entire training process of the project. The monitoring system flowchart of this project is shown in figure 3.

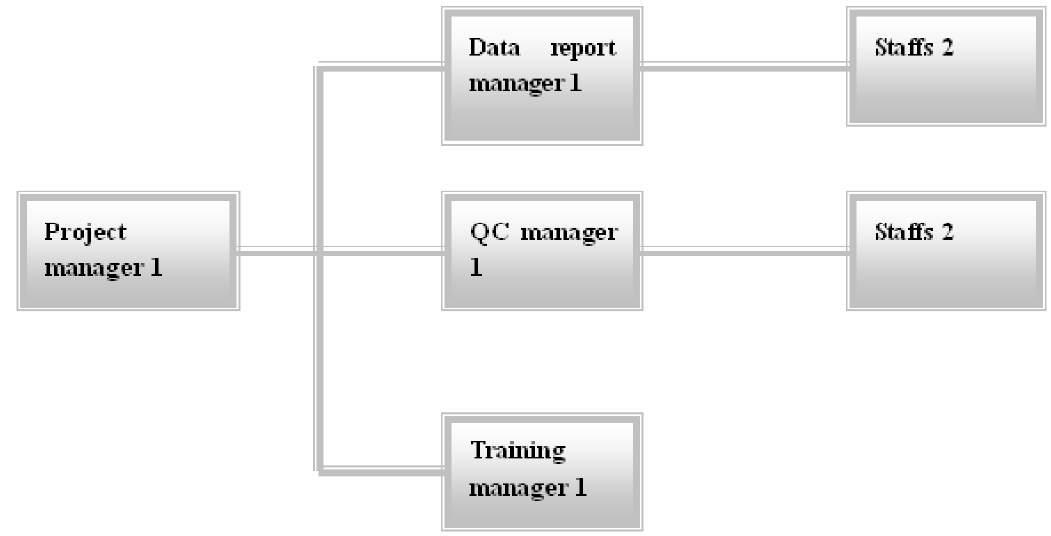

Figure 3. Monitoring system flow chart of the proposed project.

3. Metering System

The electricity generated by the project will be transmitted to an on-site transformer station that increases the voltage to 110 kV, and then be delivered to Laiyuan transformer station which connected to the Hebei Sourthern Power Grid. The simplified electrical grid connection diagram is shown in the following figure 4

