

Chair of the CDM Executive Board
UNFCCC Secretariat
Martin-Luther-King-Strasse8
D-53153 Bonn
Germany

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Ref. CRM/UNFCCC/1792

Response regarding the Request for review regarding 1792 Hebei Shangyi Manjing North Wind Farm Project

Dear Chair of the CDM Executive Board,

We refer to the request for review regarding project activity 1792 Hebei Shangyi Manjing North Wind Farm Project and would like to provide the below response to the issue raised:

Question 1 : The DOE is requested to further explain how the proposed tariff for the project activity has been determined and provide an opinion as to whether the net return to the investor has been reduced as a result of the reduction in tariffs, or whether the net return has been unaffected as a result of other changes such as investment costs.

Response:

a) The suitability of the tariff used in the investment analysis

The approved electricity tariff of all wind farms in Hebei Province built or under construction is listed as follows (*The report of statistics of wind power installed capacity in China* (2007) by Professor Shi Pengfei is adopted as the data source).

Table 1: The approved electricity tariff of all wind farms in Hebei Province

Year	Project	Tariff (with VAT) Yuan/kWh	Reference
prior to 03/2002	Zhangbei Changcheng 9MW wind farm ¹ (construction finished in 1998) ²	0.65	Ji Jia Ge ³ [2002]242 issued by NDRC in Feb 2002

¹ In the PDD, the on-grid tariff was written as 0.984 referred to the statistic by Li Junfeng. According to the confirmation of the developer of Zhangbei Changcheng 9MW wind farm, the tariff of the 0.984yuan/KWh was temporary on –grid tariff approved by Power Supply Company of Zhangjiakou City in 1998 and the tariff was approved as 0.65 yuan/KWh in 2002 finally.

² <http://www.wp-forum.cn/ArticleShow.asp?nid=2713E111-173F-4C22-A6FF-CEB7719F4ABB>

	Chengde Hongsong 3.6MW wind farm (construction finished in 2001) ⁴		
2002.3	The Electric Power Sector Reform Programme		
2006	Chengde Hongsong wind farm	0.6	Ji Jia Guan Zi [2006]57 ⁵ issued by Price Bureau of Hebei province In Jun 2006
	Guohua Shangyi Manjing wind farm	0.6	
	Hebei Shangyi Manjing East Wind Farm	0.6	
	Zhangbei Manjing Wind Farm	0.6	
	Zhangbei Mijiagou 49.5 MW Wind Farm	0.6	
	Hebei Kangbao Wolongtushan 30 MW Wind farm	0.6	
2007	CECIC HKC Danjinghe Wind Farm	0.5006	2008 Wind Power Report
2007	Guyuan 30.6MW Wind farm	0.54	Fa Gai Jia Ge [2007]1260 ⁶ issued by NDRC in Jun 2007
	Hebei Shirensan Wind farm	0.54	
	Hebei Chengde Songshan Wind farm	0.54	
	Hebei Wanquan Yulong Wind farm	0.54	
	Hebei Yuxian Kongzhongcaoyuan 49.5MW Wind Farm Project	0.54	
	Hebei Chongli Qingsanying 49.3MW Wind Farm	0.54	
	Hebei Haixing 49.5MW Wind Farm	0.61	
2007	Hebei Shangyi Manjing West Wind Farm	0.54	Fa Gai Jia Ge [2007]3303 ⁷ issued by NDRC in Dec 2007
	Hebei Weichang Zhangjiawan Wind farm	0.54	
	Hebei Weichang Longyuan Construction Investment Shanwanzi Wind farm	0.54	
2007	Hebei Chengde Yudaokou wind Farm	0.551	2008 Wind Power Report

3 <http://www.fjjg.gov.cn/fjwj/jgfw/gjjgzc/webinfo/2002/02/1187774415686122.htm>

4 <http://hbrb.hebnews.cn/20050617/ca503582.htm>

5 http://www.hebwj.gov.cn/upfiles/xy_col13super_20060703152016007126.htm

6 http://www.hebwj.gov.cn/upfiles/xy_col32gjc_20070718164220007126.htm

7 http://www.gov.cn/zwgk/2008-02/19/content_892937.htm

2008	CECIC Zhangbei Dayangzhuang Wind Farm	0.54	Fa Gai Jia Ge [2008]1876 ⁸ issued by NDRC in Jul 2008
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Source: The report of statistics of wind power installed capacity in China (2007) by Professor Shi Pengfei.

