Industrie Service

Choose certainty.
Add value.

TÜV SÜD Industrie Service GmbH · 80684 München · Germany

CDM Executive Board

Your reference/letter of	Our reference/name	Tel. extension/E-mail	Fax extension	Date/Document	Page
	IS-CMS-MUC/Th	+49-89 5791-1186	+49-89 5791-2756	2009-09-24	1 of 7
	Thomas Kleiser	Thomas.Kleiser@tuev-sued.de			

Request for review

Dear Sirs,

Please find below the response to the request for review formulated for the CDM project with the registration number 2668. In case you have any further inquiries please let us know as we kindly assist you.

Yours sincerely,

Thomas Kleiser
Carbon Management Service

Industrie Service

Response to the request for review for the CDM project activity
'Tianjin Zhenxing Cement Waste Heat Recovery for Power Generation Project'

Issue 1:

Further clarification is sought how the DOE has validated that the investment barrier to the project activity as it appears to be a problem with the project participant being unable to avail a loan in general, rather than the project activity being considered too risky to be granted a loan. If the barrier cannot be further justified, an investment analysis may be carried out to demonstrate additionality.

Response from TÜV SÜD

First of all, it has to be clearly stated that the proposed project is an internal project, which means within the premises of Tianjin Cement Industry. As such it can be implemented only from Tianjin Cement Industry and no one else.

According to the investment analysis (IRL 33) that was conducted for the proposed project by Tianjing Cement Industry Designing Institute Co. Ltd. on April 2007 the total project investment was estimated to be 59.54 Mio RMB, the company was in position to invest from own funds 20.84 Mio RMB and the rest 38.70 Mio RMB would have been raised from a bank loan. The correctness and conservativeness of the estimated total investment costs is proven by the EPC (Engineering Procurement Contract) contract, which covers most major parts of the project activity, was signed for the project in 2007, and its total value is 56.10 million RMB (see IR 5). The contract has been fully executed as the project is fully operational now, and thus it could be basically used for cross-checking. Apart from that, the connection costs to the grid were estimated to be 2.478 Mio RMB (IR 2). Combined these two major (but not only ones) categories of costs result to 58.578 Mio RMB, something that justifies the estimated total investment costs of 59.54 Mio RMB.

The incapacity of Tianjin Zhenxing Cement Company to cover by equity funds the whole amount of required investment is proved by the audit that was conducted regarding the financial status of Tianjin Zhenxing Cement Company by an independent entity, the 'Beijing Xinghua Certificate Public Accountants' and the respective report was issued on August 13th, 2007 (IRL 35). According to the report the net profit of the company for 2006 was approximately 1.5 Mio RMB. Furthermore, according to the same audit report, the company's total currency asset as of December 31st, 2006 was 87.05 Mio RMB of which 56.1 Mio RMB were cash deposits for money orders and thus could not be used. What remains of the company's total currency asset is 30.95 Mio RMB, which is much less as the total investment costs of 59.54 Mio RMB. Here it has to be also mentioned that big part of current capital needs to be available in order to maintain the normal operation of a cement plant, mainly for procurement of raw materials and to cover operating costs. For the Tianjin Zhenxing Cement Co., Ltd., the necessary current capital is generally about 10-30 million RMB. Therefore, what would theoretically remain available for the WHR project is even less than the above stated 30.95 Mio.

Industrie Service

Due to the unavailability of equity funds the project owner seeked financial help from banks and other funds institutions (financing channels such as security market, bond market, and industrial funds) of China. Still, in the beginning with no success. The Beichen Sub-branch, Tianjin Branch of China Construction Bank issued a letter on 24th July 2007 stating that due to the fact that a) Tianjin Zhenxing Cement Company has a large amount of existing unpaid loan to this bank until that point in time and b) due to the strict control on the loan limit applied by the bank recently, the bank decided not provide a loan as per request (IRL 30).

Tianjin Zhenxing Cement Company continued looking for loan by requesting other financial institutions. These were a) SPD Bank, contact person Xiaoming Zhang, Tel: 22-23671829, Bank of communications, Nankai branch, contact person Ligang Shang, Tel: 022-87728020, Tianjin Bank, contact person Zhe Zhao, Tel: 022-26229759, China Agriculture Bank, contact person Zhaoyi Xue, Tel: 022-26997180.

They all refused to grant a loan for the WHR project. This was cross-checked by the local audit team of TÜV SÜD in China.

The lack of financial support was an insurmountable barrier that would prevent the implementation of this CDM project.

Finally, the Tianjin Branch of China Industrial Bank accepted to grant the necessary loan to the project owner, something that can be seen in the letter of the bank from 06th August 2007 (IRL 17). In this letter the bank agrees to grant the loan despite the assets-liabilities ratio of the company at that particular time, based on the potential additional revenues from the CER's which would increase the financial attractiveness of the project.