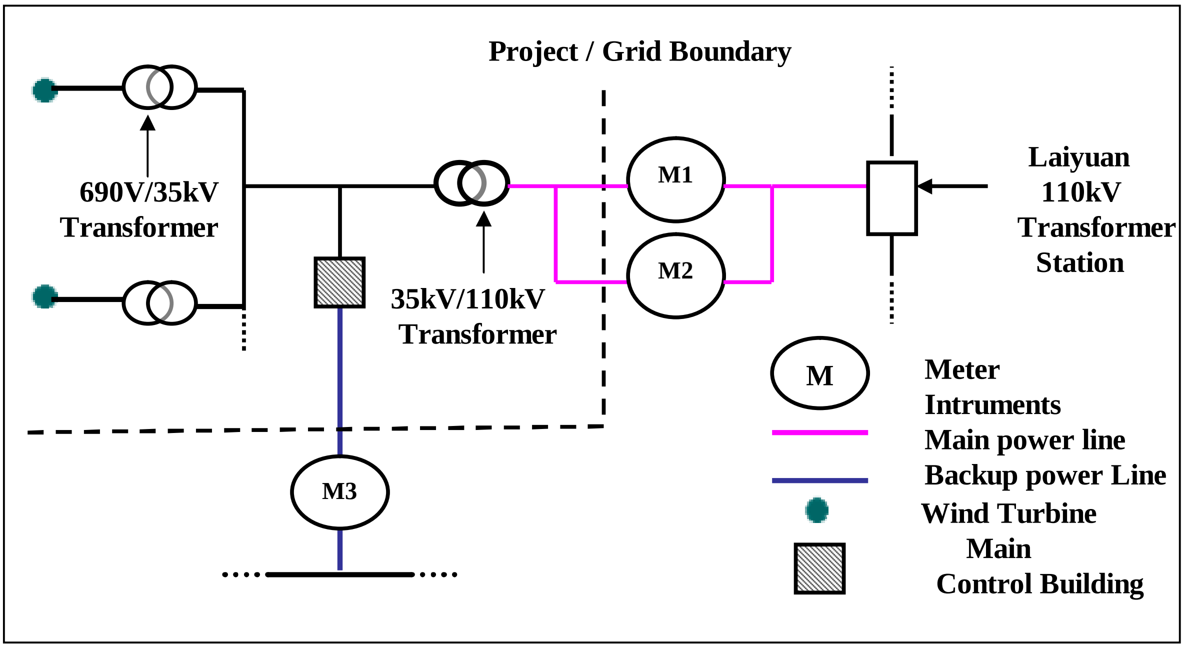

Figure 4.Simplified electrical grid connection diagram

The power line supplying electric power to the grid can also deliver power from the grid to the wind farm in case of emergencies and when the wind farm does not produce enough power for auxiliary power use. The metering equipment runs in two directions and will record two readings, i.e. electricity supplied to the grid ($EG_{s,y}$) and electricity consumed from the grid ($EG_{c,,y}$).

The metering system indicated by the meter instruments at M1 in Figure 4 is the main meter, the metering system indicated by the meter instruments at M2 in Figure.4 is the backup meter, which are both managed, operated and maintained by the project owner. The main meter and the backup one are as like as two peas.

The grid company will monitor the main meter M1. The invoice, billing receipts and accounting vouchers for receipt of payment for power supplied to the grid will serve as a cross-check. The project owner will read and record the main (M1) and backup (M2) instruments monthly.

When blackout in the main power line, the project will use the power through the backup line. Power delivered to the project through a backup power line ($EG_{backupline,y}$) is metered by instruments at M3 in figure 4 which are operated by the grid company but can also be read by the project owner. The project owner will record the readings in electronic and manual form. The project owner will receive monthly billing receipts from the grid company which serve as a cross-check of the accuracy of the record of the readings of meter M3.

Net electricity supplied to the grid by the project is calculated on a monthly basis as:

$$EG_y = EG_{s,y} - EG_{c,y} - EG_{backupline,y}$$

With:

$EG_{s,y}$ electricity supplied by the project through the main power line metered by the instruments at M1.
$EG_{c,y}$ electricity consumed by the project through the main power line metered by the instruments at M1.
$EG_{backupline,y}$ electricity delivered to the project through the backup line metered by the instruments at M3.

4. Calibration

The metering equipments will be properly calibrated and checked annually according to national standard (DL/T448－2000) to ensure its accuracy. The metering equipment shall have sufficient accuracy so that any error resulting from such equipment shall not exceed 0.5% of full-scale rating.

The main calibration will be implemented by Hebei Northern Power Grid and relative recording files will be supplied to the project owner. These recording files will be preserved by the project owner and provide to DOE in Verification

The main meters must be fulfilled calibration in 10 days by both parties in such conditions:

- The error resulting from such equipments exceed allowable scale.
- The operation of one or more elements does not accord with the request of rules.

There will be a maintenance schedule programmed at the start of the operation and will be refreshed according to the plants performance requirement.

5. Information collection and management

It is the responsibility for the project owner to provide necessary information and data for validation and verification. All the monitoring data should be recorded and kept under safe custody of the power plant site manager.

The measurement of the whole production data is controlled and stored in an identified management department.

Any change within the project boundary, such as change in spare or equipment will be recorded and any change in the emission reduction due to such alteration will also be studied and recorded.
Physical document will be stored by the project owner and kept one copy in order to facilitate the verification of DOE.

A very reliable and well-tested software control system will be used to manage data and information collecting and recording. The software presentation pursues clear and easy operation of the wind farm, without need for extensive computer skill.

The monthly records of power supplied to the grid and received from the grid, invoices, relevant accounting documents and billing receipts and the results of calibration shall be collected in a central place by the project owner. Data record will be archived for a period of 2 years after the crediting period to which the records pertain.

6. Procedure in case of damaged metering equipment

In case metering equipment is damaged and no reliable readings can be recorded the project owner will estimate net supply by the proposed project activity according to the following procedure:

a. In case the main meter is damaged only:

By reading the backup meter.

b. In case both the main meter and the backup one are damaged:

The project owner and the grid company will jointly calculate a conservative estimate of power supplied to the grid according to the Power Purchase Agreement. A statement will be prepared indicating

- Tthe background to the damage to metering equipment
- The assumptions used to estimate net supply to the grid for the days for which no record could be recorded the estimation of power supplied to the grid. The statement will be signed by both a representative of the project entity as well as a representative of the grid company.
- The project entity will furthermore document all efforts taken to restore normal monitoring procedures.