Note: For clarity the project titles from the tariff documents and CDM/VER documentation are used. (The statistics by Professor Shi Pengfei list the projects by location rather than project title.)

The expected on-grid tariff used for the investment analysis in the PDD is taken from the approved FSR. At the time the FSR was being completed, in June 2007, the proposed project had not yet received a tariff approval. Therefore, FSR referred to the latest approved on-grid tariff of nearby wind farms⁹. The on-grid tariff of the nearby wind farms in Hebei province before the FSR was completed was approved as 0.54RMB/kWh in the NDRC notification of 8 June 2007 (Fa Gai Jia Ge [2007]1260). Therefore, a tariff of 0.54RMB/kWh as officially approved for nearby wind farms was used in the FSR and the investment analysis in the PDD.

Additionally, in the two subsequent tariff notifications (Fa Gai Jia Ge [2007]3303 dated 3/12/2007 and Fa Gai Jia Ge [2008]1876 dated 23/07/2008), the tariff of wind farms in the same area in Hebei province was maintained at 0.54 RMB/kWh, indicating that the assumed tariff in the FSR is suitable for the investment analysis. Therefore, 0.54 Yuan/kWh, the most recent tariff approved at the time of writing the FSR, is appropriate and reasonable to be used in the investment analysis in the PDD.

b) The reasons for the decline in tariffs applicable to wind projects exporting electricity to the same grid and whether the net return to the investor has been reduced as a result of the reduction in tariffs, or whether the net return has been unaffected as a result of other changes such as investment costs.

Before the Electric Power Sector Reform Programme in March 2002, there were two small scale wind farms constructed in Hebei province. One is Zhangbei Changcheng 9MW Wind Farm, the earliest experimental wind farm supported by government and ODA. Another is Chengde Hongsong Wind Farm with small installed capacity of 3.6MW. The objective of these early projects was to stimulate wind power development in China, so the tariff (0.65 Yuan/kWh, VAT included) approved by provincial administration bureau is not comparable to subsequent projects.

In March 2002, the State Council issued the Notice of Electric Power Sector Reform Programme to undertake the power sector reform in China. The reform was to divide the former single national power company into regional companies and to separate generation and distribution responsibilities and introduce market forces. High on-grid tariff for wind power would not be continued under the power sector reform.

⁸ http://www.gov.cn/zwgk/2008-08/14/content_1071728.htm

⁹ FSR, p140&p146.

In July 2005 NDRC issued a notification which stipulated that the rate of domestic production of wind turbines should not be less than 70%¹⁰. Under this rule, the domestic production of wind turbines in China was encouraged which resulted in a production increase of wind turbines and relatively lower production costs of domestic manufacturers in terms of same model (capacity) compared to the costs of imported turbines. The increase of domestic production is also of benefit to the reduction of maintenance costs of wind power plants.

According to the law i.e. "*National Renewable Energy Laws*"¹¹ and the policy i.e. "*Interim Regulation for Electricity Tariff of Renewable Energy Power Generation and Appointment of Expenses*" ([2006] 7)¹² made by Chinese government in January 2006, the electricity power generated by the wind power plants should be fully purchased by local grid companies, which benefits the electricity sales revenue of wind power plants compared to the situation before 2006.

As a result of the government's policies to promote the domestic wind power industry, the development of wind farm projects in China has rapidly increased as shown in the table above, and the investment and cost for wind farms have declined in relative terms. Local government issued tariff notification with tariff of 0.60 Yuan/kWh in 2006 and in June 2007 NDRC reassessed the price level of the feed-in tariffs and issued the new tariff notifications [Fa Gai Jia Ge [2007]1260] with a tariff of 0.54Yuan/kWh. After these notifications, the consequent notifications [Fa Gai Jia Ge [2007]3303] in December 2007 and [Fa Gai Jia Ge [2008]1876] in July 2008 showed that the tariff is kept stable as 0.54Yuan/kWh in Hebei Province. At the same time, to further encourage the wind power development, in March 2007, the state council issued a new tax regulation with a decrease of income tax rate from 33% to 25%¹³. So although the tariff in Hebei province was reassessed several times, the incentives to wind farms are not reduced, and the tariff has remained much higher than the average tariff on the grid, applicable to conventional power plants.

c) Impact on the attractiveness of investment in wind power

It is clear from the table above that there has been a massive increase in investment in the sector in Hebei Province over the last few years, indicating that the attractiveness of investment in wind power has not been negatively affected.

