

Langemarckstrasse 20
45141 Essen
Germany

Phone: +49 201 825-0
Fax: +49 201 825-2517

Info.tncert@tuev-nord.de
www.tuev-nord-cert.com

TÜV®

CDM Executive Board

Our / Your Reference

Contact
Rainer Winter
E-Mail: rwinter@tuev-nord.de

Direct Dial
Phone: -3329
Fax: -2139

Date
28.09.2009

Request for Review

“Heilongjiang Fujin 48MW Wind Power Project” (2573)

Dear Sir/Madam,

Please find below the response of the TÜV NORD JI/CDM Certification Program and the project participant to the request for review for the above mentioned project No. 2573.

If you have any questions do not hesitate to contact us.

Yours sincerely,

TÜV NORD JI/CDM Certification Program



Rainer Winter

Request for Review (1)	
Issue raised by EB Members / DNA	<i>The DOE should explain how it has validated the investment analysis in line with the VVM paragraph 112 (a) and (c) , in particular the assumed 6% yearly escalation in "Operating cost" as appropriate, while the other parameters remain constant.</i>

Response of PP

We would like to add the following information:

The operating costs (O&M costs) calculation of the proposed project was based on the approved Feasibility Study Report (FSR). The FSR was completed in Oct 2007 by an independent body, China Fulin Wind Energy Development Co., Ltd which is qualified to compile design reports for wind power projects and it has obtained a “grade B” license in new energy industry issued by the National Development and Reform Commission. The FSR was approved by Heilongjiang Province Development and Reform Commission.

Regarding the escalation for the O&M costs, the clarification is provided in the following:

1. The O&M costs of the proposed project includes five parts which are maintenance costs, annual welfares of employees, cost on using equipment of phase I project, Insurance premium and other fee. The increase in the maintenance costs results in an increase in the O&M costs, as the rest parameters are set basically fixed in the operation period, as shown in Table 1.

Year		1	2	3	4	5	6	7	8	9	10
Maintenance costs of fixed assets	25840		702	745	789	837	887	940	996	1056	1120
Welfares of employees	2820		141	141	141	141	141	141	141	141	141
Cost on using equipment of phase I project	840		42	42	42	42	42	42	42	42	42
Insurance premium of fixed assets	3793		190	190	190	190	190	190	190	190	190
Others Fee	6720		336	336	336	336	336	336	336	336	336
Operating cost	Average 2001		1411	1453	1498	1545	1595	1649	1705	1765	1828

Table 1: O&M costs over the operation time

Year	11	12	13	14	15	16	17	18	19	20	21
Maintenance costs of fixed assets	1187	1258	1333	1413	1498	1588	1683	1784	1892	2005	2125
Welfares of employees	141	141	141	141	141	141	141	141	141	141	141
Cost on using equipment of phase I project	42	42	42	42	42	42	42	42	42	42	42
Insurance premium of fixed assets	190	190	190	190	190	190	190	190	190	190	190
Others Fee	336	336	336	336	336	336	336	336	336	336	336
Operating cost	1895	1967	2042	2122	2207	2297	2392	2493	2600	2714	2834

2. Based on economic evaluation code (Economical Assessment Method and Parameters for Construction Project Version 3¹) an escalation could be applied to the maintenance costs and the costs could have an increase over the operation period.
3. By examining the registered CDM wind power projects in Heilongjiang province (listed in the Table 2 as following), it is noted that 9 out of 12 projects have adopted an escalating operating cost method, which means it is common in Heilongjiang province.

