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	Javier Castro	Javier .Castro@tuev-sued.de			

Request for Review

Dear Sirs,

Please find below the response to the review formulated for the CDM project with the registration number 1914. In case you have any further inquiries please let us know how we can kindly

Javier Castro
Carbon Management Service

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Response to the CDM Executive Board

Question 1

The DOE should clarify how it has validated the investment analysis, in particular: (a) the period of analysis and; (b) the conservativeness and justification for the fixed tariff used.

Response by PP

(a)

The period of analysis is 20years;

According to **Page 84, '*Inform on Economic Assessment method and parameter of Construction Projects by NDRC and MO (Version 03)C*',** the project life time is determined by the lifetime of the main equipments, for the waste heat project the main equipment is the generator and boiler, and according to audit laws and regulations of China the lifetime of generator and boiler are considered to be 12-20 years, so this input value is considered reliable***/4/***[http://www.ale.gov.cn/09/03.jsp?tid=200703011249016315241 96]

For the Shuanglong project, the left of fix assets is 2.78 million Yuan at the end of the assets periods, this has been taken into consideration of cash flow while calculating IRR.

(b)

- Firstly, the applied tariff (0.323 Yuan/KWh) is calculated based on national regulation, namely *Notice about adjust electricity purchase price of East China Power Grid from NDRC" (No.FaiGaiJiaGe [2006] 1230) http://www.ndrc.gov.cn/zcfb/zcfbtz/tz2006/t20060630_75077.htm;*
- Secondly, the electricity prices in the same region are about 0.323 Yuan/KWh, For project *Yixing Jinshu Cement Co.ltd Low Temperature Waste Heat Power Generation Project(http://cdm.unfccc.int/Projects/Validation/index.html) and*

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The project *Yixing Tiansheng Cement Co.ltd Low Temperature Waste Heat Power Generation Project(http://cdm.unfccc.int/Projects/Validation/index.html);*

The prospected prices are all 0.323 Yuan/KWh.

This documentation is published by NDRC of Jiangsu Province on its official website on 2006.07.03. (see annex01); There is also a documentation "Notice on Adjustment of Electricity Price from Jiangsu Province Price Bureau" is published on Jiangsu Province Price Bureau's(Government who's in charge of price) website based on "Notice about adjust electricity purchase price of East China Power Grid" from NDRC" (No.FaiGaiJiaGe 2006 1230); (see annex02)

- Thirdly, Because extra power reserve fees is going to be charged by power supply company for captive power station. So, the expected price used in PDD is lower than the price that the project owner buying electricity. The price of 0.323 used is conservative.

Response by DOE

(a) In No. 3 of Annex 45 of EB41 it is stated the following:

The period of assessment should not be limited to the proposed crediting period of the CDM project activity. Both project IRR and equity IRR calculations shall as a preference reflect the period of expected operation of the underlying project activity (technical lifetime), or - if a shorter period is chosen - include the fair value of the project activity assets at the end of the assessment period. In general a minimum period of 10 years and a maximum of 20 years will be appropriate. …

The crediting period lasts 10 years for this project. Meanwhile, the lifetime of the project is indicated in the PDD with 21 years, which is, according to DOE experience, regarded to be appropriate for such project activity. The investment analysis has been done for 16 years, being less than the technical lifetime. The fair value of the project activity assets at the end of the assessment period has been ensured by taking it into consideration of "fix assets recovery" (left of fix assets at the end of the assets periods) while calculating the cash flow of the proposed project. Hence, the chosen period does comply with the EB guideline.

(b) The price of 0.323 Yuan/kWh (excl. VAT) is consistent with the value applied in the FSR. The power tariff is cross- checked with the Jiangsu tariff rate. Official evidence for the selected power tariff of 0.323 Yuan/kWh dated from 2006 has been checked by the local Auditor. The value is plausible and reasonable. Additionally the benchmark defines

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the use of fix values in the analysis.

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Question 2

The DOE is requested to further explain why the PP opted to use a less efficient technology and how the CDM would help to overcome this barrier.

Response by PP

According to step 3 of the additionality tool(EB39 Annex10).

(b) Technological barriers, *inter alia*:

- Skilled and/or properly trained labour to operate and maintain the technology is not available in the relevant country/region, which leads to an unacceptably high risk of equipment disrepair and malfunctioning or other underperformance; [not applicable for the proposed project]
- Risk of technological failure: the process/technology failure risk in the local circumstances is significantly greater than for other technologies that provide services or outputs comparable to those of the proposed CDM project activity, as demonstrated by relevant scientific literature or technology manufacturer information; [not applicable for the proposed project]

Compared with foreign technology, domestic technology is in a less efficient; but domestic has a lower investment and operation cost[1].