While the tariff was reduced slightly for some areas in Hebei when NDRC first issued the tariff notification, the tariff setting by the Central government provides a greater degree of certainty and stability. Also, a domestic wind power industry had been created, reducing the dependence on more expensive imported equipment. Finally, in March 2007, the state council issued a new tax regulationⁱ with a decrease of income tax rate from 33% to 25%. So, as explained above,

10 <http://www.86wind.com/info/detail/34-6754.html>, fagainengyuan [2005]1204

11 http://www.windpower.org.cn/news/links/fl_2005_0510_02.htm;

12 Fagaijiage [2006]7

13 <http://www.chinagender.com/html/ZC/200809/25-132.html>, No 63

although the tariff in Hebei province was reassessed several times, the incentives to wind farms are not reduced, and the tariff has remain much higher than the average tariff on the grid, applicable to conventional power plants.

d) The project is additional, even with the higher tariff

According to the tariff notifications by NDRC¹⁴, the tariff of the wind farm projects was officially approved, which was referred to as a two-phase tariff, namely that there are two phases: firstly within 30,000 hours of operation (first phase tariff) and secondly after 30,000 hours of operation (second phase tariff). The tariff for the first phase (within 30,000 hours of operation) will be fixed (i.e. 0.54 Yuan/kWh), the tariff after 30,000 hours of operation will be the average tariff of the local grid which is significantly below the tariff level granted for the initial period. Thus the original tariff assumption, 0.54 RMB/kWh for the whole life of the proposed project, made at the time of the investment decision has been proven to be conservative.

Furthermore, even if the highest previous tariff of 0.61 Yuan/kWh after the Electric Power Sector Reform Programme in the Hebei province is used in the investment analysis of the proposed project, the IRR would be 7.25%, which is still lower than the benchmark. The IRR is calculated as follows:

1. The tariff in the first 30,000h is fixed as 0.61yuan/RMB approved by NDRC (according to the estimated annual operation hours of 2123 h in the FSR, it will be adopted in 14 years)
2. 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 Hebei province in 2007 was 0.3453 Yuan/kWh¹⁵ (adopted in other 6 years).

Conclusion

Following the discussion above, it is concluded that the tariff used in the investment analysis is suitable. It is shown that the tariffs have only been higher in the early years of the development of the wind power industry, when few projects were built, and that the tariff has been stable after June 2007. It is shown that the attractiveness of investment in wind power has not been significantly negatively affected, and that there has been a large increase in investment in the sector in Hebei Province over the last few years. Finally, it is shown that even with the highest tariff awarded since the Power Sector Reform Programme in March 2002, the proposed project activity would not reach the benchmark and would not be economically attractive without CDM registration.

¹⁴ Documents [2007]1260, [2007]3303, [2008]1876

¹⁵ <http://www.dianliz.com/article/20081030/3032.html>

Question 2: The DOE should further substantiate the validation of the following input values in line with VVM para. 111 (c) and 112 (a): total investment, O&M costs and tax rates.

Response:

According to the Methodology of Feasibility Study Report on Wind Farm Project (Fagainengyuan [2005]899)¹⁶, the FSR was developed by an authorized third party of Beijing Jikedian Renewable Energy Development Center in November 2007 and officially approved by Development and Reform Committee of Hebei Province on 27 February 2008.

The input values include total investment, O&M cost and tax rates used in PDD are derived from the Feasibility Study Report; such input values are listed in the table below:

Table 2: Input values of the proposed project

Total investment	437.18 million yuan	P116 in FSR
O&M cost	10.65 million yuan	P133&134 in FSR
Education tax	3%	P118 in FSR
City build tax	5%	P118 in FSR
Value added tax (VAT)	8.5%	P118 in FSR
Revenue tax rate	25%	P118 in FSR

2.a. Total investment

The total investment is 437.18 Million Yuan and the investment per kilowatt is 8,832 Yuan for the proposed project in the FSR approved by Hebei DRC, which is reasonable according to the investment level of wind power project in China¹⁷.