No.	Project No.	Registered Data	Project	Does the O&M cost escalate during the operation period?
1	829	06/04/2007	Yichun Daqingshan Wind Power Project ²	Yes
2	906	11/05/2007	Heilongjiang Huafu Muling Wind Farm Project ³	No
3	969	18/05/2007	Yichun Erduoyan Wind Power Project 28.05 MW ⁴	Yes
4	1147	27/08/2007	Yichun Shimaodingzi Wind Power Project 30.6MW ⁵	Yes
5	1209	30/09/2007	Wuerguli 30 MW Wind Power Project ⁶	Yes
6	1310	17/12/2007	Guohua Qiqihaer Fuyu 1st Stage Wind Farm Project ⁷	Yes
7	2023	15/12/2008	Heilongjiang Dajiazishan 49.5MW Wind Power Project ⁸	No
8	2056	26/12/2008	Heilongjiang Huanan Hengdaishan East Wind Power Project ⁹	Yes
9	2049	27/12/2008	Heilongjiang Beiantun 49.5MW Wind Power Project ¹⁰	No
10	2200	19/01/2009	Heilongjiang Huanan Hengdaishan West Wind Power Project ¹¹	Yes
11	2035	23/01/2009	Heilongjiang Yilan Maanshan Wind Power Project ¹²	Yes
12	1816	13/02/2009	Heilongjiang Shiwenzi Wind Farm Project ¹³	Yes
				9 out of 12 projects

Table 2: Escalation/ non escalation of O&M costs in other registered CDM projects

4. Due to the short history of wind power development in China and the unavailability of a unified national standard on valuing the O&M costs, particularly the maintenance costs included, have been usually predicted by experienced experts in the design institutes based on the project specific

¹ Issued by the NDRC

² <http://cdm.unfccc.int/Projects/DB/DNV-CUK1167140122.7/view>

³ <http://cdm.unfccc.int/Projects/DB/DNV-CUK1169849299.65/view>

⁴ <http://cdm.unfccc.int/Projects/DB/DNV-CUK1172484180.34/view>

⁵ <http://cdm.unfccc.int/Projects/DB/DNV-CUK1180509799.76/view>

⁶ <http://cdm.unfccc.int/Projects/DB/BVQI1182384587.37/view>

⁷ <http://cdm.unfccc.int/Projects/DB/TUEV-SUED1188220544.5/view>

⁸ <http://cdm.unfccc.int/Projects/DB/DNV-CUK1218275959.9/view>

⁹ <http://cdm.unfccc.int/Projects/DB/DNV-CUK1218460144.88/view>

¹⁰ <http://cdm.unfccc.int/Projects/DB/DNV-CUK1218452051.84/view>

¹¹ <http://cdm.unfccc.int/Projects/DB/BVQI1207772996.31/view>

¹² <http://cdm.unfccc.int/Projects/DB/DNV-CUK1218296845.76/view>

¹³ <http://cdm.unfccc.int/Projects/DB/BVQI1207772996.31/view>

	<p>situation: e.g. climate, traffic condition, geographic factor etc. As the design institute for wind power projects contains a number of experts covering wide fields (e.g. wind resource evaluation, generation optimizing, electricity transmission, construction and economic evaluation, etc), its FSR, itself is on the basis of expertise. FSR has also to be validated by the sector experts before it could be approved. Therefore, the technology applied and the values set in the FSR could be trusted.</p> <p>In the operation period, the equipment will certainly be aging, the failure rate will increase, and some parts will be replaced, consequently the maintenance costs will have an increase. So the maintenance rate in FSR was increased annually, the suitability of the increasing rate has been approved by the experts and the Heilongjiang Province Development and Reform Commission.</p> <p>5. According to the analysis the percentage of average annual O&M costs relative to static total investment based on the registered CDM wind power projects in Heilongjiang Province, the ratio of average annual O&M costs against Static total investment is from 1.9 % to 4.9 % (refer to Table 3). For the proposed project, the ratio of average annual O&M costs against Static total investment is 4.4 % which is in the range of 1.9 % and the 4.9 %.</p> <p>Therefore, the O&M costs of the proposed project are credible and appropriate to make investment decision.</p>
--	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