7 Monitoring Report

The Project owner will annually prepare a monitoring report which will include among others a summary of daily operations, metering values of power supplied to and received from the grid, copies of sales/billing receipts, a report on calibration and a calculation of emission reductions.

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)

>>

The baseline study and monitoring methodology was completed on05/08/2008

Name of person determining the baseline study and monitoring methodology:

Feng shijun, Consultant, Hebei CDM Project Office
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Hebei CDM Project Office is not a Project Participant.

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:

>>
31/03/2007 Equipment purchasing

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

>>
20 years

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:

>>
08/10/2008 or the date of registration in **EB**, whichever is later.

C.2.1.2. Length of the first crediting period:

>>
7years

C.2.2. Fixed crediting period:

Not applicable

C.2.2.1. Starting date:

>>

C.2.2.2. Length:

>>

SECTION D. Environmental impacts

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

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The Environmental Impact Assessment of the proposed project was completed by the College of Resource and Environmental Sciences, Hebei Normal University, and approved by the Environment Protection Bureau of Hebei Province on 21th August,2006(decree number:[2006]133). Main contents of the Environmental Impact Assessment are summarized as follows:

Ecological impact

Construction Phase

1) Impact on Foliage

① The impact of Booster Station, Temporary Construction Field, The main Approach Road, the waste disposal area (WDA) and the road to WDA

The area of the buildings stated above will be all the shrub-grassland. The original vegetation will be uprooted for the construction. So, constructing the buildings stated above have some adverse impact on vegetation during construction phase.

② Impact of the wind turbine's zone and the cable chutes

The area of the wind turbine's zone and the cable chutes will be all the grassland. The greensward in the area under construction will be divided into pieces (30×30cm) before construction. The pieces of greensward will be replanted in the construction field and maintained by special personnel. The surface soil from permanent occupation and part of the construction field will be piled up in the construction field. The surface soil will be backfilled and then replanted the pieces of greensward after the construction. Therefore, the wind turbine's zone and the cable chutes have little impact on vegetation during construction phase.

③Impact of construction road

The folding-road laying system will be used as the construction road. When constructs finished, the laying device will be removed and the grassland will be recovery after a period of time. Hence, the construction road has little impact on vegetation during construction phase.

In a word, there is little impact on vegetation during construction phase.

2) Impact on other animals

No big mammal has been found in the local area. There are only small mammals just like hare and mice. The small animals disturbed by the construction (like the snail 、the angleworm、the ant) will migrate the similar habitat conditions nearby due to their strong ability of migration. So, the species diversity and population size in the area will not be obviously influenced by the proposed project during the construction phase.

To conclude, the ecological impact of the proposed project during construction phase is insignificant.

Operation Phase

1) Impact on the Vegetation

The area occupied by the proposed wind farm will be 339,822m^2, in which there will be 26,372 m^2 for permanent occupation and 313,450 m^2 for temporary occupation. The original ecological system will be recovery from the third year after the construction period. Additionally, the project owner will plant 2

hm^2 Seabuckthorn and other shrub to make the afforestation rate over 15%.Hence, the impact of the proposed project on the vegetation during operation phase will be minimal.

2) Impact on the animal

No big mammal has been found in the local area. There are only small mammals just like hare and mice. They will migrate to the former address after the construction period. Moreover, there is no rare birds in the project site and the project site is not the thoroughfare of migratory birds.

Therefore, the impact of the proposed project on the animal during operation phase will be minimal.

3) Visual Impact

The wind turbines installed in the grassland will enhance the visual value of the grassland and demonstrate the harmonious relation between human and nature. So, the proposed project has little impact on the local scene.

In a word, the ecological impact of the proposed project during the operation phase will be insignificant.

Environmental Impact

Construction phase

The distance between the temporary construction field and Xiushuipen village is 50m. The shortest distance between the wind turbine and the village is 3500m. The periodic sprinkling will be done during the construction phase and the transport truck will be covered by canvas. The construction will be prohibited from 12:00 to 14:00 and night. So the dust and the noise generated by construction activities will have less impact on local residents.

The main solid waste generated from the site will be construction waste as well as the household waste from the personnel at the site. The solid waste will be carried to the landfill.

The waste water is the sewage from the workers. The sewage will be sprinkled on the site ground. Because of the spot construction manner, the sewage can't be collected. The little sewage will be absorbed into soil or vaporized and will not form the runoff. So the waste water will not damage the water environment.