The investment comparison of domestic and foreign technology[2]:

Item	Domestic	Foreign
Unit Investment	7000-9000/KWh	16000KWh

From the table, it can be seen that compared with domestic technology, the foreign technology request too much for investment. For this reason, the project owner shall have a very low prospected IRR. Under this condition, the project owner has to choose a less efficient domestic technology and accept unproven reliability and uncertainty.

The implementation of Pure low temperature waste heat recycling power generation in China has been prevented to some degree by the high cost of advanced imported equipment. The manufacturer of the waste-heat utilization technology has been unable to build up substantial sales to other cement plants in China due to the high cost of its equipment.[3] The high cost of equipment prevents Chinese companies from implementing these technologies.

[1] See (Refer to) for more information on energy efficiency promotion policies: Global Environment Institute(2005), Financing of Energy Efficiency Improvement for Cement Industry in China, GEI Report, January 2005.

[2] Comparison of Domestic and foreign Cement Waste Heat Recovery Tech, Building Material of China, 2005.06.

[3] The first applications of advanced waste heat utilization technology in the Chinese cement industry was a demonstration project at the Anhui Ningguo Cement Plant supported by the New Energy and Industrial Technology Development Organization (NEDO) of Japan and the State Development and Planning Commission which became operational in 1998.

Domestic industrial technology companies have been developing waste heat utilization technologies, but these technologies have not yet achieved the same standards in efficiency and in particular reliability as foreign manufacturers[4].

Besides, the project owner has no experience on operation of power generation,they have been faced many challenges from power station. Skilled and/or properly trained labour to operate and maintain the technology is not available in the relevant country/region, which leads to an unacceptably high risk of equipment disrepair and malfunctioning or other underperformance; For this reason, the project owner has to cost a large sum of money to employ expertise and made special arrangement for its staff to become familiar with waste heat capture and utilization technology. Staff of the project attended the training sessions in order to operate and maintain the waste heat utilization equipment. This means a large expenditure; in fact the tech barriers at last come into financial barriers if the project owner chooses the domestic technology.
However, with the expected CDM income, the project owner shall be able to have a reasonable project IRR and with a good cash flow to afford to provide more training for the staff and employ experienced experts to guarantee the operation and so to low down the prospected risk and overcome this barrier.

Response by DOE

The project participant relies on both, the investment analysis (step 2) and the barrier analysis (step 3). The investment analysis proves already the project additionality. According to the applied addionality tool version 4, the barrier analysis is then optional. Nevertheless, step 3 is applied in the PDD and, therefore, the technological barrier will be justified in the following.

Technological Barrier:

The PP uses domestic technology, meanwhile this technology is not available in the Jiangsu province. All available information of the PP regarding this barrier has been validated by the DOE. Since non of the criteria of the additionality tool for a technological barrier are fully applicable here, a technological barrier for the project activity cannot be assumed.

[4] See (Refer to) for more information on energy efficiency promotion policies: Global Environment Institute(2005), Financing of Energy Efficiency Improvement for Cement Industry in China, GEI Report, January 2005.

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Question 3

The DOE should clarify how the project start date complies with the CDM Glossary of terms.

Response by PP

According to EB's CDM-Glos-04, *"the start date shall be considered to be the date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity."*
AS Timeline showed in PDD:

Time	Milestones
10/2006	Investment decision was made on the board meeting and CDM issue was taken into consideration.
05/2007	Environmental impact assessment was approved by Environmental Protection Administration of Jiangsu Province.
07/2007	Feasibility Study Report was approved by Economy and Trade committee of Jiangsu Province, the proposed project gained its approval from government, it is recommended that the project owner to apply for support from CDM.
09/2007	Main equipments boilers order contract signed.
10/2007	The 5000t/d cement production line was put into production.
03/2008	Construction started.

The investment decision was made in 10/2006 which can be cross-checked by the board meeting records. And in 07/2007, the proposed project gained its approval from local government *Economy and Trade committee of Jiangsu Province*, it is recommended that the project owner to apply for support from CDM. This can be cross-checked with the approval document. With this approval, the project owner can start construction, so this is considered to be the starting date of the proposed project.

The consideration of CDM issue can be seen both from the board meeting records and the approval of local government.

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Response by DOE

As for CDM-Glos-04 (EB 41, para. 67) the starting date of a CDM project activity is defined as following:

The starting date of a CDM project activity is the earliest date at which either the implementation or construction or real action of a project activity begins. Project activities starting between 1 January 2000 and the date of the registration of a first clean development mechanism project have to provide documentation, at the time of registration, showing that the starting date fell within this period, if the project activity is submitted for registration before 31 December 2005.

In light of the above definition, the start date shall be considered to be the date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity. This, for example, can be the date on which contracts have been signed for equipment or construction/operation services required for the project activity. Minor pre-project expenses, e.g. the contracting of services /payment of fees for feasibility studies or preliminary surveys, should not be considered in the determination of the start date as they do not necessarily indicate the commencement of implementation of the project. For those project activities which do not require construction or significant pre-project implementation (e.g. light bulb replacement) the start date is to be considered the date when real action occurs. In the context of the above definition, pre-project planning is not considered "real action".

