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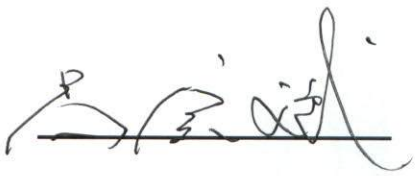
Ref: Response to request for review "Guangdong Huizhou LNG Power Generation Project" with the registration number 1884

Dear Sirs,

Please find below the response to the request for review formulated for the CDM project "Guangdong Huizhou LNG Power Generation Project" with the registration number 1884. The project proponent has prepared the response in consultation with the World Bank.

We hope this meets your requirements.

Yours sincerely,



Hongbin Lv
General Manager

Question 1. The DOE should further clarify how it has validated that gas price and tariffs are unlikely to increase.

The gas price and the electricity tariff assumptions used for the investment analysis are fully consistent with the assumptions used in the Feasibility Study Report (FSR) for Guangdong Huizhou LNG power generation project (May, 2004), further referenced as Guangdong Huizhou power project. The FSR was prepared by the independent organization *Guangdong Electric Power Design Institute* accredited by the Chinese Ministry of Construction. The FSR was approved by the National Development Reform Committee (NDRC) in July 2004.

It is specified in the Guangdong Huizhou power project PDD (Version 03, 15/06/2008) that the gas price is unlikely to decrease and tariff is unlikely to increase based on the best available information at the time of an investment decision.

The likelihood of changes of Liquefied Natural Gas (LNG) price

The price of LNG used in the investment analysis of the Guangdong Huizhou power project was estimated according to the pricing clause of the take-or-pay contract for the LNG supply with the Guangdong Dapeng LNG:

- The LNG price is determined in correlation with the spot crude oil price in the JCC international market;
- The LNG price can vary within a fixed range of the reference crude oil price. This range is established for the whole duration of the take-or-pay contract and is not subject for revision. The upper limit of the oil price is defined at 25USD/barrel (Free-On-Board price) and the corresponding gas price[1] was equal to 1.55 RMB/m^3 (including VAT);
- The trend of spot crude oil prices[2] that was observed in the time of the investment decision is clearly indicating that the crude oil price was above the upper limit of 25USD at least since January 2004.

In this context, the reduction of the gas price under the contract conditions is unlikely and thus no corresponding improvement of financial returns of the Guangdong Huizhou power project can be expected.[3]

The likelihood of the electricity tariff increase

It was foreseen by the project entity at the time of investment decision that the electricity tariff was unlikely to increase. This assumption was conservative taking into account the following evidence.

- The electricity tariff used in the investment analysis (489 RMB/MWh (including VAT)) is fully consistent with the estimate in the FSR for the Guangdong Huizhou Power project (approved by NDRC in July 2004). In addition, the assumed electricity tariff level is above the 2004 reference tariff for coal-fired power plants[4], which are dominant in the fossil-fuel generation by the Guangdong provincial grid, in Guangdong Province (405 RMB/MWh (including VAT)).

[1] In accordance with the pricing clause of LNG Take-Or-Pay Contract, the gas price is consisted of three relevant unit gas prices: LNG price (FOB), LNG transportation price, and unit terminal & trunkline charge.
[2] http://www.tnc.com.cn/news/detail/1/1/d115428.html
http://omrpublic.iea.org/omrarchive/10dec04pri.pdf
[3] The increase of gas price would lead to a reduction in the financial returns of the Guangdong Huizhou power project.
[4] The power generation from coal-fired power plants accounted for about 70 percent of total thermal power generation in Guangdong Provincial Grid in 2004, according to China Electric power Yearbook 2005.

This confirms that the estimate is realistic and conservative.

- *Notification on Electric Power Tariff Reform* issued by the Office of State council on 09/07/2003. In accordance with the notification, the newly-built power plants in the country are required to participate in on-grid tariff bidding. Before that, Southern China Power Grid started the pilot operation of on-grid bidding. The result showed that the power tariffs for individual participating power plants could significantly decrease as a result of increasing market competition [5].