¹⁴ <http://cdm.unfccc.int/Projects/DB/DNV-CUK1167140122.7/view>
¹⁵ <http://cdm.unfccc.int/Projects/DB/DNV-CUK1169849299.65/view>
¹⁶ <http://cdm.unfccc.int/Projects/DB/DNV-CUK1172484180.34/view>
¹⁷ <http://cdm.unfccc.int/Projects/DB/DNV-CUK1180509799.76/view>
¹⁸ <http://cdm.unfccc.int/Projects/DB/BVQI1182384587.37/view>
¹⁹ <http://cdm.unfccc.int/Projects/DB/TUEV-SUED1188220544.5/view>
²⁰ <http://cdm.unfccc.int/Projects/DB/DNV-CUK1218275959.9/view>
²¹ <http://cdm.unfccc.int/Projects/DB/DNV-CUK1218460144.88/view>
²² <http://cdm.unfccc.int/Projects/DB/DNV-CUK1218452051.84/view>
²³ <http://cdm.unfccc.int/Projects/DB/DNV-CUK1218657862.08/view>
²⁴ <http://cdm.unfccc.int/Projects/DB/DNV-CUK1218296845.76/view>
²⁵ <http://cdm.unfccc.int/Projects/DB/BVQI1207772996.31/view>

No.	Proj. No.	Project	Static Total Investment(10 ⁴ Yuan)	O&M (10 ⁴ Yuan)	O&M / Static Total Investment
1	829	Yichun Daqingshan Wind Power Project ¹⁴	16434	753	0.046
2	906	Heilongjiang Huafu Muling Wind Farm Project ¹⁵	34900	960	0.028
3	969	Yichun Erduoyan Wind Power Project 28.05 MW ¹⁶	25892	1269	0.049
4	1147	Yichun Shimaodingzi Wind Power Project 30.6MW ¹⁷	30092	1380	0.046
5	1209	Wuerguli 30 MW Wind Power Project ¹⁸	32719	659	0.020
6	1310	Guohua Qiqihaer Fuyu 1st Stage Wind Farm Project ¹⁹	41931	1048	0.025
7	2032	Heilongjiang Dajiazishan 49.5MW Wind Power Project ²⁰	48993	1226	0.025
8	2056	Heilongjiang Huanan Hengdaishan East Wind Power Project ²¹	21715	938	0.043
9	2049	Heilongjiang Beiantun 49.5MW Wind Power Project ²²	46579	1201	0.026
10	2200	Heilongjiang Huanan Hengdaishan West Wind Power Project ²³	37284	1466	0.039
11	2035	Heilongjiang Yilan Maanshan Wind Power Project ²⁴	41220	1478	0.036
12	1816	Heilongjiang Shiwenzi Wind Farm Project ²⁵	52429	1000	0.019
13	2573	The proposed project	45469	2001	0.044

Table 3: Share of O&M cost to total static investment in reg. CDM projects

6. Furthermore, it is conservative to apply escalating O&M costs than to use fixed O&M costs, which are achieved based on the condition that the total O&M costs in the whole operation period maintain unchanged. In the above paragraph (4), it is indicated that the total O&M costs in the FSR is credible and appropriate to make investment decision. As the attached spreadsheet (Annex 1) indicated using a fixed rather than an escalating operating cost in the whole operation period in investment analysis, the Project IRR of the proposed project will have a decrease from 6.81% to 6.34%.

Response of DOE

The validating DOE has verified the the financial analysis included in Feasibility Study Report. It can be confirmed that the O&M costs are comprised of five sections: maintenance costs, annual wages and welfares of employees, cost on using equipment of phase I project, insurance cost and other fees. Table 1 provided by the client above show that the most parameters remain fixed during the lifetime except maintenance. The table above and the data included in the FSR have been checked and no mistake has been observed. The data provided is exactly the same.