The Board further noted that there may be circumstances in which an investment decision is taken and the project activity implementation is subsequently ceased. If such project activities are restarted due to consideration of the benefits of the CDM the cessation of project implementation must be demonstrated by means of credible evidence such as cancellation of contracts or revocation of government permits. Any investment analysis used to demonstrate additionality shall comply with the requirements of paragraph 7 of the "Guidance on the assessment of investment analysis" (version 02).

As indicated in the timeline on page 20 of the PDD, the main equipment boilers contract order signed was in September 2007. Evidence stating this was available for the Audit team (see also IRL No. 27 of Annex 2 of our validation report). This date is regarded by DOE to be the start date of the project activity (start of implementation), since expenditures in this case for the purchase of the boilers have been committed by the PP.

The project start date, indicated in chapter C.1.1 of the PDD, is July 4, 2007 combined with the following statement: "*when the proposed project was approved by Economy and Commerce Commission of Jiangsu Province ."* Taking into account the above indicated definition of the start date of a project activity, this event is considered to be related to minor pre-project expenses and, thus, does not comply with it.

However, it can be confirmed by DOE that with the decision of the directorate of Jiangsu Jiaoqiao Cement Co. Ltd. to invest on Waste Heat Recovery Project applying for CDM project from October 2006 (see IRL No. 28), strong evidence is available proving that the CDM project has been considered prior to the correct starting date of the project activity in September 2007.

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Question 4

The DOE is requested to clarify how the baseline electricity supply from the grid has been calculated and validated and to confirm that the electrical output of the project activity will not be greater than the historical electricity consumption of the cement line.

Response by PP

The electricity supply is calculated:

- First, the mean operation capacity of the proposed project is calculated to the waste heat volume of the cement kiln; it is 8.5MW;
- Secondly, the operation hours is chosen as 7000hours/year;
- Thirdly, for this kind of project, 8% of the electricity generated is consumed by the generating system itself;

So, the electricity supply=8.5*7000*0.92%=5414MWh (54.14GWh); This can be cross checked with similar projects data published by professional independent Cement Design Institute on cement industrial website ***/1/*** [http://www.chinacements.com/news/2007/4-5/C15386705.htm and /2/ [Comparison of Domestic and foreign Cement Waste Heat Recovery Tech*, Building Material of China, 2005.06*]. This project is a newly built one; there is no history data of electricity consumption of the cement line.

However, “the electrical output of the project activity will not be greater than the historical electricity consumption of the cement line’, this can be checked by comparing different FSR from different cement design institutes. The electrical output of the project activity takes a 30% of electricity consumption of the cement line.

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Calculation Details:

<table>
<tr><th>Electricity consumption of the cement kiln</th><th colspan="2">Electricity generation from Waste Heat Recovery[5]</th></tr>
<tr><td rowspan="6">For a 5000t/d cement line, its mean electricity consumption in China is about 91.94KWh/t;[6]
The mean output of 5000t/d cement line is 1,500,000ton/y(5000 t/d *300d);
The electricity consumed is
91.94*1,500,000=13791×10^4 kWh;</td><td>Waste heat resource parameters from SP</td><td>340000Nm^3/h; 350 ℃;
Outlet:240±10 ℃</td></tr>
<tr><td>Heat available for WHR</td><td>6000×10^{4}kJ/h</td></tr>
<tr><td>Waste heat resource parameters from AQC</td><td>180000 Nm^3/h; 360 ℃;
Outlet: 95℃</td></tr>
<tr><td>Heat available for WHR</td><td>6300×10^4 kJ/h</td></tr>
<tr><td>Sum of heat resource</td><td>7000 hours/y</td></tr>
<tr><td>Expected operation hours</td><td>5414×10^4 kWh</td></tr>
<tr><td colspan="3">The proportion that electricity from WHR takes of electricity consumed by cement line is
5414×10^4/13791×10^4=39.25%;
So, it is clear that the Electricity generation from Waste Heat Recovery shall never overcome Electricity consumption of the cement kiln.</td></tr>
</table>

Response by DOE

According to the European BREF paper for the cement industry (2001) the power consumption of a cement kiln is between 90 and 130 kWh/t cement. The above indicated figure for that evidence is available is within this range.

The above calculated figures for the yearly power consumption of the whole cement plant and the yearly power generated by the project are deemed to be reasonable. Finally, by the calculation of the PP above it is clearly demonstrated that the amount for the baseline electricity consumption of the cement kiln is much higher than the electricity generated by the project.

[5] Data source: Shuanglong's FSR; Data applied can also be cross-checked by DOE's expertise on other cement projects;
[6] See Annex03-Energy consumption of new dry cement line;