Operation Phase

1) Sewage

The waster water from the proposed project during operation phase will only be sewage. The sewage processed by the biological septic tank will in compliance with the second level standards in the Table 4 of <Integrated Wastewater discharge Standard > and will be discharged into the collecting pond. The processed sewage will be utilize to irrigate plant in the project site without discharge because it will in compliance with the standards of dry land in the Standards for irrigation water quality (GB5084-1992).

Therefore, the sewage from the proposed project during the operation phase will have less impact on the environment.

2) Noise

It is predicted that the noise contribution of the wind turbines is 43db (A) with a distance of 400m to the wind turbines. The project is located in the rural area which has a lower geoenvironmental background value. So the noise will have less impact on the residents if the distance is over 400m. The closest village to the proposed wind farm is Guoshitang village and the shortest distance between them is 3500m.Hence, the proposed project will have less impact on the residents during the operation phase.

3) Solid waste

The solid waste will be mainly composed of the household garbage generated from the workers in the 110 kV booster station. The yield of the solid waste will be about 3.0t/a. The solid waste will be carried termly to the landfill nearby. Therefore, impact of solid waste on the environment is considered to be insignificant.

Conclusion

The proposed project does not have any major adverse impacts on the environment during its construction and operation phase.

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:

>>

The environmental impacts are considered insignificant.

SECTION E. Stakeholders' comments

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

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The project owner invited the comments of local stakeholders by means of on-site surveys. The staff of Hebei Construction Investment Yuzhou Wind Energy Co., Ltd carried out on-site surveys on the local government agencies, local villagers and residents, the representative of investor and project owner in Yuxian County during June in 2007. The survey was conducted through distributing and collecting responses to a questionnaire which was designed by project owner.

A1l page questionnaire were designed to be easily filled in the following sections:

1) Project introduction
2) Respondent's basic information and education level
3) Questions on:
    - Does the proposed project has positive/negative impact on your livelihoods?
    - Do you agree with the construction of the proposed project?
    - What is your opinion on developing wind farm projects in the local area?
    - Does the proposed project has positive/negative impact on the local environment?
    - Do you think that the proposed project will accelerate the developing of local economy?
4) Space for the respondents' signature and date.

In addition, a questionnaire was advertised in Yuxian County TV Station on January 29th, 2008.Besides the content mentioned above, the following question was added in the advertisement.

- What other comments and suggestions do the respondents have for the company regarding the Project?

E.2. Summary of the comments received:

>>

The on-site survey had 88.8% response rate (40questionnaires returned out of 45) and the following is a summary of the key findings:

- Education level of the respondents: middle level (15), high level (25)
- The status of the respondents: resident (27) , government representative (6),local electric power department(7).
-

Summary of the survey：

Survey Result of Stakeholders			
Does the proposed project has positive/negative impact on your livelihoods?	Positive	Negative	Don't care
	90％	0	10％
Do you agree with the construction of the proposed project?	Yes	No	Don't care
	100％	0	0
What is your opinion on developing wind farm projects in the local area?	Good	Normal	Bad
	87.5％	7.5％	5％
Does the proposed project has positive/negative impact on the local environment?	Positive	Negative	Don't care
	95％	0	5％

Do you think that the proposed project will accelerate the developing of local economy?	Yes	No	Don't care
	82.5%	0	17.5%

No comments of the televiewers have been received from January 29th,2008 to February 6th ,2008.

Conclusion:

The stakeholders are all supportive of this project and no negative comments have been received.

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

>>

No negative comments have been received on the project. Therefore there has been no reason to modify the plans due to comments received.

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 involved in the project activity.

ANNEX 3
BASELINE INFORMATION

The following tables summarize the results from the formulas listed in the ACM0002(Version 6) Baseline methodology for grid-connected electricity generation from renewable sources. The information provided by the table includes data, data sources and the underlying computations.

1 The values of key parameters

Table.1 NCV, Emission factor and Oxidation rate of fuels

Fuel	NCV	Emission factor tc/TJ	Oxidation rate
Raw coal	20908 kJ/kg	25.80	1
Cleaned coal	26344 kJ/kg	25.80	1
Other Cleaned coal	8363 kJ/kg	25.80	1
Coke	28435 kJ/kg	25.80	1
Crude oil	41816 kJ/kg	20.00	1
Gasoline	43070 kJ/kg	18.90	1
Coal oil	43070 kJ/kg	19.60	1
Diesel	42652 kJ/kg	20.20	1
Fuel oil	41816 kJ/kg	21.10	1
Other oil product	38369 kJ/kg	20.00	1
Natural gas	38931 kJ/m3	15.30	1
Coke oven gas	16726 kJ/m3	12.10	1
Other coal gas	5227 kJ/m3	12.10	1
Liquefied petroleum gas	50179 kJ/kg	17.20	1
Refinery gas	46055 kJ/kg	18.20	1

