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Att: CDM Executive Board

Your ref.:	Our ref.:	Date:
CDM Ref 1726	MLEH/DUDAG	31 July 2008

Response to request for review ''Ma Steel (new plant) CDQ and waste heat utilization project'' (1726)

Dear Members of the CDM Executive Board,

We refer to the requests for review by three Board members concerning DNV's request for registration of project activity 1726 "Ma Steel (new plant) CDQ and waste heat utilization project" and would like to provide the following initial response to the issues raised by the requests for review.

Comment 1: **The DOE shall describe how the reliability of the input values used in the investment analysis has been validated in accordance with the requirements of EB38 paragraph 54(c).**

DNV Response:

The investment analysis is based on data from the feasibility study report (FSR). The FSR was developed in August 2005 by the ACRE Coking & Refractory Engineering Consulting Corporation and further approved by the Maanshan Development and Reform Commission on 10 August 2006. This date of approval was selected as the project's starting date. The FSR was valid at the time of the decision to proceed with the investment in the project activity in August 2006 when its approval was given by the Maanshan Development and Reform Commission.

DNV has verified the project feasibility study report dated of August 2005, and the project approval from Maanshan Development and reform Committee dated of August 2006. As part of the validation process DNV has also cross-checked the FSR values with the project investment analysis input values.

There are two input parameters for the investment which do not come from the FRS. These are the values for the grid power price and the annual O&M costs parameters. The electricity tariff used for the investment analysis is 0.42735 RMB/kWh (after tax), the data source for this value is actual power tariff purchased from the grid in 2005 as set by the East China Power Grid. The

electricity price used for the investment analysis is higher than the tariff in FSR (0.38 RMB/kWh), which a conservativ approach. DNV has reviewed the data source[1] for the electricity price.

The annual O&M costs input value for the project investment analysis is also different from the value available in the FSR. The reason for this discrepancy is that the annual O&M costs include cost for electricity consumed by the project activity. As the electricity tariff is 0.42735 RMB/kWh in PDD, while it is 0.38 RMB/kWh in FSR, then the annual total O&M cost value was also revised accordingly for the purpose of the investment analysis. During the validation process, DNV has assessed the input value of the O&M for the investment analysis and find it in accordance with EB's requirements.

In order to ensure that FSR values are valid and applicable at the time of the investment decision, DNV has also compared the proposed project investment analysis input values with other waste heat utilization projects developed in China. DNV has used the following parameter as part of projects comparison: investment costs per MW, electricity tariff and percentage of O&M costs relative to total investment costs. And by applying sectoral expertise, DNV was able to confirm that the input parameters used in the investment analysis are reasonable and adequately represent the economic situation of the project at the time of decision.

***Comment 2*: The PP/DOE should justify why the sensitivity analysis has not been carried out with electricity tariff, which could be a significant input in determining the project IRR.**

DNV Response:

In accordance with EB39 Annex 35 'Guidance on the assessment of the investment analysis' paragraph 15, guidance which was not available at the time of the validation of the project, states that input variable for the investment analysis that constitute more than 20% of the total project costs or total project revenues should be subjected to reasonable variation, and the results of this variation should be presented in the PDD and be reproducible in the associated spreadsheets. The initial objective of a sensitivity analysis is to determine in which scenarios the project activity would pass the benchmark or become more favorable than the alternative.

The electricity tariff variable was initially not included in the sensitivity analysis because DNV understands - base on its expertise for this type of project and region - that the electricity tariff, although it has an impact on the IRR, is not subject to large variation when accounting for inflation, as it will be further demonstrated below.

However, in light of the EB39 Annex 35 guidance on the assessment of the investment analysis, The project participant has provided a revised sensitivity analysis and estimated the required increase in electricity tariff which would lead the project IRR to reach the project benchmark of 11%. The project IRR reaches the benchmark when the electricity tariff increases in real term by 3.37% over the lifetime of the project, which is equivalent to an annual increase of 0.33%.