- The Guangdong Huizhou power project was required by NDRC to participate in the on-grid bidding, as it was indicated in the approval of the feasibility study of the project in July 2004. This requirement significantly increased the level of risks of the investment project given that Guangdong Huizhou power project cannot be granted with the preferential price under the bidding system**.** In fact, development of bidding will create increasingly competitive electricity market according to the *Notification on Electric Power Tariff Reform in 2003* and is expected to exercise downward pressure of the tariffs.

Based on the information available at the time of investment decision making, and taking into account the expected increase of competition with other fossil-fuel power generation capacities (demonstrated to be least cost alternatives for the Guangdong Huizhou power project), the increase of the electricity tariff was unlikely.

Question 2. The DOE should clarify how it has validated the prior consideration of the CDM in line with EB 41, Annex 46, paragraph 5.

We understand that as per requirement of EB 41 Annex 46 paragraph 5, the CDM EB requires DOE to provide confirmation that the CDM was seriously considered in the decision to implement the project activity and continuing and real actions were taken to secure CDM status for the project in parallel with its implementation. The PP has provided the following sources[6] of information to DOE.

1. Meeting minute of Carbon Credits Seminar held in Zhuhai City in August 2002, when the project investors was first aware of CDM potential in LNG power gneneration projects.
2. *"Case Study of Clean Development Mechanism Project of Zhuhai Power Plant Project Phase II"*. The study was initiated in February 2003 by the project investor[7] and completed in November 2003 by an independent third party to evaluate the CDM potential on the natural gas-fired power plant projects in China.
3. Minute of meeting on discussion of CDM implication in natural-gas-fired projects in the management team of project investor in February 2004, to require the CDM consideration in the Huizhou LNG power generation project based on the outcomes of the "Case Study of Clean Development Mechanism Project of Zhuhai Power Plant Project Phase II".
4. FSR with financial analysis considered the impacts of potential CDM revenue carried out by Guangdong Electric Power Research Institute, an accredited third party institute, in February 2004**.** The results of the analysis shows that the financial internal return rate (FIRR) can increase from 6.12 percent to 8.18 percent after taking into account of the CER

[5] http://www.chinapower.com.cn/article/1000/art1000256.asp
[6] See attachment package.

revenue, higher than the investment benchmark of 8 percent, thus the CDM will dramatically increase the financial viability of the proposed project.

5. Minute of shareholder investment decision meeting in May 2004. The project investors were aware of the financial non-viability of the project without CDM revenue and decided to proceed with the project taking into consideration of the potential CDM contribution to the project's financial internal return rate.
6. Project construction started on September 23rd, 2004.[8]
7. Notice issued by the project entity in March 2005, to establish CDM working team so as to start the CDM project application.
8. Consulting contract of PDD was signed with Tsinghua University in July 2006.
9. Project Idea Note, which was submitted to the World Bank in September 2006, after the methodology AM0029 was approved in May 2006.
10. The Version 01 PDD of the Proposed Project was public on UNFCCC website[9]
11. Letter of Intent, countersigned between the World Bank and the project proponent in Oct 2006.
12. Emission Reductions Purchase Agreement, which was signed by the project entity and International Bank for Reconstruction and Development (IBRD) in December 2007.

Table 1- CDM Project Activity Timeline.

Date	Milestone
20-Aug-02	Carbon Credits Seminar held in Zhuhai city
13-Feb-03	Investors agreed to authorized Tsinghua University and Energy Research Institute NDRC to start a "Case Study of Clean Development Mechanism Project of Zhuhai Natural Gas Power Plant Project Phase II"
Nov/03	"Case Study of Clean Development Mechanism Project of Zhuhai Power Plant Project Phase II" was completed
13-Feb-04	Investors required Huizhou LNG power generation project to consider CDM.
17-Feb-04	FSR with financial analysis considered the impacts of potential CDM revenue was carried out
26-May-04	Investors decided to take part in CDM application
23-Sep-04	Project construction started
09-Mar-05	Established CDM working team
19-Jul-06	Consulting contract of PDD writing signed with Tsinghua University date. Validation contract with SGS signed on September 7th 2006.
15-Sep-06	The Version 01 PDD of the Proposed Project was public on UNFCCC website
Sep-13-06	Project Idea Note of the project was submitted to World Bank. It was