<u>The decisive reason to overcome this hurdle was the serious CDM potential which may substantially shorten the returning period and increase the financial attractiveness of the project.</u>

Very helpful was also the fact that Tianjin Zhenxing had already signed the CER purchase term sheet with international buyer (January 2007) and that had started the CDM application process via a DOE.

The proposed project activity is an internal project on the premises of the Tianjin Zhenxing Cement Company. The only legal entity that can implement the proposed project is Tianjin Zhenxing Cement Company. This means, that if this company cannot raise the necessary funds, then the project will not be implemented at all. According to that, it is additional.

In summary, the additionality of the proposed CDM project is soundly proven and checked by TÜV SÜD according to the requirements of the additionality tool, version 05.2, step 4 and the CDM Validation and Verification Manual that was result of EB meeting 44.

Industrie Service

Response from Project Participant

As stated in the PDD requesting registration, the proposed project activity has faced serious barriers due to its limited access to financial resources since it was approved by the local government.

First of all, the amount of the total investment cost of the project is in such magnitude that it cannot be independently financed by the project owner, which has been clearly reflected in the audit report on the annual financial statement of the Tianjin Zhenxing Cement Co., Ltd. in 2006 (IRL 35). As a result, the financing of the project depends on other financial resources.

However, as proved in the PDD requesting registration, other possible external financial channels, such as security market, bond market and industrial funds, have not been available to the project activity.

Consequently, the most likely financial resource for the project activity is the bank loan. At the time of seeking financial resources for the project activity, the project owner had been operating at low profit for several years, facing huge pressure and fierce competition in the Chinese cement industry, and lacking sufficient collateral to be granted financial support, all of which contribute to its poor financial crediting, and there was no sign that the situation would be turned around quickly in the near future. All of the factors, incorporated with the large amount of the loan required for the project, make the grant of loan to the project activity highly risky for any financial institutions that would possibly provide support to the project. Therefore, it is not surprising that the loan application for the project activity has been declined by local branches of several banks, such as China Construction Bank (IRL 30), Shanghai Pudong Development Bank, Bank of Communications, Bank of Tianjin, and Agricultural Bank of China. Actually, the loan would not even be granted by the China Industrial Bank if no CDM potential existed for project 2668, as reflected in IRL 17.

Thus, though it appears that the barrier existed because of the project owner's inability to avail a loan, it could be argued that fundamentally the barrier is still associated with the risk of the project activity itself. No matter how good the return rate of the project looks on paper, once the project owner is in predicament, e.g., facing the broken cash flow, the payback of the project would not be secured and thus it could be considered risky. Moreover, it should be noted that the project owner did have the financial ability to certain extents by its equity fund, i.e., 35% of the total investment cost for the project, as long as the financial support needed is not as insurmountable as that required for project 2668. In another word, the barrier would not exist to the project owner for any of its projects in considerably smaller scale, and thus the amount of investment required for project is specifically relevant to the barrier identified. So, the barrier due to limited access to financial resources should not be regarded applicable to the project owner in general, but only to project 2668.

In terms of applicability of barrier analysis, as per paragraph 114 of the VVM, 114. issues that have a clear direct impact on the financial returns of the project activity cannot be considered barriers and shall be assessed by investment analysis. This does not refer to either

(a) Risk related barriers, for example risk of technical failure, that could have negative effects on financial performance, or
(b) Barriers related to the unavailability of sources of finance for the project activity.

For project 2668, it has been clearly demonstrated that no financial source would be available without CDM. This barrier that would prevent the project from occurring was actually alleviated by the CDM potential of the project. As a result, it is our opinion that barrier analysis is justified and should be applied to demonstrate the additionality of project 2668.

Issue 2:

The PP/DOE shall substantiate that the waste heat utilized in the project activity was released into the atmosphere in the absence of the project activity at existing facility, in line with the applicability criteria of the methodology.

Response from TÜV SÜD

The project design and construction status were checked by the audit team of TÜV SÜD during the on-site visit and it was found out that waste heat was released into the atmosphere without any utilization and no existing WHR facility has been found on-site.
A plant layout which shows the original facility arrangement (IRL 26) has been reviewed by the audit team during the follow-up interviews. Hence the audit team could confirm that the waste heat utilized in the project activity was released into the atmosphere in the absence of the project activity at existing facility.
This approach is in line with the criteria of methodology AMS III.Q version 1. Paragraph 6.b.iv states that:
'The waste gas/heat or waste pressure utilized in the project activity would have been flared or released into the atmosphere in the absence of the project activity. This shall be proven by one of the following options:
Process plant manufacturer's original specification/information, schemes and diagrams from the construction of the facility could be used as an estimate of quantity and energy content of waste gas/heat produced for rated plant capacity per unit of product produced'.

