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Request for Review

Dear Sirs,

Please find below the response to the review formulated for the CDM project with the title "Zhejiang Cixi Wind Farm Project" with the registration number 1837. In case you have any further inquiries please let us know as we kindly assist you.

Yours sincerely,

Abhishek Goval
Carbon Management Service

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Response to the CDM Executive Board

Issue 1

“The DOE is requested to explain further clarify and provide evidence that it is unlikely for: (i) tariff to increase by 8%, (ii) annual power output to increase by 7.5%; and (iii) specific investment to decrease by 7.5%, as per EB 41 annex 45 para 17 guidance.”

Response from the Project Participant

(i) Tariff

Since the submission of the PDD for registration, the tariff approval of the proposed project was issued by Zhejiang Price Bureau (in October 2008). In the tariff approval letter, the tariff of the proposed project has been fixed at 0.666Yuan/kWh (incl. VAT). The agreed tariff, therefore, is 7.5% lower than the level assumed in the FSR and PDD, and the original tariff assumption has indeed proven to be very conservative.

Since the tariff is regulated by the government, the tariff is fixed once it is approved by government¹. The owner of the project would not be able to make assumption of tariff increase for decision making. Moreover, the on-grid tariffs of the wind farms in China have been decreasing over the last few years.² Therefore, it is not feasible for the PP to assume that the tariff would increase.

(ii) Annual power output

The annual power output is determined by an independent qualified design institute with the highest grade, Grade A, using scientific methods as applied internationally. The estimated net supplied power is calculated from the turbine availability, grid availability and the wind speed, and many other elements. The calculations for the proposed project are carried out using professional WASP software (www.wasp.dk) designed for wind energy, which is used by wind developers and turbines manufacturers worldwide. The output is maximised through optimal turbine distribution in the wind farm, and considering the specific turbine characteristics, and the grid connection. The output calculations account for issues such as air density corrections, turbine efficiency, planned maintenance, contaminated rotors, and auxiliary power use, etc. No discounts are applied for turbine or grid availability.

Besides the turbine and grid availability, the third factor to determine the potential output is the wind speed. The wind speeds used in the FSR for calculating the estimated net supplied power is taken from the on-site wind data measurements (Xujiapu station) from September 2004 to August 2005. Comparing the wind speeds over this period with the average historical wind speeds since 1971 measured by the local weather station (Cixi meteorological station), it can be concluded that the wind speeds used for calculating the net supplied power are above the

¹ For example, two wind farm projects, Fujian Dongshan Wujiaowan and Liuaowang wind farms, also in ECPG, which had recently been approved with a long-term fixed tariff regulated by government well below the tariff level assumed in the FSR and PDD.

² <http://www.eri.org.cn/manage/upload/uploadimages/eri200672795944.pdf>



average (2.7m/s for the 2004-2005 period, compared to 2.6m/s for the period since 1971). However, the wind speed data used in the calculation is not corrected for the fact that this period enjoyed higher wind speeds than average, as the difference was only 3.5%. On this basis, the supplied power in FSR is optimistically calculated.

Therefore, as turbine and grid availability can not be increased, and the wind speeds used are above average compared to historical records, it can be concluded that it is unlikely that the net supplied power will be increased by 7.5% or more above the level assumed in the PDD over the lifetime of the project.

(iii) Static Investment

For a wind farm project, the cost of turbines, engineering construction and related accessories make up the main investment. As prices of turbines and other related equipment have been increasing in recent years³, a decrease of the static investment is unlikely and it is more likely for the investment costs to go up.

Indeed, the turbine price and other costs have increased during the project construction period. The real contracted price of the turbines and the connection system are all higher than that estimated in FSR. The actual cost of the turbines was 12% higher than that in the FSR; the connection system cost was 200% higher than that in the FSR⁴. Therefore the total actual specific investment of the proposed project will be higher. On this basis, a reduction of 7.5% or more in the investment costs is not realistic for this project.

Response by TÜV SÜD

The PDD as submitted with request for registration presents a sensitivity analysis which is in line with EB41, para 17 guidance, taking into consideration a range of +10% and .10%, which is also frequently seen in the Chinese wind power sector. As noted in the query, the benchmark threshold of 8% is crossed when assuming a decrease of 7.5% in investment, or a tariff increase by about 8% or the supplied power increase by about 7.5%. In response to that TÜV SÜD will provide an assessment of the probability of the occurrence of these scenarios.