Furthermore, the comparison with other similar scale projects which were located at the same region, Hebei Province in China, is shown below. All the projects in the following table have been registered successfully on UNFCCC website or submitted to EB for registration.

Table 3: Similar scale CDM projects in Hebei province

reference No	Project title	installed capacity(MW)	Investment (million yuan)	Investment per kWh (yuan/ kWh)
0842	Hebei Shangyi Manjing East Wind Farm Project	49.5	468.66	9468
0845	Zhangbei Mijiagou 49.5 MW Windfarm Project	49.5	481.42	9726
0877	Hebei Chengde Songshan Wind Farm Project	49.5	411	8303
1855	CECIC Zhangbei Dayangzhuang Wind Farm Project	49.5	378.17	7640
1873	Hebei Chengde Huifeng Windfarm Project	49.5	534.525	10798

¹⁶ <http://old.blog.edu.cn/user1/124/archives/2005/1055283.shtml>

¹⁷ <http://news.stockstar.com/info/Darticle.aspx?id=JY,20060324,00059242>, the average investment level of the wind farm is 8000-10000yuan/KWh.

2040	Hebei Shangyi Manjing West Windfarm Project	49.5	455.668	9205
2067	Hebei Shirensan Wind Power Project	49.5	490.44	9908
2088	Hebei Yuxian Kongzhongcaoyuan 49.5MW Wind Farm Project	49.5	522.95	10565
2140	Hebei Chongli Qingsanying 49.3MW Wind Farm Project	49.3	509.56	10336
1895	CECIC Zhangbei Gaojialiang Wind farm Project	49.5	437.86	8846
1715	chengde fengze Wind farm Project	49.5	503.33	10168
2125	Guohua Hebei Huanghua Wind farm Project	49.5	491.93	9938
1792	the proposed project	49.5	437.18	8832

As the table indicated, compared with the data reported for other similar CDM projects in the Hebei province, the total investment is within the acceptable range. The average investment level is calculated as 9,575Yuan/kWh, which is higher than that of the proposed project. Therefore, the total investment in FSR is credible and appropriate to make investment decision.

2.b. Annual O&M cost

The annual O&M costs mainly include maintenance costs, salary and welfare, material cost and other costs. The design institute of FSR estimated the value based on the investigation of operated wind power projects in China.

By comparing the percentage of average annual O&M costs relative to total investment of the proposed project with other CDM wind projects in Hebei province, the validity of the O&M costs can be confirmed. Furthermore, compared with the projects in table below, the average ratio of average annual O & M costs against total investment is 3.01%, which is higher than the one of the proposed project, 2.44%. Therefore, the O & M cost in the FSR is credible and appropriate to make investment decision.

Table 4: Annual O&M costs of the similar CDM project in Hebei province

Reference no	Project Title	Installed capacity(MW)	Investment (Million Yuan)	O&M cost (Million Yuan)	O&M cost/ investment
0842	Hebei Shangyi Manjing East Wind Farm Project	49.5	468.66	23.00	4.91%
0845	Zhangbei Mijiagou 49.5 MW Windfarm Project	49.5	481.42	10.10	2.10%
0877	Hebei Chengde Songshan Wind Farm Project	49.5	411.00	17.00	4.14%

1855	CECIC Zhangbei Dayangzhuang Wind Farm Project	49.5	378.17	13.82	3.65%
1873	Hebei Chengde Huifeng Windfarm Project	49.5	534.53	12.40	2.32%
2040	Hebei Shangyi Manjing West Windfarm Project	49.5	455.67	12.43	2.73%
2067	Hebei Shirensan Wind Power Project	49.5	490.44	25.53	5.21%
2088	Hebei Yuxian Kongzhongcaoyuan 49.5MW Wind Farm Project	49.5	522.95	10.75	2.06%
2140	Hebei Chongli Qingsanying 49.3MW Wind Farm Project	49.3	509.56	11.36	2.23%
1895	CECIC Zhangbei Gaojialiang Wind farm Project	49.5	437.86	6.56	1.50%
1715	chengde fengze	49.5	503.33	13.92	2.77%
2125	Guohua Hebei Huanghua	49.5	491.93	12.70	2.59%
1792	the proposed project	49.5	437.18	10.65	2.44%