Response from Project Participant

Methodology AMS-III.Q (v1) is applicable in cases where the waste heat utilized in the project activity would have been flared or released into the atmosphere in the absence of the project activity, and this shall be proven by one of the following options:

- **Direct measurements** of energy content and amount of the waste gas/heat or waste pressure for at least three years prior to the start of the project activity.

- **Energy balance** of relevant sections of the plant to prove that the waste gas/heat or waste pressure was not a source of energy before the implementation of the project activity. For the energy balance the representative process parameters are

Industrie Service

required. The energy balance must demonstrate that the waste gas/heat or waste pressure was not used and also provide conservative estimations of the energy content and amount of waste gas/heat or waste pressure released.

- **Energy bills** (electricity, fossil fuel) to demonstrate that all the energy required for the process (e.g. based on specific energy consumption specified by the manufacturer) has been procured commercially. Project participants are required to demonstrate through the financial documents (e.g. balance sheets, profit and loss statement) that no energy was generated by waste gas/heat or waste pressure and sold to other facilities and/or the grid. The bills and financial statements should be audited by competent authorities.

- **Process plant** manufacturer's original specification/information, schemes and diagrams from the construction of the facility could be used as an estimate of quantity and energy content of waste gas/heat produced for rated plant capacity per unit of product produced.

During the validation process of the project, approach 4 is applied according to which the **process plant** manufacturer's original diagram of the clinker production lines before project 2668 was implemented (IRL 26) is checked. No WHR facilities have been found on the diagram, which indicates that the waste heat had not been utilized and thus been released into the atmosphere before project 2668 was implemented.

It could be further substantiated the release of waste heat into the atmosphere in the absence of the project by the approach of **energy bills**. In 2006, the year before project 2668 was implemented, the total electricity consumption and the total cement production of the Tianjin Zhenxing Cement Co., Ltd. were 196.78 million kWh (IR 3) and 166.12 million tons, respectively, which makes a comprehensive electricity consumption per unit of cement of approximately 118 kWh/ton of cement, within the reasonable ranges of the comparable reference value of 110 kWh/ton as published in the relevant national standard (IR 4)[1]. And all of the demand in electricity in 2006 has been met by the import from the power grid[2]. Moreover, in year 2006, all revenues of the Tianjin Zhenxing Cement Co., Ltd. came from its main business, the cement production, except for the only minor revenues from the transportation of cement, as reflected in the annual audit report on the accounting statements of the Tianjin Zhenxing Cement Co., Ltd. in 2006[3] (IRL 35.1). Therefore, it could be concluded that all waste heat to be utilized in project 2668 was released before the project was implemented since all electricity demand required for the cement production process had been procured commercially and the waste heat had not been sold for any commercial purposes.

Issue 3:

[1] *The norm of energy consumption per unit of product of cement* (GB16780-2007), pg. 2.

[2] Detailed invoices for power consumption of Tianjin Zhenxing Cement Co., Ltd. in year 2006.

[3] The Audit report on the annual financial statement of the Tianjin Zhenxing Cement Co., Ltd. in 2006, Annex, pg. 13 & 15, Beijing Xinghua Accounting Firm, (2007) Jing Kuai Xing Shenzi #1-35.

Industrie Service

The means of calculation of fcap is not in accordance with AMS.III.Q. version 01. The DOE should have raised a Corrective Action Request to require the project participant to apply AMS.III.Q. version 02 or requested a deviation. As no deviation has been requested, the PP should now apply AMS.III.Q. version 02 fully to this project activity. The DOE should revalidate the project applying AMS.III.Q. version 02.

Response from TÜV SÜD

As seen in chapter B.6.1 step 6 p. 28 of PDD, method from AMS III.Q version 1 is applied in order to calculate fcap. This can be also seen in table B.6.2 where the parameters $Q_{BL,product}$ and $q_{WG,product}$ are presented.

Still, there is an inconsistency between page 22 of PDD and page 28 regarding the applied units to measure $Q_{BL,product}$ and $q_{WG,product}$. In p. 28 the units that are foreseen in AMS III.Q are used [Nm^3] but in p.22 the units that are used are [MWh].

The DOE would like to apologize for overseeing this inconsistency and clearly state that concerning the determination of the capping factor method 2 of version 1 of AMSIII.Q is applied. The units if the paramaters $Q_{BL,product}$ and $q_{WG,product}$ will be revised in order to be consistent throughout the PDD.

Response from Project Participant

After double checking, it is concluded that the fcap calculation applied in the PDD is basically in compliance with requirement in AMS-III.Q (version 01), as shown on pages 28 and 31 of the PDD requesting registration as well as the CER calculation sheet (Appendix 1 as the registration is requested). However, the units of relevant parameters in fcap calculation, such as $Q_{WG,BL}$, $Q_{WG,y}$, and $q_{WG,product}$, are mistakenly expressed on page 22 of the PDD requesting registration, something which is in discrepancy with AMS-III.Q (version 01). Necessary corrections will be made to make the PDD in complete compliance with AMS-III.Q (version 01).