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Att: CDM Executive Board

Your ref.:
CDM Ref 1874

Our ref.:
CPD/MLEH

Date:
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Response to request for review of the project “25.3MW WHR Project of Zhejiang Leomax Group (1874)”

Dear Members of the CDM Executive Board,

We refer to the issue raised by the requests for review by four Board members regarding project activity “25.3MW WHR Project of Zhejiang Leomax Group” (UNFCCC reference number 1874) and would like to provide the following initial responses to the issue raised.

Question 1: The DOE is required to explain how it has validated the investment analysis, the appropriateness of the input values used, and the use of fixed input values in line with EB 38, paragraph 54 (c).

DNV Response:

a) Appropriateness of the input values used for the project investment analysis.

There is only one potential developer for the project, and an equity IRR is applied for the project investment analysis. According to the regulation “Project Economic Evaluation Methods and Parameters Version 03” the benchmark of equity IRR for the cement industry is 12% (after tax). The equity IRR of the project is 7.47%, 8.07% and 7.92% for Tonglu, Jiande and Guangde locations, respectively, without CDM which is lower than the selected benchmark of 12%. This shows that the project is not financially attractive for investors.

According to the guidance of EB38 paragraph 54, DNV has validated the input parameters used in the investment analysis as follows:

Step 1: Assess the sources of the input parameters

All input parameters used in the financial analysis of this project are taken from the projects feasibility study reports (FSR) prepared by the Tianjin Cement Industry Design & Research Institute Co., Ltd.:

- Jiande plant FSR dated March 2006, approved by the Zhejiang Economic and Trading Commission on 18 May 2006.
- Guangde plant FSR dated December 2005, approved by Anhui Economic and Trading Commission for Guangde plant on 31 August 2006
- Tonglu plant FSR dated December 2006, approved by the Zhejiang Economic and Trading Commission on 9 January 2007.

The input parameters used in the financial analysis can thus be considered as information provided by independent and recognised sources.

Step 2: Confirm that the values used in the PDD are fully consistent with the FSR

DNV compared the input parameters for the financial analysis included in the PDD with the parameters stated in the FSR and was able to confirm that the values applied are consistent with the value stated in the FSR.

Step 3: Assess the period of time between the approval of the FSR and the investment decision

The FSR which was approved earliest was the one for Jiande plant in May 2006 which is 5 months prior to the decision to proceed with the project activity, taken on 30 October 2006. Given this relative short period of time between the approval of the FSR and 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.

Step 4: Cross-check the parameters used in the financial analysis with the parameters used by other similar projects

The input parameters used in the financial analyses were compared with the data reported for other similar proposed CDM projects in the ECPG, by comparing investment costs per MW, electricity tariff, percentage of O&M costs relative to total investment costs, etc. DNV was able to confirm that the input parameters used in the financial analysis are reasonable and adequately represent the economic situation of the project.

b) Appropriateness of the fixed values used for project investment analysis

DNV was able to confirm that it is common practice in China that financial analysis in FSRs shall be calculated with a non escalated investment costs, electricity tariff and O&M costs. In addition, it is DNV's understanding that FSR (or PDR) are the basis for project developer investment decision in China. Moreover, the applied benchmark relates to an IRR determined with fixed input value, and an IRR without escalation of the electricity tariff and O&M costs is thus in our opinion more suitable to be compared against the selected benchmark.

In *Economic Assessment Method and Parameters for Construction Project*, it is mentioned that rates for both cash inflows (revenues from electricity generation) and outflows (costs from O&M) should be predicted at the beginning of the operation period and that these predictable rates will be fixed and applied throughout the operation period and in order to comply with the benchmark criteria, "A fixed price should be used in the operation period".

Fixed value: Electricity tariff

The electricity tariff is under strict control by the central government in China, and will not be significantly changed without permission by the central government. In order to ensure price stability for the whole country, the central government controls basic prices, such as electricity tariffs and commodity prices. Adjustment of electricity tariffs results from negotiations by several government departments and may even need to be approved by the CPC Central Committee.