2.c. Tax rates

The tax rates are listed as follows:

Table 5: The tax rates of the proposed project

Item	Value
Value added tax (VAT)	8.5%
Income tax	25%
Education tax (of the VAT)	3%
City building tax (of the VAT)	5%

i: Value added tax:

The VAT of 8.5% used in approved FSRs for wind power industry is half that of normal VAT of 17%, is in accordance with National VAT Law issued by State Administration of Taxation (State council [1993]134)¹⁸ 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 01/12/2001¹⁹.

ii: 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 set as 25%.²⁰

iii: Education tax

18 <http://www.chinatax.gov.cn/n480462/n480513/n480919/index.html> , State Administration of Taxation, National VAT Law,

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

20 <http://www.chinagender.com/html/ZC/200809/25-132.html>

According to the Interim Provision on Education Tax Law, the education rate is 3% of VAT²¹.

iv: City building tax

According to the National City Tax Law, the city building tax rate is 5% of VAT²².

Question 3: The PP/DOE are requested to amend the emission factor and emission reduction calculations using data which was available at the time of commencing validation.

The PDD (version 1.1) for global stakeholder publication (GSP) was published on UNFCCC website on July 4, 2008, which used the baseline Emission Factor, 1.0755 tCO₂/MWh, issued by China DNA in August 2007.

During the validation process, the China DNA has updated the Emission Factor on 18 July 2008. Thus, the validation team required the PP to update the Emission Factor and relevant calculations based on the latest data of Yearbooks of 2007. Therefore the baseline emission factor was revised as 1.0548tCO₂/MWh in the PDD submitted for registration.

However, the date validation started (GSP) was July 4, 2008, at that time the latest China Electric Power Yearbook 2007 and China Energy Statistical Yearbook 2007 were already available but latest standard coal consumption of coal fired power plants power supply for most advanced commercialized technologies in 2005 was not available . So the emission factor should be recalculated as follows:

1. The emission factors and oxidation factors of fuels were used according to IPCC2006.
2. The data China Electric Power Yearbook 2007 and China Energy Statistical Yearbook 2007 were used.
3. The available standard coal consumption of coal fired power plants power supply for most advanced commercialized technologies (2005) in China was used as the value issued by China DNA in August 2007.

Based on the available data at the time of commencing validation, the Emission Factor was amended as follows:

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)	0.9041
Baseline Emissions Factor ($EF_{grid,CM,y}$ in tCO ₂ /MWh)	1.0637

21 http://www.law-lib.com/law/law_view1.asp?id=99771

22 <http://202.108.90.130/chinatax/jibenfa/jibenfa0401.htm>

Therefore, the emission reduction calculations used the available Emission Factor was amended below:

Table 6 :Estimated emission reductions of the proposed project in first crediting period

Years	Annual estimation of emission reductions in tonnes of CO₂e
2009/09/01-2009/12/31	36,889
2010	111,784
2011	111,784
2012	111,784
2013	111,784
2014	111,784
2015	111,784
2016/01/01-2016/08/31	74,895
Total estimated reductions (tonnes CO ₂ e)	782,488
Total number of crediting years	7 years
Annual average over the crediting period of estimated reductions (tonnes of CO ₂ e)	111,784

*Note: * using 12-monthly periods from the start of the crediting period*

Table 7 :Values obtained when applying formulae above (tCO₂e)

Year	Estimation of project activity emissions (tonnes of CO₂e)	Estimation of baseline missions (tonnes of CO₂e)	Estimation of leakage (tonnes of CO₂e)	Estimation of overall emission reductions (tonnes of CO₂e)
2009/09/01-2009/12/31	0	36,889	0	36,889
2010	0	111,784	0	111,784
2011	0	111,784	0	111,784
2012	0	111,784	0	111,784
2013	0	111,784	0	111,784
2014	0	111,784	0	111,784
2015	0	111,784	0	111,784
2016/01/01-2016/08/31	0	74,895	0	74,895
Total (tCO ₂ e)	0	782,488	0	782,488
<i>Note: * using 12-monthly periods from the start of the crediting period</i>				

Yours sincerely,



Dr John Green

Chief Operations Officer