Sources: NCV, China Energy Statistical Yearbook 2006, page 287; Emission factor, 2006 IPCC Guidelines for National Greenhouse Gas Inventories" Volume2 Energy, Table1.3 and Table1.4,Page1.21-1.24, No.1 Chapter

Table.2 Emission factor of thermal plant based on the best technology commercially available in the regional grid of China

	Variable	Efficiency of electricity supply	Emission factor (tc/TJ)	Oxidation rate	Emission factor (tCO2/MWh)
		A	B	C	D=3.6/A/1000*B*C*44/12
Fire-coal plant	$EF_{Coal,Adv}$	35.82%	25.8	1	0.9508
Fire-gas plant	$EF_{Gas,Adv}$	47.67%	15.3	1	0.4237
Fire-fuel plant	*EFOil,Adv*	47.67%	21.1	1	0.5843

2 Explain of calculating the BM emission factor of the North China Power Grid

Step 1: Table.3 Calculating the proportion between CO_2 emission by burning coal, fuel, gas, separately and the total emission.

		Beijing	Tianjin	Hebei	Shanxi	Shandong	Inner Mongolia	Total	NCV	Emission factor	Oxidation factor	Emission
Fuel type	Unit	A	B	C	D	E	F	G=A+…+F	H	I	J	K=G*H*I*J*44/12/100
Raw coal	10000 ton	897.75	1675.2	6726.5	6176.45	10405.4	6277.23	32158.53	20908 kJ/kg	25.80	1	636,062,536
Cleaned coal	10000 ton	0	0	0	0	42.18	0	42.18	26344 kJ/kg	25.80	1	1,051,186
Other Cleaned coal	10000 ton	6.57	0	167.45	373.65	108.69	0	656.36	8363 kJ/kg	25.80	1	5,192,725
Coke	10000 ton	0	0	0	0	0.11	0.21	0.32	28435 kJ/kg	25.80	1	8,608
Subtotal												**642,315,054**
Crude oil	10000 ton	0	0	0	0	0	0.73	0.73	41816 kJ/kg	20.00	1	22,385
Gasoline	10000 ton	0	0	0.01	0	0	0	0.01	43070 kJ/kg	18.90	1	298
Coal oil	10000 ton	0	0	0	0	0	0	0	43070 kJ/kg	19.60	1	0
Diesel	10000 ton	0.48	0	3.54	0	0	0.12	4.14	42652 kJ/kg	20.20	1	130,786
Fuel oil	10000 ton	12.25	0	0.23	0	0	0.06	12.54	41816 kJ/kg	21.10	1	405,690
Other oil product	10000 ton	0	0	0	0	0	0	0	38369 kJ/kg	20.00	1	0
Subtotal												**559,160**
Natural gas	10 million m^3	2.8	0.8	0	27.6	0	0	31.2	38931 kJ/m3	15.30	1	681,417
Coke oven gas	10 million m^3	6.4	7.5	6.2	210.8	0	3.9	234.8	16726 kJ/m3	13.00	1	1,742,396
Other coal gas	10 million m^3	160.9	78.6	388.3	98.8	0	183.7	910.3	5227 kJ/m3	13.00	1	1,111,027
Liquefied petroleum gas	10000 ton	0	0	0	0	0	0	0	50179 kJ/kg	17.20	1	0
Refinery gas	10000 ton	0	0	9.02	0	0	0	9.02	46055 kJ/kg	18.20	1	277,221
Subtotal												**4,812,062**
Total												**647,686,276**

Data source：China Energy Statistical Yearbook 2006
According to the formulas (2), (3) and (4):
λ_{Coal}=99.17%， λ_{Oil}=0.08%， λ_{Gas}=0.74%

Step 2: Calculating the emission factor of thermal plant.

$$EF_{Thermal} = l_{Coal} \times EF_{Coal,Adv} + l_{Oil} \times EF_{Oil,Adv} + l_{Gas} \times EF_{Gas,Adv} = 0.9465(tCO2e/MWh)$$

Step 3: Calculating the BM emission factor of power grid.