If variations in the tariff should be estimated in financial analyses, variations of the O&M costs such as salary, material costs, etc. should be considered accordingly. As this is difficult to do accurately, and the inflation in China is considerably higher than the tariff escalations, thereby

tending to cancel out the escalation in the tariffs, a fixed tariff is commonly adopted in the investment analyses in China.

As part of the response for this request for review the project participant has prepared a revised IRR and NPV including the escalation of electricity tariff and O&M based on statistical data. According to data from the announcement of National Bureau of Statistics of China¹ in the period 2002 to 2006, the maximum annual increase of electricity tariff is 4.2% (in 2005) and the maximum annual price increase of materials (mainly water), wages and welfare is 6.4% (in 2006) and 16.3% (in 2002) respectively in China. This shows that the annual O&M costs increase rate is higher than for the electricity tariff. The revised IRR and NPV, taking into account the escalation rates, are lower than the initial values not including escalation. The spreadsheet of IRR and NPV applied the escalation of electricity tariff and O&M have been provided and reviewed by DNV and the revised financial analysis was found to be correct.

Fixed value: Investment costs

The actual investment cost for Jiande and Guangde are available and were provided to DNV together with evidences for these costs. These evidences include fixed assets investment, power supplied records and power purchase invoice. This can be summarised as follow:

The key parameters	FSR values	Actual values
Total investment	Jiande : 52.94 million Guangde: 58.77 million	53 million 58.78 million
Power generation	Jiande: 59 880 MWh Guangde: 57 540 MWh	59 979 MWh 50 350 MWh
Power tariff	Jiande: 0.308 RMB/KWh Guangde: 0.297 RMB/KWh	0.301 RMB/KWh 0.295 RMB/KWh

The comparison above shows that the FSR total fixed asset investment values for Jiande and Guangde are lower than the actual values. For the power generation, the actual data of Guangde is lower than estimated in the PDD. For Jiande the actual data is only 1.65% higher than estimated. For the power tariff, all actual values are lower than the estimated ones. Therefore, the estimated input parameters can be considered as reasonable and rather conservative.

Hence, DNV was able to confirm that all input parameters in the PDD are derived from reliable sources and are reasonable, and it is conservative to use fixed input parameters for the investment analysis.

Question 2: The DOE is requested to explain how it has validated that importation from the grid is the most economically attractive alternative.

DNV Response:

According to methodology AM0024, the possible alternative scenarios in absence of the CDM project activity would be as follows:

- 1) The proposed project activity not undertaken as a CDM project activity;
- 2) Continuation of equivalent import of electricity from the ECPG;
- 3) To construct a new thermal power plant.

¹ <http://www.stats.gov.cn/tjsj/nds/2007/html/I0916e.htm>, <http://www.stats.gov.cn/tjsj/nds/2007/html/E0522e.htm>

As shown in our validation report, it has been discussed that alternative scenario 3 did not comply with Chinese law and thus is excluded. Then alternative scenarios 1 and 2 are the remaining possible baseline alternatives.

For the comparison of these two alternative scenarios, an appropriate analysis method has been determined. Since the project will achieve economic benefits from electricity sale other than CDM income, the investment comparison analysis (Option II) or the benchmark analysis (Option III) can be selected to confirm the project's additionality. However, the investment comparison analysis (Option II) is only applicable to the project if similar investment alternatives were available. Since this is not the case for the proposed project activity and only one baseline alternative involves investment, the benchmark analysis (Option III) was selected to confirm the project's additionality.