As part of its response to this request for review, the project participant has estimated the electricity tariff annual rate of change in real term using available historical data[2] for the period preceding (2000 to 2005) and following (2005 to 2008) the project decision. The results are as follow:

[1] Anhui Grid Tariff Policy, 2005. 0.5 RMB/kWh including VAT of 17%.
[2] China Statistical Yearbook 2007, Beijing, China statistical press, page 57 and 59.

Period	Growth rate electricity tariff	Rate of inflation	Annual rate of change real electricity tariff.	Annual rate of change real electricity tariff. To reach IRR=Benchmark 11%
2000-2005	2.50%	3.24%	-0.74%	0.33%
2005-2008	4.79%	5.46%[1]	-0.67%	0.33%

The conclusion of the results above is that for both periods, the rate of inflation balances the electricity tariff growth rate. The resulting annual rate of change in electricity tariff tends historically to decrease, by -0.74% for the period (2000-2005) and -0.67% (2005-2008). For the project IRR value to reach the benchmark the electricity tariff would have to increase annually by 0.33%, which is unlikely to happen in light of the historical trend shown above.

DNV has reviewed and reproduced independently the calculations presented by the project participant in its response to the request of review. DNV agrees with the argumentation that despite that the electricity tariff has an impact on the project IRR value, it is unlikely to be subject to substantial changes. On the contrary the electricity tariff tends over time to decrease in real term. In addition, Chinese authorities tend to favour stable electricity tariff over time. Therefore, it is conservative for the project participant to assume, at the time of the project decision, a constant electricity tariff over the project lifetime.

Comment 3: **Taking into consideration that the operating capacity of a CDQ is directly linked to the operating capacity of the coke ovens and that - depending on the coke demand - the coke ovens' capacity can be increased or decreased by changing the heating temperature in the coke ovens' heating chambers, the PP/DOE should provide more information regarding the maximum and the minimum design production capacities of the coke ovens and of the connected CDQ. Subsequently the PP/DOE should apply this range to the sensitivity analysis in determining the project IRR.**

DNV Response:

The project participant response is professional and was reviewed by a DNV sectoral expect and can be summarised as follow:

The coking oven batteries are designed to operate under standard parameters to consistently produce coke of a suitable quality and to optimise the lifetime of the coke oven battery equipment. A CDQ unit is subsequently designed on the basis of the designed coke oven battery operational parameters. It is not usual practice to increase the coke ovens' capacity by changing the heating temperature in the coke ovens' heating chambers.

There are two possible scenarios by which a coke oven battery operator could change the coking operational parameters which could impact the electrical output of the CDQ plant. These are:

A. a change in the throughput of the coking ovens which causes a variation in the amount of available waste heat over a set period of time, and/or;

B. a change in the coke oven battery operational hours which results in a change in the number of hours in which waste heat can be utilised for electricity generation.

Under scenario A, It is possible to increase the throughput. However, it would require to shorten the coking time and to heat the coal to a higher end temperature resulting in more available waste heat for recovery by the CDQ unit. There are two key implications of this change to normal

operational practice. Increasing the throughput has implications for the operation of the coking plant and the product quality. DNV understand that shortening the coking time will result in power coke quality, a failure to meet the expected operational life of the coke oven battery (COB, and higher emissions. None of these choices would be desired by a coking plant due to technical and regulatory reasons as has been explained in the project proponent response verified by DNV.

In addition DNV has reviewed the Harworth Power's professional opinion[1], which for the purpose of determining the maximum output from the project confirms that the limiting factor should be considered to be within the power generating plant and not the coking plant, as it is impossible to produce more power than the power plant can deliver. This is further elaborated in the project proponent's response.

Under scenario B, it is not possible that the coking plant operates more than the designed operational hours which depend on the time required for scheduled maintenance and shutdown periods. However, if the scheduled maintenance takes less time than generally expected, this will, theoretically allow the CDQ unit to operate for more hours than designed. Effect of which has already been demonstrated in the sensitivity analysis that was done for the project activity.

