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Att: CDM Executive Board

Your ref.:
CDM Ref 2117

Our ref.:
ZXJ/RAFI/MLEH

Date:
30 June 2009

Response to request for review of the project “Heilongjiang Yilan Hezuolinchang Phase II Wind Power Project” (2117)

Dear Members of the CDM Executive Board,

We refer to the issues raised by the requests for review by three Board members regarding the project activity, “Heilongjiang Yilan Hezuolinchang Phase II Wind Power Project” (UNFCCC reference number 2117) and would like to provide the following initial responses to the issues raised.

Comment 1: The DOE is requested to further clarify the suitability of the input values to the investment analysis as per the requirements of EB 38 paragraph 54(c) guidance.

DNV Response:

The FSR¹ was finalized in January 2008 by Xinjiang Wind and Electricity Design Consulting Co., Ltd. which is 10 days prior to the decision to proceed with the project activity (i.e. the start date of the project) which was on 26 February 2008. Given this short period of time between finalising of the FSR and the decision to proceed with the project activity it is unlikely in the context of the project that the input values would have materially changed and that it is thus reasonable to assume that the FSR has been the basis of the decision to proceed with the investment in the project.

Since these parameters in the FSR were substantiated by experts and approved by the Development and Reform Commission of Heilongjiang Province on 19 February 2008, the use of the data from the FSR for use in the IRR analysis was deemed reasonable by DNV. In the validation report version 01 of 25 March 2009, the following has been confirmed by DNV:

- The static total investment of the project is 222.14 million RMB and was taken from the FSR;
- The power tariff is 0.5717 before accumulative operation of 30 000 hours, and 0.4209 after accumulative operation of 30 000 hours, which is also sourced from the FSR;
- Operating and maintenance costs reflect local practices. The increase in cost year by year is due to aging and is not due to inflation, which is not included in FSRs in China.

DNV by using its local sectoral expertise was able to confirm that the costs which have been adopted in the FSR represent current situation of Chinese wind sector. DNV confirms that the fixed investment costs, material costs and labor costs are appropriate for a wind farm of this size.

¹ Feasibility Study Report of Heilongjiang Yilan Hezuolinchang Phase II Wind Power Project

Further information is provided below in regards to how DNV has validated by cross-checking or other appropriate manners, that the input values from the FSR are valid and applicable at the time of the investment decision as per the requirements of EB 38 paragraph 54 (c).

Total static investment

In China, the investment cost per kW for wind power projects is approximately 9 266 RMB/ kW ² and the investment cost per kW of Heilongjiang Yilan Hezuolinchang Phase II Wind Power Project is 9 012 RMB/kW. Thus the total static investment for the Heilongjiang Yilan Hezuolinchang Phase II Wind Power Project is within the normal range of total static investment for wind power projects.

Bus bar Tariff

The tariff in the FSR dated January 2008 and approved by Development and Reform Commission of Heilongjiang Province is 0.5717 (excl. VAT) before accumulative operation of 30 000 hours, and 0.4209 (excl. VAT) after accumulative operation of 30 000 hours. The same has been the basis for IRR calculations and was also valid at decision making to invest in the project. Both the PDD and corresponding IRR calculations used this consistent tariff which has been verified by DNV during validation.

The approved guiding tariff by NDRC (National Development and Reform Committee) on 23 July 2008³ is 0.5622 Yuan/kWh (excl. VAT) within 30000 operation hours. The applied tariff of 0.5717 (excl. VAT) within 30 000 hours of operation being higher than the approved guiding tariff was considered conservative by DNV.

In addition, using the average tariff of 0.4209 (excl. VAT) for Heilongjiang Power Grid beyond 30 000 operation hours applied in the IRR calculation, was also considered conservative since the benchmark thermal power tariff in Heilongjiang grid is only 0.30 Yuan/kWh (excl. VAT)⁴.

Annual Electricity Output (theoretical and effective)

The observation and measurements of the wind resources have been carried out from 1971 to 2000 as indicated in the FSR. The yearly data was corrected based on the historical meteorological data of more than 30 years (from 1971 to 2000), provided by local metrological station.

The revised data was processed in the professional WAPS software to calculate the annual theoretical power generation. To obtain the annual effective power generation, the FSR developer discounted the above theoretical annual generation by considering factors such as air density, trailing stream, wind turbine efficiency etc. The plant load factor of Heilongjiang Yilan Hezuolinchang Phase II Wind Power Project is 26% (corresponding to full operation hours of 2273); this is reasonable according to the range of load factors from 20% to 40% stated in the document “Explanation regarding the issue for discount of theoretical annual generation of wind power in China” issued by NDRC dated 02 June 2009⁵. Compared with 4 similar wind projects⁶

² Investment cost per kW for wind power projects in China
http://chinanews.xinhuanet.com/jszb/2007-09/28/content_11276436.htm