(i) Tariff

As demonstrated by the Project Participants, the original tariff assumption made at the time of the investment decision has been proven to be too high and thus conservative in the CDM context. The tariff document by Zhejiang Price Bureau (as attached to this response as enclosure 3) is fixing the tariff at 0.66 RMB, 7.5% lower than the level assumed in FSR and PDD: It has been TÜV SÜD's observation that tariffs for wind power plants are likely to be fixed at lower levels than expected in the design phase. During validation it was therefore assumed that it was a known fact to the project participants that the tariff assumed in FSR is the highest it could get, with likelihood to be fixed at a lower level at the later stage of the projects implementation.

It is hence concluded that the increase in tariff must have been deemed very unlikely at the time of investment decision, and, as could be proven here, for this specific project is now a completely unrealistic scenario, as the tariff has been fixed at a even lower level than anticipated. Though not explicitly mentioned in the tariff approval notice (as attached) it could be

³ *The Development of Wind Power*, published by People's Daily, pls. refer to :

<http://energy.people.com.cn/GB/5720709.html>

⁴ See turbines purchase contract (dated 18 May 2007) and the connection system contract (3 August 2007).

confirmed by a phone call to the leader of Ningbo Price Bureau, Mr. Mr. Xuedong Ma, that the price of Cixi Windfarm, 0.66 RMB/kWh is applied to 30,000 hours, and then later on, the average tariff of grid of Zhejiang province will be applied, as also projected in the FSR and IRR calculation.

(ii) Annual power output

There are various parameters which influence the net power delivery of the project to the grid. The design of the wind farm has been carried out by an independent institute, with an A grade certificate (IRL37). As pointed out by the project participant, there are numerous factors influencing the annual power output of the wind power plant. TÜV SÜD can confirm that in the calculations made by the design institute, both

- Availability of the turbines
- Availability of grid capacity

are assumed to be 100% available. This is a conservative approach in the CDM context, as in reality neither turbine nor grid availability will reach this theoretical 100% level.

The third main parameter determining the annual power output, the available wind resource, has also been proven to be overestimated. In chapter 2.5 of the feasibility study, "The wind resource of the representing year", it is clearly shown that the average wind speed which is applied for the annual power output estimation is 2.7m/s, as derived from the detailed wind speed measurement from Sep 2004 to Aug 2005. However, it is also referred to the average wind speeds of longer time periods, derived from the nearby weather station. The past trend reveals a tendency that the average wind speed is decreasing:

- The overall average wind speed from 1971 to 1991 is 2.7m/s
- The average wind speed from 1992 to 2004 is 2.5m/s

Given the above trend, it is concluded that the wind speed applied in the assessment is rather optimistic which is very unlikely to be exceeded.

To conclude, three of the major parameters influencing the annual power output were optimistic estimates at the time of the investment decision, and thus TÜV SÜD considers it as very unlikely that the average annual power output throughout the crediting period would exceed the estimate as applied in the financial analysis.

(iii) Static Investment

In the past years it was observed by TÜV SÜD that costs to build up a wind farm in China had a tendency to rather increase than decrease. Due to increasing demand the prices for turbines were increasing over the last years.

Regarding Cixi project it can be confirmed that both the costs of the turbines and the electricity connection were higher than anticipated in the planning stage. The costs for the turbines could be evidenced to be 12% above the initial estimate (see also enclosure 1 as attached to this response). The cost of the individual turbine has risen from estimated 9 Million RMB per tur-



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bine (taken from FSR, refer to PDD and IRR spreadsheet) to 10.6 Million RMB. The actual costs for the electricity connection have risen from 18 Million RMB to nearly 57 Million RMB.

Given the above circumstance, it is deemed very unlikely that the total static investment can be 7.5% below the estimate in FSR and it is thus concluded that it is very unlikely to reach the benchmark threshold.



Issue 2

“Further clarification is required on how the DOE has validated the common practice analysis, in particular, selection of the similar project activities, and difference between the policy scheme in late nineties and policy scheme applied for the project activity.”

Response from the Project Participant

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

The proposed project is connected to East China Power Grid (ECPG) and located in east China; therefore, the wind farms in the same region (ECPG) are included in PDD for the common practice analysis. The list of wind farms are sourced from the “Statistics of domestic wind farm installation capacity in 2006” which is widely indexed in China. There are two non-CDM projects which were built in the late nineties and granted with high tariff (about 1.2 RMB/kWh)⁵, while another 7 projects in ECPG are all applying for CDM registration and have registered or have started GSP⁶.