As per the Feasibility Study Report the maintenance costs will increase by 6 % per year which leads to the annual incremental O&M costs. In the course of the validation, DOE has seriously examined the financial analysis including all applied values and confirmed the appropriateness and reliability of those values. By means of the following actions:

	<ol style="list-style-type: none"> DOE has reviewed the qualification of the author of Feasibility Study Report (China Fulin Wind Energy Development Co., Ltd) and other supporting documents like the approval of FSR from Heilongjiang DRC and confirmed the legality and credibility of the FSR. According to the <i>Economical Assessment Method and Parameters for Construction Project (version 03)</i>, which is issued by Chinese National Development and Reform Commission and is considered as a main economic evaluation code in China, the project investor could choose either constant rate or escalated rate method to estimate the maintenance costs. It is assessed to be reasonable to apply escalated maintenance costs in proposed project because of the equipment aging and the malfunction rate rising in the lifetime. Several similar registered CDM projects in Heilongjiang Province have been checked to confirm the values applied. As indicated in the response of the client above the DOE confirms that 9 out of 12 registered wind power CDM projects in Heilongjiang Province applied an escalation of maintenance costs. Assuming that the rate will be fixed as 2001 10⁴ RMB over the project lifetime the share of O&M costs to the total static investment is 4.4 %. Compared to the registered CDM projects the ratio of average annual O&M costs to total static investment of the proposed project is reasonable as they are in a range of 1.9 % to 4.9 %. The data provided in the tables above have been checked by the validation team. No mistakes have been observed. TÜV NORD includes in the assessment technical literature. <i>Kaltschmitt et al.</i>²⁶ referring in the economic analysis to wind power projects to operation costs of about 5 % - 8 % annually compared to the total investment. It shows that the assumption of 4.4 % is not an overestimation and hence considered as acceptable. In the course of this Request for Review the information of the PP provided in point 6 above have been validated. It can be confirmed that the calculation presented in Annex 1 is correct and similar to the IRR calculation submitted for Request for Registration, instead of the O&M costs which are assumed to be fixed in Annex 1. <p>In conclusion TÜV NORD refers to different sources like the Feasibility Study Report, Approval of Feasibility Study Report, Registered CDM projects and technical literature to come to a convincing and reliable assessment. It can be confirmed that the</p>
--	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

²⁶ Page 341 – 342, Renewable Energy – Technology, Economics and Environment, Springer, 2007

	<p>underlying assumptions are appropriate and the financial calculations are correct</p> <p>The assessment above clearly shows that VVM paragraph 112 a) and c) are considered to come to a conclusion.</p> <p>In conclusion, it is confirmed by DOE that validation of the investment analysis is in line with the VVM paragraph 112,</p> <p>(a) Describe in detail how the parameters used in financial calculations have been validated</p> <p>(c) Confirm whether the underlying assumptions are appropriate and the financial calculations are correct, and the assumed 6% yearly escalation of maintenance cost is appropriate.</p> <p>If this information is not sufficient to close the request for review, we appoint Mr. Li Yong Jun as our contact person:</p> <p>Mr. Li Yong Jun CDM project manager China Room 11C, East Ocean Centre II, No. 618 Yan An Rd. (E), Huangpu District, Shanghai China 200001 Tel: +86 (0)21 53855353-259 Fax: +86 (0)21 53855369</p>
--	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Request for Review (2)

Issue raised by EB Members / DNA	<p><i>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 over the years, or whether the net return has been unaffected as a result of other changes such as investment costs.</i></p>
Response from PP	<p>We would like to add the following information:</p> <p>The FSR of the proposed project was completed by China Fulin Wind Energy Development Co., Ltd in Oct 2007 and was approved by Heilongjiang Province Development and Reform Commission. In the FSR, the tariff is 0.52 RMB/kWh (excluding VAT). The IRR of the proposed project is 5.8 % based on the tariff from FSR. In July 2008, the tariff approval of the proposed project was issued by the Heilongjiang Province Development and Reform Commission (Fagaijiage [2008] NO.1876). The approved tariff is 0.56 RMB/kWh (excluding VAT). The approved tariff is higher than the tariff in the FSR. It is conservative that we adopted the higher tariff for the proposed project in the PDD. Even if adopting higher tariff, the project IRR of the proposed project is 6.81%, which is also lower than the benchmark 8%.</p>