Table.4 The installed capacity of North China Power Gird in 2005

Installed capacity	Unit	Beijing	Tianjin	Hebei	Shanxi	Inner Mongolia	Shandong	Total
Thermal	MW	3,833.5	6,149.9	22,333.3	22,246.8	19,173.3	37,332	111,068.7
Hydro	MW	1,025	5	784.5	783	567.9	50.8	3,216.2
Nuclear	MW	0	0	0	0	0	0	0
Wind and other	MW	24	24	48	0	208.9	30.6	335.5
Total	MW	4,882.5	6,178.9	23,165.7	23,029.8	19,950.2	37,413.4	114,620.5

Data source: China Electric Power Yearbook（2006）

Table.5 The installed capacity of North China Power Gird in 2004

Installed capacity	Unit	Beijing	Tianjin	Hebei	Shanxi	Inner Mongolia	Shandong	Total
Thermal	MW	3,458.5	6,008.5	19,932.7	17,693.3	13,641.5	32,860.4	93,594.9
Hydro	MW	1,055.9	5	783.8	787.3	567.9	50.8	3,250.7
Nuclear	MW	0	0	0	0	0	0	0
Wind and other	MW	0	0	13.5	0	111.8	12.4	137.7
Total	MW	4,514.4	6,013.5	20,730	18,480.5	14,321.2	32,923.6	96,983.2

Data source: China Electric Power Yearbook（2005）

Table.6 The installed capacity of North China Power Gird in 2003

Installed capacity	Unit	Beijing	Tianjin	Hebei	Shanxi	Inner Mongolia	Shandong	Total
Thermal	MW	3,347.5	6,008.5	17,698.7	15,035.8	1,1421.7	30,494.4	84,006.6
Hydro	MW	1,058.1	5	764.3	795.7	592.1	50.8	3,266
Nuclear	MW	0	0	0	0	0	0	0
Wind and other	MW	0	0	13.5	0	76.6	0	90.1
Total	MW	4,405.6	6,013.5	18,476.5	15,831.5	12,090.4	30,545.2	87,362.7

Data source: China Electric Power Yearbook（2004）

Table.7 BM emission factor of North China Power Grid

	Installed capacity in 2003	Installed capacity in 2004	Installed capacity in 2005	2005-2003 new installed capacity addition	Ratio to new installed capacity addition
	A	B	C	D=C-A	
Thermal（MW）	84,006.6	93,594.9	111,068.7	27,062.1	99.28%
Hydro（MW）	3,266	3,250.7	3,216.2.7	-49.8	-0.18%
Nuclear（MW）	0	0	0	0	0.00%
Wind（MW）	90.1	137．7	335．5	245．4	0.90%
Total（MW	87,362.7	96,983.2	114,620.5	27,257.8	100.00%
Ration to installed capacity in 2005	76.22%	84.61%	100%		

$EF_{BM,y}$=0.9465×99.28%=0.9397 tCO_2e/MWh.

3The process of calculating OM emission factor:

Table.8 Simple OM emission factor of North China Power Grid in 2003

Fuel type	Unit	Beijing	Tianjin	Hebei	Shanxi	Inner Mongolia	Shandong	Subtotal	Emission factor	Oxidation rate	NCV	CO2 Emission（tCO2e）
									（tc/TJ）	（%）	（MJ/t,km^3）	K=G*H*I*J*44/12/10000
		A	B	C	D	E	F	G=A+B+C+D+E+F	H	I	J	K=G*H*I*J*44/12/1000
Raw coal	10000 ton	714.73	1052.74	5482.64	4528.51	3,949.32	6,808	**22535.94**	25.8	100	20,908	445,737,636.11
Cleaned coal	10000 ton						9.41	**9.41**	25.8	100	26,344	234,510.60
Other Cleaned coal	10000 ton	6.31		67.28	208.21		450.9	**732.7**	25.8	100	8,363	5,796,681.31
Coke	10000 ton					2.8		**2.8**	29.5	100	28,435	75,318.63
Coke oven gas	10 million m^3	0.24	1.71		0.9	0.21	0.02	**3.08**	13	100	16,726	228,559.67
Other coal gas	10 million m^3	16.92		10.63		10.32	1.56	**39.43**	13	100	5,227	914,399.71
Crude oil	10000 ton						29.68	**29.68**	20	100	41,816	910,139.18
Gasoline	10000 ton						0.01	**0.01**	18.9	100	43,070	298.48
Diesel	10000 ton	0.29	1.35	4		2.91	5.4	**13.95**	20.2	100	42,652	440,693.26
Fuel oil	10000 ton	13.95	0.02	1.11		0.65	10.07	**25.8**	21.1	100	41,816	834,672.45
Liquefied petroleum gas	10000 ton							**0**	17.2	100	50,179	0
Refinery gas	10000 ton			0.27			0.83	**1.1**	18.2	100	46,055	33,807.47
Natural gas	10 million m^3		0.5				1.08	**1.58**	15.3	100	38,931	345,076.60
Other oil product	10000 ton							**0**	20	100	38,369	0
Other coke product	10000 ton							**0**	25.8	100	28,435	0
Other energy	10000 ton standard coal	9.83					39.21	**49.04**	0	0	0	0
											Subtotal	455,551,793.43