[8] http://www.people.com.cn/BIG5/paper49/13041/1171618.html
[9] http://www.sgsqualitynetwork.com/tradeassurance/ccp/projects/project.php?id=142

	approved on September 13, 2006.
27-Oct-06	Signed Letter of Intent with World Bank
19-Dec-07	Signed EPPA with World Bank

The above evidence sufficiently demonstrates that CDM was seriously considered in the decision to implement the project activity and continuing actions were taken by the project proponent to secure the CDM status in parallel with the project's implementation.

Questions 3. The DOE should clarify how they have validated that the project activity will not constrain natural gas supply in the region in accordance with the methodology.

The Meth Panel clarification AM _CLA_0091, acknowledged by the EB during its 41st meeting, regarding the applicability of the AM0029 stated that "notwithstanding where the natural gas is imported from, this applicability condition is to be implemented by demonstrating, through monitoring, that the full demand of natural gas by the project activity is dedicatedly met with imported gas, and where dedicated imports is not the case, the monitoring should show that satisfying the project activity's demand for natural gas will not lead to a shortages in supplies of the gas to other projects within the country."

Thus, project activity that can demonstrate that its full demand of the natural gas is dedicatedly met with imported gas is applicable under AM0029 v1.1. The following evidence was provided to the DOE, who also verified in the validation report that the project meets these criteria, and can confirm the application conditions of the methodology have been met:

a) The full demand of liquefied natural gas (LNG) by the Guangdong Huizhou power project is dedicatedly supplied under the LNG sales and purchase contract signed between the project entity and Dapeng LNG company. In according to the Meth Panel clarification, the Guangdong Huizhou power project will not and cannot constrain future natural gas capacity additions. As per requirement of the clarifications, the additional monitoring point will be included to monitor the sources of LNG supply (please see response to the question 5 below).

b**)** The constant supply of natural gas of Dapeng LNG company is from the Australia's Northwest Shelf which is guaranteed by the gas purchase contract for 25 years (starting in 2006) and is fully covering the needs of the project**.** According to the independent third-party assessment[10] the natural gas resources of Greater North West Shelf area had been identified as of about 100 trillion cubic feet (Tcf). One Tcf can produce about 20 million tones of LNG. The Northwest Shelf Venture has a proven track record as a reliable and efficient supplier of LNG spanning more than a decade. It is the third largest LNG exporter in the Asia-Pacific region, with the capacity to supply around 11.5 million tonnes of NG each year from 2004.

The above evidence demonstrates that the full demand of natural gas by the Guangdong Huizhou power project will be dedicatedly met by the imported gas and will not constrain future natural gas capacity additions in the region.

[10] http://www.nwsalng.com.au/website.aspx?mp=3&pn=301

Question 4. The DOE should give a positive validation opinion on the elimination of baseline alternatives and levelized cost comparison of remaining alternatives.

AM0029 requires that the baseline alternatives should include all possible realistic and credible alternatives that provide outputs or services comparable with the Proposed Project, these alternatives need not consist solely of power plants of the same capacity, load factor and operational characteristics (i.e. several smaller plant, or the share of a larger plant may be a reasonable alternative to the Proposed Project activity). Moreover, they should deliver similar services (e.g. peak vs. base load power). Therefore, within the grid boundary any alternative which can supply comparable output or services, i.e., peak load and power amount, can be identified as the baseline scenario.

The baseline alternative analysis in the project activity excluded the non-peak-load alternatives, as well as those not in compliance with all applicable legal and regulatory requirements. Five alternatives (the Proposed Project without CDM; 600 MW Super Critical Plant; 600 MW Sub Critical Plant; 300 MW Sub Critical Plant and 180MW Oil fired CCGT) were identified to conduct further investment analysis. Relevant information on technologies in remaining alternatives was provided to the DOE verified that as per request of the AM0029, our baseline analysis includes all recently constructed and under construction technologies at the moment of investment decision.