For alternative scenario 1, as shown in our validation report, the equity IRRs without CDM revenue are 7.47% (Tonglu Plant), 8.07% (Jiande Plant) and 7.92 (Guangde Plant), which are all lower than the equity benchmark rate of 12%, and the result is substantiated by the sensitivity analysis. So, alternative scenario1 is financially unattractive. This is also in accordance with the "Guidance on the assessment of investment analysis" that states that "if the alternative to the project activity is the supply of electricity from a grid this is not to be considered an investment and a benchmark approach is considered appropriate." These IRR analyses represent the incremental investment, costs and returns by the project compared to the continuation of importing electricity from the grid.

To further demonstrate that import of electricity from the grid is more economically attractive than the proposed project activity not undertaken as a CDM project activity, a comparative NPV calculation has been conducted by the project proponent and reviewed by DNV. It shows that the NPV for the "continuation of grid electricity imports" is minus 123.24 million RMB for Tonglu, minus 121.41 million RMB for Jiande and minus 112.72 million RMB for Guangde. The NPV for the proposed project activity not undertaken as a CDM project activity is minus 130.45 million RMB for Tonglu, minus 128.44 million RMB for Jiande and minus 122.09 million RMB for Guangde. Thus, it is demonstrated that scenario 1 (the proposed project activity not undertaken as a CDM project activity) is financially less attractive than scenario 2 (import of electricity from the grid). As per methodology AM0024, scenario 2 should consequently be identified as the baseline scenario.

In conclusion, for the project proponent the rational decision is the continuation of grid electricity imports, which is reasonably considered as the baseline scenario.

Question 3: The DOE is requested to clarify how the project emission has been validated in absence of historical data for other lines (except Jiande line), as required by the methodology, and to confirm that the project activity will not lead to an increase in fuel consumption from the normal operation of the plant.

DNV Response:

According to AM0024 Version01, Project emission (PE_y) is the difference in CO₂ emissions from use of fossil fuel in the clinker making process in cement manufacturing unit, where the project is being implemented, before and after the project implementation.

PE_y , is determined as follows:

$$PE_y = (EI_{p,y} - EI_B) * O_{clinker,y} * COEF_{fuel,y}$$

where:

$$EI_B = F_B / O_{\text{clinker},B}$$

F_B is the average annual energy consumption, expressed in TJ, of clinker making process prior to the start of operation of the project activity. At least one full year of data should be used. If a year's worth of pre-Project Activity data is not available, then the Project Developer should outline the plan for ensuring conservativeness based on a combination of the ex ante design estimate of energy consumption plus available measured data. $O_{\text{clinker},B}$ is the average annual output, expressed in tonnes of clinker prior to the start of operation of the project activity. At least one full year of data should be used.

The project proponents should report ex-ante estimate of PEy in the CDM project design document (CDM-PDD). Ex-ante estimate of PEy could be based on feasibility report for the project activity.

As mentioned in validation report, as clinker production requires a predetermined blend of raw materials (limestone and coal) to produce a tonne of clinker, the balance of these raw materials can not be adjusted and therefore the coal requirement per tonne of clinker produced does not change is deemed acceptable.

In order to justify this argument, in validation phase, the project emissions were based on two months actual data which was available for the site Jiande, and the project emissions were calculated to be minus 1.429 tCO₂e. Guangde and Tonglu use similar technology and equipment as Jiande and furthermore belong to the same owner, so the assumption that project emission are zero for Guangde and Tonglu is in our opinion reasonable.

Furthermore, the actual data for Jiande and Guangde are now available. The calculated project emissions are minus 23,429 tCO₂e and minus 13,942 tCO₂e, respectively. This confirms that the assumption, that the project emissions are zero in the PDD, is reasonable. DNV has verified the input data and the calculations provided in the response by the project participants.

Acknowledging that no actual clinker production prior to project implementation is available for the site Tonglu to determine the pre-project energy consumption per unit output of clinker, applying the values determined for the sites Jiande and Guangde is in our opinion adequate for the ex-post confirmation that the project emission are zero and the project activity will not lead to an increase in fuel consumption from the normal operation of the plant.

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

Yours faithfully

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