All evidences referred to in the project proponent response to the request for review has been provided and reviewed by DNV.

***Comment 4*: Further clarification is required on how the DOE has validated the baseline determination, in particular that the continuation of grid electricity imports is more economically attractive alternative than the project activity undertaken without CDM.**

DNV Response:

As stated in the validation report, the proposed project activity without CDM has an IRR of 10.29% and is not economically attractive when compared to the relevant benchmark of 11% that has been based on the *Economic Analysis Method and Parameters for Project Construction*, (version 2) published by the National Development and Reform Commission and the Ministry of Construction in 1993 and valid to August 2006.

The possible alternative scenarios in the absence of the proposed project activity have been discussed in the validation report. The baseline scenario is that an equivalent amount of electricity would, in the absence of the project activity, have been generated by the operation of grid-connected thermal power plants and by the addition of new generation sources.

In further confirming the additionality of the project, DNV found that the approach adopted was in line with the "Tool for the demonstration and assessment of additionality" and the EB 39 Report Annex 35 guidelines as further explained below. Following sub-step 2(a) of the tool, since the proposed project generates financial and economic benefits through the sale of electricity other than CDM-related income, the simple cost analysis (Option I) was not applicable. The investment comparison analysis (Option II) should be applicable to the projects where similar investment alternatives are available. However, since the proposed project activity without CDM is not economically attractive, Option II was also excluded and the benchmark analysis (Option III) was chosen to confirm the project's additionality.

It should be noted here that the EB 39 Report Annex 35 *''Guidance on the assessment of investment analysis''* provides further relevant guidance stating that in a situation such as this project activity, an investment comparison analysis is not appropriate as the alternative to the project activity is to make no investment and take the supply of electricity from the grid:

[1] Harworth Letter to DNV 24th of July 2008

"If the proposed baseline scenario leaves the project participant no other choice than to make an investment to supply the same (or substitute) products or services, a benchmark analysis is not appropriate and an investment comparison analysis shall be used. 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."

DNV understands that since one of the alternative to the project activity is continued import of electricity from the grid, the project developer's decision should be to invest in the project activity or not invest (i.e. the project developer does not require the project activity to provide its limited electricity demand as it can be sourced from the grid). The following elaboration in the aforementioned EB 39 Report Annex 35 is also found relevant by DNV:

"*The benchmark approach is therefore suited to circumstances where the baseline does not require investment or is outside the direct control of the project developer, i.e. cases where the choice of the developer is to invest or not to invest."*[1]

However, in order to further illustrate succinctly that continuation of grid electricity imports is more economically attractive than the project activity undertaken without CDM, a comparative NPV calculation has be conducted by the project proponent and reviewed by DNV. The comparative calculation adopted here is based on calculation of the NPV between a) "*The project activity undertaken without CDM*" and b) "*Continuation of grid electricity imports*":

The comparative NPV calculation was conducted by comparing (1) the cost of continuing the baseline activity of importing electricity to (2) the cost of implementing the project without CDM revenue. In the second NPV calculation, no revenues were included for the avoided power supply costs, because the NPV of option 2 will be compared with the NPV of option 1, purchase from the grid. This was found reasonable by DNV. The discounting was conducted using the benchmark rate of 11%.

The NPV for the "*continuation of grid electricity imports*" has been calculated to be minus 46.81 million RMB. The NPV for "*The project activity undertaken without CDM*" has been calculated to be minus 48.25 million RMB.

The result of the comparative NPV calculation thus indicates that the "*continuation of grid electricity imports*" is more economically attractive than the "*project activity undertaken without CDM*". This forms the basis for the baseline scenario to be the "*Continuation of equivalent import of electricity from North China Power Grid*" without the use of waste heat for electricity production.

We sincerely hope that the Board accepts our aforementioned explanations.

Yours faithfully
for DET NORSKE VERITAS CERTIFICATION AS

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[1] EB 39 Report Annex 35 "Guidance on the Assessment of Investment Analysis" page 3