Data source：China Energy Statistical Yearbook 2004

Electricity imported from Northeast power Grid in 2003：4,244,380 MWh
Average emission factor of Northeast power Grid in 2003：1.1366 tCO_2e/MWh Total electricity supply of Northeast power Grid in 2003：153,227,363 MWh

Total emission of Northeast power Grid in 2003：174,151,899 tCO_2e

Table.9 Thermal plants of North China Power Grid in 2003

Province	Electricity generation	Parasite use rate of power plants	Electricity supply
	（MWh)	（%）	（MWh）
Beijing	18,608,000	7.52	17,208,678.4
Tianjin	32,191,000	6.79	30,005,231.1
Hebei	108,261,000	6.5	101,224,035
Shanxi	93,962,000	7.69	86,736,322.2
Inner Mongolia	65,106,000	7.66	60,118,880.4
Shandong	139,547,000	6.79	130,071,759
Total			425,364,906

Data source: China Electric Power Yearbook（2004）
Total electricity supply of North china power Grid in 2003：429,609,286 MWh
Total emission of North china power Grid in 2003：460,375,781 tCO_2e
Average emission factor of North china power Grid in 2003：1.0716 tCO_2e/M

Table.10 Simple OM emission factor of North China Power Grid in 2004

Fuel type	Unit	Beijing	Tianjin	Hebei	Shanxi	Inner Mongolia	Shandong	Subtotal	Emission factor	Oxidation rate	NCV	CO2 Emission（tCO_2e）
									（tc/TJ）	（%）	MJ/t,km^3	K=G*H*I*J*44/12/10000
		A	B	C	D	E	F	G=A+B+C+D+E+F	H	I	J	K=G*H*I*J*44/12/1000
Raw coal	10000 ton	823.09	1410	6299.8	5213.2	4932.2	8550	**27228.29**	25.8	100	20,908	538,547,476.6
Cleaned coal	10000 ton						40	**40**	25.8	100	26,344	996,856.96
Other Cleaned coal	10000 ton	6.48		101.04	354.17		284.22	**745.91**	25.8	100	8,363	5,901,190.882
Coke	10000 ton					0.22		**0.22**	29.5	100	28,435	5,917.8922
Coke oven gas	10 million m^3	0.55		0.54	5.32	0.4	8.73	**15.54**	13	100	16,726	1,153,187.451
Other coal gas	10 million m^3	17.74		24.25	8.2	16.47	1.41	**68.07**	13	100	5,227	1,578,574.385
Crude oil	10000 ton							**0**	20	100	41,816	0
Gasoline	10000 ton	0.39	0.84	4.66				**5.89**	20.2	100	42,652	0
Diesel	10000 ton	14.66		0.16				**14.82**	21.1	100	41,816	186,070.4874
Fuel oil	10000 ton							**0**	17.2	100	50,179	479,451.3838
Liquefied petroleum gas	10000 ton		0.55	1.42				**1.97**	18.2	100	46,055	0
Refinery gas	10000 ton		0.37		0.19			**0.56**	15.3	100	38,931	60,546.05223
Natural gas	10 million m^3							**0**	20	100	38,369	122,305.6296
Other oil product	10000 ton							**0**	25.8	100	28,435	0
Other coke product	10000 ton	9.41		34.64	109.73	4.48		**158.26**	0	0	0	0
Other energy	10000 ton standard coal											0
											subtotal	549,031,577.7

Data source：China Energy Statistical Yearbook 2005

Electricity imported from Northeast power Grid in 2004：4,514,550 MWh
Average emission factor of Northeast power Grid in 2004：1.1741 tCO_2e/MWh
Total electricity supply of Northeast power Grid in 2004：199,754,431 MWh
Total emission of Northeast power Grid in 2004：170,132,885 tCO_2e