In 2002 the State Council issued the Notice of Electric Power Sector Reform Programme to undertake electric power sector reform in China. Before the reform, the former state national power company took responsibilities for both power generation and power distribution, and the tariff for renewable power generation was granted with a high tariff. While the reform was to divide the former single national power company into regional companies and to separate generation and distribution responsibilities and to introduce price competition.⁷ Under this new price policy, the tariff for renewable energy generation is not set at the same high levels but at much lower levels.

Before 2003, wind farms built in China were all experimental, small-scale or demonstration projects, normally supported by Chinese governmental loans or loans from foreign donors. The objective of such projects was to stimulate wind power development in China.⁸ The Zhejiang Linhai Wind Farm was supported by as a governmental "Bi-Emphasis Projects"⁹. The Zhejiang Cangnan wind farm was a small-scale demonstration project and was granted with high tariff¹⁰. After the price cap regulation for wind power electricity tariffs was put in place by 2003, such high tariffs are impossible to obtain for wind farm developers. Presently, further development of large scale wind farms in East China Power Grid doesn't enjoy the favourable treatments as the early projects in the 1990s, thus faces financial barriers and is not feasible without the CDM. So all the other wind farms in common practice have already successfully been registered or are applying for CDM registration – note that the proposed Zhejiang Cixi project is the first project in Zhejiang province since the two early projects mentioned above.

⁵ <http://www.cec.org.cn/news/showc.asp?ID=25498>

⁶ Registered projects 0388, 0491, 0833, 0995, and 1172, project 2043 is requesting registration, and one project under validation

<http://cdm.unfccc.int/Projects/Validation/DB/0HQZDQWJWUZM6QBD7BBLHECKAWMIQL/view.html>

⁷ <http://www.lawon.cn/law/detail.dox?id=2211075>

⁸ <http://www.nwtc.cn/Article/ShowArticle.asp?ArticleID=422>

⁹ <http://www.tzsjw.gov.cn/tzgy.php?newsi=&id=99>

¹⁰ <http://www.cec.org.cn/news/showc.asp?ID=25498>

Therefore, wind power projects similar with the proposed project activity are not common practice in the East China Power Grid without CDM registration.

Project Participant's Conclusion:

According to the above response and the evidences, it can be concluded that:

- (i) It is extremely unlikely that the proposed project activity would reach the benchmark 8% without CDM funding.
- (ii) The proposed project activity is not common practice in the East China Power Grid without CDM registration.

It is our sincere hope that the Executive Board will accept these clarifications and explanations.

Response by TÜV SÜD

Common practice analysis of Cixi Windfarm takes into consideration all other wind farms installed in the entire grid it is connected to, the East China Power Grid (ECPG), which is expanding over a territory of 5 provinces.

The projects listed in the PDD are found to be correctly representing the wind farms which are installed on ECPG territory. The publication "Statistics of domestic wind farm installation capacity in 2006" is the most recent comprehensive publication on the wind power capacity in China, listing all relevant wind farms to be considered in this context. All but two projects are either registered as CDM projects or have started the validation. The remaining two projects were built before 2002, and were hence built under a different policy scheme. In 2002 the Chinese power market was liberated, aiming at lowering the costs for electricity production. As a result the tariffs have become lower as well.

As a result TÜV SÜD is strongly convinced that projects which were built before 2003 were not built in a comparable financial environment, and shall thus not be further considered in common practice analysis.

There are however indicators which support an assumption to limit the common practice to Zhejiang Province only. Cixi wind farm is the first of its kind in this province. But as can be seen from the tariff document (enclosure 3) the tariff is regulated on the provincial level. As such, the investment environment is not comparable to neighbouring provinces or the rest of the ECPG. It is therefore concluded most appropriate to limit the common practice analysis to Zhejiang province, where no other such projects are found. Thus the project complies with the criteria provided by the additionality tool.

Enclosures (with reference No. in TÜV SÜD validation report Annex 2 - IRL):

- Enclosure 1 – Extract of the Wind turbines contract of Zhejiang Cixi wind farm (IRL11)
- Enclosure 2 – Zhejiang Cixi wind farm 110kV connection system contract (IRL39)
- Enclosure 3 – Tariff Document by Zhejiang Price Bureau (IRL40)
- Enclosure 4 – Extract of FSR presenting the wind resource data applied (IRL6)
- Enclosure 5 – Partial translation of the footnotes referred to by the PPs response