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	IS-CMS-MUC/RZ Rachel Zhang	+49 89 5791-3038 rachel.zhang@tuev-sued.de	+49 89 5791-2756	2009-10-09	1 of 11

Dear Sirs or Madams,

Please find below the response to the review formulated for the CDM project "Tangshan Jidong Cement Matoushan Matishan 25MW Cement Waste heat Recovery Project" with the registration number 2587. In case you have any further inquiries please let us know as we kindly assist you.

Best regards

Rachel Zhang
Carbon Management Service

Appendix:

- Statement from the "*Tangshan branch of the North China Power Grid Company*"
- Statement from "*Hebei Province Building Materials Industry Design & Research Institute*"
- Bank loan approval from Agricultural Bank of China
- Extracts from World Bank report no.: 38641-CN on "*Energy Efficiency Financing Project*"
- Extracts from International Finance Corporation Report on "*Energy Efficiency Improvement Potential & Opportunities in China's Cement Industry*"
- Statement from "*Hebei Building Materials Industry Design & Research Institute*" on the availability of heat

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Response to the CDM Executive Board

Request 1:
The DOE shall further clarify on the suitability of the WACC as an appropriate benchmark for the project IRR in accordance with the paragraph 13 of the Guidance on the Assessment of Investment Analysis version 2.1, in particular, application of WACC for similar projects with similar risks, developed by the same company.

AND

Request 2:
The DOE shall further substantiate: (i) the suitability of the input values to the investment analysis in line with the paragraph 111 (c) of VVM, in particular, total investment, annual O&M cost, and annual operational hours; and (ii) why demand/capacity charge, if it would have been paid in the absence of the project activity by the project participant, has not been considered as savings in the investment analysis.

AND

Request 3:
The PP/DOE shall further clarify the existence of the investment barriers to the project activity in accordance with Tool for the demonstration and assessment of additionality version 5.2.

AND

Request 4:
The DOE shall justify whether the project activity consumes the waste heat from an existing cement facility or a new cement facility in line with ACM0012 version 03.1. Further the DOE shall substantiate whether there are more than two clinker production lines at the cement production facility, if so, what the use of waste heat generated by other clinker production lines is.

AND

Request 5:
The PP/DOE shall further substantiate that the waste heat utilized in the project activity would be released into the atmosphere in the absence of the project activity in line with the ACM0012 v3.1.

AND

Request 6:
The DOE shall further clarify how the means of calculation of fcap is in line with the ACM0012 v3.1, in particular, use of data of another similar clinker production line (Sanyou 1) to calculate the theoretical recoverable energy.

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Response by TÜV SÜD:

Issue 1:

The "Guidance on the Assessment of Investment Analysis" requires the following:

Internal company benchmarks/expected returns (including those used as the expected return on equity in the calculation of a weighted average cost of capital - WACC), should only be applied in cases where there is only one possible project developer and should be demonstrated to have been used for similar projects with similar risks, developed by the same company….
….to assess the past financial behavior of the entity during at least the last 3 years in relation to similar projects.

The guidance does not clearly define the meaning of "similar projects", hence the audit team assumes that the board is interested in other waste heat recovery projects implemented by the same company.
In the past Tangshan Jidong Cement Co., Ltd. has implemented one waste heat recovery project.
The FSR of this project, developed by an independent and certified third party, indicates an IRR after tax of 33.73% which is higher than the benchmark of 15,58%. Nevertheless, the risk connected to the project (e.g. supply constrains) have been too high for the project owner. To overcome the risk perception Jidong decided not to implement this project as a pure WHR project, but rather to implement it as a combined coal-fired / WHR project (IRR of 24.88%). This shows that the company has applied the same benchmark for similar Waste Heat Recovery project in the past.
Furthermore the PP invests in five other Waste Heat Recovery projects. Due to non sufficient financial returns these projects will be realized with the help of CDM. For all these projects the benchmark of 15.58% has been used.
The project participant provided the DOE with an overview of the company investments since 2003. For all projects (WHR and core business investments like raw mill installation; from 2003 to 2006) mentioned in the PDD, the FSR has been checked and verified by TÜV SÜD. All investments have crossed the announced benchmark of 15.58%.
These projects are located in the core business of the Cement plant (grinding mill, new production line).The audit team recognizes that these projects are not baring the same risks as the WHR projects.
Nevertheless, following the International Finance Corporation Report on "Energy Efficiency Improvement Potential & Opportunities in China's Cement Industry" in August 2007 (IRL 28) decision makers give priority to the expansion of the production capacity rather than investing in energy conservation projects. Some of the obstacles faced by the investors are:

- Large investment costs
- Commercial banks impose higher guarantee requirements on the financing of energy efficiency projects. It is hard for Cement enterprises to produce the assets meeting these guarantee requirements.
- The opportunity cost of not implementing core-business production related projects (cement production) and instead diverting resources to non-core business (WHR utilization), incentivizes the project company to favour the implementation of cement production related projects over projects not directly related to the production and sale of cement (such as WHR projects)

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These obstacles have also been confirmed by the World Bank report no.: 38641-CN on "Energy Efficiency Financing Project".[1] (IRL 58)
The above named hurdles show that the comparison to projects in the core business is even conservative, as they include fewer risks than WHR projects.

The DOE wants to note that minimum investment benchmarks are published in the "Methods and Parameters for Financial Evaluation of Construction projects (3rd Edition)" (IRL 59). These are the so-called sector benchmarks applied by other CDM projects in China. Jidong is not required to use these benchmarks for their investment decisions.
Indeed, the book emphasizes that the published benchmarks are not necessarily suitable for private investors. In fact, the Methods and Parameters book states that private investors or other investors can determine their own benchmark based on their cost of capital and risk premium on particular investment project.
Hence TÜV SÜD confirms that the benchmark is suitable for the proposed project and has been continuously applied for similar projects with similar risks for the same company.