³ http://jgs.ndrc.gov.cn/zcfg/t20080813_230722.htm

⁴ Notice on adjustment of the tariff in NEPG issued by NDRC in 2006 (<http://china.findlaw.cn/fagui/jj/26/104270.html>)

⁵ Explanation regarding the issue for discount of theoretical annual generation of wind power in China” issued by NDRC dated 02 June 2009 <http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File2278.pdf>

⁶ <http://cdm.unfccc.int/Projects/DB/DNV-CUK1218657862.08/view>
<http://cdm.unfccc.int/Projects/DB/DNV-CUK1218460144.88/view>
<http://cdm.unfccc.int/Projects/DB/DNV-CUK1169849299.65/view>
<http://cdm.unfccc.int/Projects/DB/DNV-CUK1218296845.76/view>

(full operation hours ranging from 2070 to 2230) in the same region, DNV confirmed that effective annual electricity output assumed in the FSR of Heilongjiang Yilan Hezuolinchang Phase II Wind Power Project is conservative and reasonable.

O&M Costs

The annual O&M cost of Heilongjiang Yilan Hezuolinchang Phase II Wind Power Project is 6.969 Million RMB, mainly including maintenance costs, salary and welfare, material cost and other costs. The annual O&M costs (annual O&M: 6.969 Million RMB) is 3.13% of the total static investment of the proposed project (static total investment: 222.14 Million RMB) which is comparable with O&M costs relative to the static total investment which ranges from 2.75 to 4.3% for 4 similar projects in the same region.

Other relative inputs

For the other parameters such as depreciation rate, residue value, working capital, project life time, taxes etc.; DNV confirmed that all those input parameters used in the financial analysis of Heilongjiang Yilan Hezuolinchang Phase II Wind Power Project are all consistent with the financial parameters in the FSR.

Comment 2: The DOE is requested to confirm the appropriateness of the electricity tariff assumed in the PDD, in comparison with previous tariff notifications for similar projects in the same region which commenced since 2002 and whether such information was available at the time the FSR was prepared.

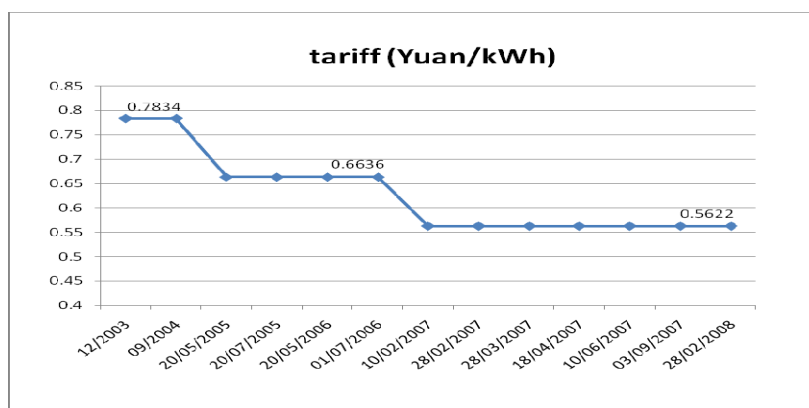
DNV Response:

In the Heilongjiang Province where the Heilongjiang Yilan Hezuolinchang Phase II Wind Power Project is located, the tariff trend from 12 other wind projects⁷ commencing after 2002 in Heilongjiang province is presented in the following diagram.

The below diagram shows that the tariff was decreasing from 0.7834 to 0.5622 Yuan/kWh (Excl.VAT), and the tariff of 0.5622 Yuan/kWh (Excl.VAT) was the prevailing tariff when the FSR of Heilongjiang Yilan Hezuolinchang Phase II Wind Power Project was finalized in January 2008.

⁷ <http://www.newenergy.org.cn/Html/00412/20041605.html>
 Yichun Daqingshan : <http://cdm.unfccc.int/Projects/DB/DNV-CUK1167140122.7/view.html>
 HuaFu Muling : <http://cdm.unfccc.int/Projects/DB/DNV-CUK1169849299.65/view.html>
 Yichun Shimaoding: <http://cdm.unfccc.int/Projects/DB/DNV-CUK1180509799.76/view.html>
 Yichun Erduoyan : <http://cdm.unfccc.int/Projects/DB/DNV-CUK1172484180.34/view.html>
 Yichun Xiaochengshan: <http://cdm.unfccc.int/Projects/DB/DNV-CUK1227680375.56/view>
 Hengdaishan West: <http://cdm.unfccc.int/Projects/DB/DNV-CUK1218657862.08/view>
 Yilan Maanshan: <http://cdm.unfccc.int/Projects/DB/DNV-CUK1218296845.76/view>
 Fujin Phase II: <http://cdm.unfccc.int/Projects/DB/BVQI1212750031.01/view>
 Yilan Hezuolinchang: <http://cdm.unfccc.int/Projects/DB/DNV-CUK1218463806.5/view>
 Hengdaishan East: <http://cdm.unfccc.int/Projects/DB/DNV-CUK1218460144.88/view>
 Wuerguli: <http://cdm.unfccc.int/Projects/DB/BVQI1218624268.71/view>