	<p>Furthermore, China National Development and Reform Commission issued the notice on guiding the on-grid tariff for wind power generation on 24 July 2009 (Fa Gai Jia Ge [2009] 190627). According the notice, the proposed project is located in the area where the VAT-including tariff is 0.61 RMB/kWh (equals to 0.56 RMB/kWh excluding VAT). Therefore, the tariff for calculating IRR of the proposed project is in line with the guiding tariff issued by the NDRC.</p> <p>The tariff for calculating IRR which was issued by the Heilongjiang Province Development and Reform Commission is higher than the predicted tariff in the FSR and is in line with the guiding tariff issued by China NDRC. Therefore, the tariff for calculation IRR in PDD is credible and conservative.</p> <p>The static total investment for the IRR calculation of the proposed project is RMB 454.69 million derived from FSR. The FSR was completed by an independent body and was approved by the Heilongjiang Province Development and Reform Commission. The FSR is thus considered to be a reliable resource to reflect the actual economic situation of the proposed project at the time of investment decision. Since the proposed project was completed, the actual static total investment could be confirmed and it is RMB 471.84 million derived from financial audit report. The financial audit report for the proposed project activity "Heilongjiang Fujin 48MW Wind Power Project Investment Statistics" was conducted by an independent body, Heilongjiang Electric Power Construction Supervision Co., Ltd. According to the financial audit report, the actual static total investment which was spent on is RMB 471.84 million until May 2009. The actual static total investment is more than the estimated static total investment RMB 454.69 million from the FSR. Therefore, it is conservative that we adopted the estimated static total investment in the FSR for IRR calculation of the proposed project in the PDD. The actual investment costs were increased, and the net return to the investor of the proposed project has been affected slightly. The net return to the investor is conservative also.</p>
--	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

²⁷ http://www.sdpc.gov.cn/zcfb/zcfbtz/2009tz/t20090727_292827.htm

Response of DOE	<p>The electricity tariff of proposed project is 0.56 RMB/kWh (excluding VAT) which was determined by Heilongjing Province Development and Reform Commission (Fagaijiage [2008] NO.1876) in July 2008. On 24 July 2009, China National Development and Reform Commission issued normative on-grid tariff for wind power generation (Fa Gai Jia Ge [2009] 1906). According to the guiding policy, the proposed project is located in an area where the VAT-including tariff is 0.61 RMB/kWh, which is equivalent to the tariff 0.56 RMB/kWh without VAT. It is also observed by DOE that the approved tariff was higher than the estimated tariff 0.52 RMB/kWh (without VAT) in Feasibility Study Report and is hence more conservative for the investment analysis. Therefore it was accepted by the validation team to utilize the higher value. All supporting documents, which are mainly based on official governmental announcements, have been checked by the DOE in the course of validation and were assessed as credible.</p> <p>During time of the validation the price applied for the grid tariff is reasonable also other financial parameters indicated and assessed in the validation report are reasonable. TÜV NORD can only provide a project specific assessment and the financial parameters clearly show that the project is not financially viable. The net return is not sufficient without considering CDM benefits, therefore the PP applied for CDM status. Additional to the assessment in the validation report the validation team checked the financial audit report conducted by Heilongjiang Electric Power Construction Supervision Co., Ltd. The company is a third party and is authorized and has sufficient expertise to provide this service. According to this report the actual investment has reached RMB 471.84 million until May 2009 which is higher than the value estimated in investment analysis.</p> <p>This further substantiates the assessment that the net return is not sufficient to make the project financial viable.</p> <p>If this information is not sufficient to close the request for review, we appoint Mr. Li Yong Jun as our contact person:</p> <p>Mr. Li Yong Jun CDM project manager China Room 11C, East Ocean Centre II, No. 618 Yan An Rd. (E), Huangpu District, Shanghai China 200001 Tel: +86 (0)21 53855353-259 Fax: +86 (0)21 53855369</p>
-----------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------