Based on the consistent assumptions across the alternatives compared, the levelised cost comparison of remaining alternatives contains the reliability analysis of the data source and the sensitivity analysis of the alternatives taking into consideration of reasonable variations of load factor and fuel cost.

To further demonstrate the financial attractiveness of the 600 MW sub-critical coal-fired power plant is robust to reasonable variations in the critical assumptions for the alternatives (i.e. fuel cost and the load factor), a sensitivity analysis has been conducted in the PDD.

The sensitivity analysis on page 11 of the PDD is fully conclusive in the sense that the robust baseline selection was done and the 600 MW subcritical coal-fired power plant is always the least levelised cost alternative.

Question 5 The DOE should explain how it has validated that the monitoring plan complies with the methodology.

The clarifications for the Monitoring plan:

1. As per the approved monitoring methodology AM0029 Version 01.1, the parameters to be monitored for baseline emissions are listed below and are specified in Section 7.1 of the PDD.
    - Build Margin emission factor for the grid ($EF_{BL,CO2,y}$) will be obtained from the national authority. If such data will not be timely available from the national authority, the monitoring and calculation will be performed as described in the section B.6.1. of the PDD (Version 03, 15/06/2008) on pages 20-22 using formulas from 5 to 10.

- The amount of fuel *i* consumed by relevant power sources (***F*$_{i,j,y}$**);
- The net calorific value (energy content) per mass or volume unit of a fuel *i* (***NCV*$_{i,}$**);
- The oxidation factor of the fuel *i* (***OXID*$_i$**);
- CO_2 emission factor per unit of energy of the fuel *i* (***EF*$_{CO2,i}$**),)
- The amount of electricity generation by source *j* in year *y* ($G_{j,\ y}$),
- Station service power consumption rate of source *j* in year *y* ($e_{j,y.}$)
- Efficiency of most advanced coal-fired power technology that is commercially available ($EE_{coal,adv}$),
- Efficiency of most advanced oil-fired power technology that is commercially available ($EE_{oil,adv}$),
- Efficiency of most advanced gas-fired power technology that is commercially available ($EE_{gas,adv}$);
- Installed capacity of source *j* in year *y* in SCPG ($CAP_{j,y}$),
- Electricity supplied to the grid by the project (EG_y);

2. As per the approved monitoring methodology AM0029 Version 01.1, the updated parameters to be monitored for project emissions are listed below and are specified in Section 7.1 of the revised PDD (Version 04, 06/12/2008).
   - Annual fuel(s) consumption in project activity ($FC_{LNG,\ y}$);
   - Net Calorific Value(s) of the fuel used in the project activity ($NCV_{f,y}$);
   - The oxidation factor of the natural gas (***OXID*$_{gas}$**);
   - The oxidation factor of the diesel (***OXID*$_{diesel}$**);
   - Fuel emission factors for fuel used in the project activity ($EF_{CO2,\ LNG\ ,y}$);
   - Annual quantity of Diesel as startup fuel consumed in project activity;
   - Net Calorific Value of Diesel;
   - Emission factor for diesel consumed as startup fuel in the project activity;
   - CO_2 emission coefficient of fuel i (**COEF**$_i$);
   - Project emission due to combustion of fuel (PE_y).
3. As per the Approved Monitoring Methodology AM0029 Ver 01.1, parameters for leakages are not required to be monitored thus are not included in the section 7.1 of the PDD (Version 04, 06/12/2008). In addition, the leakages from the Guangdong Huizhou Power Project are assumed to be zero as demonstrated in the PDD.
4. The monitoring of liquefied natural gas source is included in Page 41 of the PDD (Version 04, 06/12/2008). The dedicated import source of gas supply will be monitored through relevant documentations provided by the gas supplier.