Figure 1 Trends for the tariff of the projects commenced after 2002 in Heilongjiang province



Two periods can clearly be identified from the above diagram:

1) **Uncompetitive period:** A few wind farm projects developed this period were enjoying the benefited policy from more favourable tariff⁸ of 0.7843 Yuan/kWh (Excl.VAT) and were funded by international low interest loan⁹ or national soft loan¹⁰. The projects are demonstration projects of Heilongjiang Mulan Wind Power Project and Heilongjiang Fujin Wind Power Project. Therefore, the projects developed in this period can not be regarded as comparable projects to the proposed project.

2) **Competition initiated period:** The “Provisional Measures for the Administration of the Electricity On-Grid Tariffs” (“On-Grid Tariff Measures”, taking effect on 1 May 2005), aims to regulate the determination of the electricity tariff offered to power producers in order to stabilize tariffs and increase competitiveness in the electricity market.

After 1 May 2005 the observed decrease in the tariff has not substantially lowered the return on investment of wind farm projects in Heilongjiang Province as the market share of domestic equipment has increased. Such an equipment investment decrease is likely to counter the impact of lower tariffs on the return of investment.

	2004	2005	2006	2007
Market share of domestic wind power manufacturers in China (%)	25	29	41.3	55.9

Comment 3: The DOE is requested to further clarify how it has validated the investment analysis, in particular, the 5% escalation applied to the operating cost at the same time other input values are fixed.

⁸ <http://www.newenergy.org.cn/Html/00412/20041605.html>

⁹ <http://www.newenergy.org.cn/Html/9991/19991799.html>

¹⁰ <http://www.chinapower.com.cn/newsarticle/1005/new1005504.asp>

DNV Response:

The O&M costs of the project are composed of five costs that include: maintenance costs, annual salaries for the employees, insurance premium of fixed assets, material fee and other costs. Among those five cost categories, escalation was only assumed for maintenance, while the other four cost categories were kept constant while calculating the project-IRR. The rationale rests on equipment aging and the failure rate rise etc. This was done as per the *Economical Assessment Method and Parameters for Construction Projects*, which states that the escalation could be applied to the maintenance costs and the maintenance costs could have an increase over the operation period.

The FSR developer used its expertise (e.g. wind resource evaluation, generation optimizing, electricity transmission, construction and economic evaluation, etc) based on the project-specific situation: e.g. climate, traffic condition, geographic factor etc, to project financial parameters in the FSR.

Hence, it is the validation team's opinion that the 5% escalation applied to the operating cost is reasonable.

Comment 4: The data used to recalculate the grid emission factor (12/2008) in the PDD submitted for registration was not available at the commencement of validation (10/2008). The PP and DOE are therefore requested to amend the grid emission factor using data, which was available at this date and provide the corresponding calculation of the emission reductions.

DNV Response:

The PDD version 2.0 of 30 August 2008 for the Heilongjiang Yilan Hezuolinchang Phase II Wind Power Project was made publicly available on UNFCCC's website on 30 October 2008. The Chinese DNA updated the emission factor for the China's Grid as follows around this date:

Date published	Links on China's DNA	NECPG (Northeast China Power Grid)		
		OM	BM	CM
18 July 2008	http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/2008/200887164119674.pdf OM: http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File1888.pdf BM: http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File1875.pdf	1.2561	0.7946	1.1407
30 December 2008	http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/2008/20081230102527637.pdf OM: http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File1888.pdf BM: http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/2008/20081231101111351.pdf	1.2561	0.8068	1.1438

The calculations by the DNA in July and December 2008 used the same data, i.e. electricity generation and fuel consumption data including data up to the year 2006. However, in July 2008 the DNA determined that the BM emission factor based on the capacity increase from 2000 to 2006, which is 19.39% of 2006 installed capacity. In December 2008, the DNA corrected the calculations of the BM emission factor and based it on the capacity increase from 1999 to 2006, which is 23.81% of 2006 installed capacity (Note that the "Tool to calculate the emission factor for an electricity system" requires that the generation of the BM power plants represent at least 20%).

The emission factor of 1.1438 tCO₂/MWh thus applies the most recent data available at the time of validation, i.e. data of 1999 to 2006 was used in the calculation of the ex-ante emission factor of 1.1438 tCO₂/MWh. Compared to the emission factor of 1.1407 tCO₂/MWh applied in the PDD

published for stakeholder comments, the calculation of the BM was corrected to consider the capacity addition during 1999 to 2006, which is 23.81% of 2006 installed capacity, instead of the capacity addition during 2000 to 2006, which is 19.39% of 2006 installed.

We sincerely hope that the Board find our elaboration on the above satisfactory.

Yours faithfully
for DET NORSKE VERITAS CERTIFICATION AS



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