Table.11 Thermal plants of North China Power Grid in 2004

Province	Electricity generation	Parasite use rate of power plants	Electricity supply
	（MWh)	（%）	（MWh）
Beijing	18,579,000	7.94	17,103,827
Tianjing	33,952,000	6.35	31,796,048
Hebei	124,970,000	6.5	116,846,950
Shanxi	104,926,000	7.7	96,846,698
Inner Mongolia	80,427,000	7.17	74,660,384
Shandong	163,918,000	7.32	151,919,202
Total			489,173,110

Data source: China Electric Power Yearbook（2005）
Total electricity supply of North china power Grid in 2004：493,687,660 MWh
Total emission of North china power Grid in 2004：554,332,148 tCO_2e
Average emission factor of North china power Grid in 2004：1.1228 tCO_2e/MWh

Table.12 Simple OM emission factor of North China Power Grid in 2005

Fuel type	Unit	Beijing	Tianjin	Hebei	Shanxi	Inner Mongolia	Shandong	Subtotal	Emission factor	Oxidation rate	NCV	CO2 Emission（tCO2e）
									（tc/TJ）	（%）	（MJ/t,km^3）	K=G*H*I*J*44/12/10000
		A	B	C	D	E	F	G=A+B+C+D+E+F	H	I	J	K=G*H*I*J*44/12/1000
Raw coal	10000 ton	897.75	1675.2	6726.5	6176.5	6277.23	10405.4	**32158.53**	25.8	100	20,908	636,062,535.8
Cleaned coal	10000 ton						42.18	**42.18**	25.8	100	26,344	1,051,185.664
Other Cleaned coal	10000 ton	6.57		167.45	373.65		108.69	**656.36**	25.8	100	8,363	5,192,725.191
Coke	10000 ton					0.21	0.11	**0.32**	25.8	100	28,435	8,607.8432
Coke oven gas	10 million m^3	0.64	0.75	0.62	21.08	0.39		**23.48**	12.1	100	16,726	1,742,396.483
Other coal gas	10 million m^3	16.09	7.86	38.83	9.88	18.37		**91.03**	12.1	100	5,227	2,111,027.27
Crude oil	10000 ton					0.73		**0.73**	20	100	41,816	22,385.49867
Gasoline	10000 ton			0.01				**0.01**	18.9	100	43,070	298.4751
Diesel	10000 ton	0.48		3.54		0.12		**4.14**	20.2	100	42,652	130,786.3867
Fuel oil	10000 ton	12.25		0.23		0.06		**12.54**	21.1	100	41,816	405,689.6325
Liquefied petroleum gas	10000 ton							**0**	17.2	100	50,179	0
Refinery gas	10000 ton			9.02				**9.02**	18.2	100	46,055	277,221.0107
Natural gas	10 million m^3	0.28	0.08		2.76			**3.12**	15.3	100	38,931	681,417.0792
Other oil product	10000 ton							**0**	20	100	38,369	0
Other coke product	10000 ton							**0**	25.8	100	28,435	0
Other energy	10000 ton standard coal	8.58		32.35	69.31	7.27	118.9	**236.41**	0	100	0	0
											Subtotal	647,686,276.3

Data source：China Energy Statistical Yearbook 2006

Electricity imported from Northeast power Grid in 2005：23,423,000 MWh
Average emission factor of Northeast power Grid in 2005：1.1578 tCO_2e/MWh
Total electricity supply of Northeast power Grid in 2005：179,031,569 MWh
Total emission of Northeast power Grid in 2005：207,282,748 tCO_2e

Table.13 Thermal plants of North China Power Grid in 2005

Province	Electricity generation	Parasite use rate of power plants	Electricity supply
	（MWh)	（%）	（MWh）
Beijing	20,880,000	7.73	19,265,976
Tianjing	36,993,000	6.63	34,540,364
Hebei	134,348,000	6.57	125,521,336
Shanxi	128,785,000	7.42	119,229,153
Inner Mongolia	92,345,000	7.01	85,871,616
Shandong	189,880,000	7.14	176,322,568
Total			560,751,013

Data source: China Electric Power Yearbook（2006）

Total electricity supply of North china power Grid in 2005：584,174,013 MWh
Total emission of North china power Grid in 2005：674,805,425 tCO_2e
Average emission factor of North china power Grid in 2005：**1.1551 tCO_2e/MWh**

Average weighted OM Emission Factor：
674805425＋554332148＋460375781）/(584174013+493687660+429609286)=**1.1208 tCO_2e/MWh**

Annex 4

MONITORING INFORMATION

No additional information.