[1] Wordlbank Report No.: 38641-CN; project appraisal document on a proposed loan in the amount of US$200 million and a proposed grant from the global environment facility trust fund in the amount of US$13.5 million to the people's republic of china in support of the energy efficient project, Transport, Energy and Mining Sector Unit sustainable development department east asia and pacific, 21 April 2008.

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Issue 2:

(i)
The DOE has checked the data applied in the PDD and IRR analysis with the Feasibility Study of Tangshan Jidong Cement Matoushan Matishan 25MW Cement Waste heat Recovery Project (IRL 6). All parameters listed in the FSR have been taken as input values.
The FSR has been completed by an independent and certified design institute (IRL 7) in November 2006, which is before the investment decision in March 2007 (IRL 13). The time between the FSR issuance and the starting date of the project activity are only 4 months.
The FSR has been approved by the government (IRL 8)
Hence the DOE confirms that the values have been valid and applicable at the time of the investment decision.

Furthermore the DOE cross checked the input values:

Operational hours:

The estimated electricity production of the proposed project is 159,460 MWh, the installed nominal capacity of the turbine is 23.8 MW and the installed nominal capacity of the boiler is 25 MW.
Considering the installed capacity of the turbine, which shall be used as the main indicator for the electricity generation, the operational hours of the project are:
159,460 MWh/ 23.8 MW = 6700 hours = 279 days
That indicates that the turbine is running with a load of 76%.
Based on our local experience TÜV SÜD confirms that this parameter is reasonable.

Total investment:

The total investment has been compared with the Reference document on Best Available Techniques in the Cement and Lime Industries (2007 draft, latest version European Commission; IRL 60). According to this document the investment costs of Waste Heat Recovery Projects in Cement plants should be around 0.8 ~1.2 million €.
The proposed project has an installed capacity of 25 MW (using the capacity of the generator, to be more conservative), hence the investment costs should be around 20~30 million €, while the project calculates with 15 million € (~153 million RMB).
The reference document shows that the assumed total investment is lower, leading to a conservative approach.
Hence the audit team concludes that the assumed price is reasonable and appropriate.

O&M costs:

The DOE has cross checked the parameter by comparing the assumed salaries and employees with the actual situation (Payrolls from Matoushan Matishan, IRL 71).
The assumed values in the FSR are slightly lower than the actual values.

Wages and benefits	Unit	FSR	Actual	Source actual
Wage	RMB/year	40,000	41,130	Project's official payroll
Staff members	Persons	29	34	

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The audit team concludes that the assumptions taken in the FSR are reasonable and appropriate. Considering that they are lower than the actual one, they can also be seen conservative.

If the O&M costs are reduced by 20%, the benchmark of 15.58% will be crossed. A decrease of 20% is very unrealistic, as the material and welfare costs rose in the last years.

(ii)

The demand/ capacity charge paid by the cement company is depended on the transformer capacity connected to the grid (IRL 67, 68). The transformer capacity will not be changed due to the implementation of the proposed Waste Heat Recovery Projects.

The electricity demand of the Cement plant will not change due to the implementation of the proposed waste heat recovery. In case of maintenance work on the WHR project the electricity supply by the grid company needs to be guaranteed.
According to “Jijiaguanzi [2006: 79]”, issued by Hebei provincial price bureau (IRL 61), a company installing a captive power station has to pay a “reserve backup capacity" charge. This can be considered as additional cost for the proposed projects activity. These costs have not been accounted for in the IRR calculation in the PDD uploaded for registration. This is considered conservative by the audit team.

…

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Issue 3:

The investment barrier has been used to demonstrate the hurdles to the implementation of the proposed CDM activity.

According to report from the World Bank (IRL 58) and International Finance Cooperation (IRL 28) there exist several obstacles for financing of energy efficiency projects.
Enclosed to this document, extracts of these reports will be uploaded. Nevertheless the audit team wants to list a few of them in the response to this RfR:

- "*Commercial banks impose higher guarantee requirements on the financing of energy efficiency projects. It is hard for Cement enterprises to produce the assets meeting these guarantee requirements*"
- *"Construction of new production capacity already requires loans from banks and lead enterprises to have high ratios of debts to assets. Therefore they encounter difficulty to finance further energy efficiency projects."*

- The Chinese government has issued restrictions on bank lending to industries with production overcapacity such as the cement industry (IRL 30).

In this particular project the bank loan was issued with reference to the additional finance of the project due to CDM. (IRL 11) This shows that CDM has played a major role in the approval decision by the bank. The loan approval is enclosed to this document.

The result of this assessment clearly shows that the barrier presented in the PDD can be considered real.
This barrier would prevent the project activity but would not prevent the baseline of the project.

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Issue 4

The project activity has been implemented in a new Cement Facility, which is applicable under Methodology ACM0012 vers. 3.1.

At the Cement production facility where the proposed project activity is located, three newly installed clinker production lines are operating.

- Matishan 4,500 t/d clinker line;
- Matoushan 4,500 t/d clinker line;
- Fengrun 4,500 t/d clinker line.

This has been checked by the audit team during the on-site visit and single line diagrams of the Cement plant (IRL 62).
Waste heat from the newly installed Matishan and Mathoushan clinker line will be utilized by the proposed project activity.
Waste heat from the newly installed Fengrun clinker line will be utilized by another CDM Waste heat recovery project ("*Tangshan Jidong Cement Fengrun District 12MW Cement Waste heat Recovery Project*")[2]

[2] http://cdm.unfccc.int/UserManagement/FileStorage/9GSAL5DMRNZJP3H614T0EWOYBK82Q7

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Issue 5

During the Meth Panel Meeting from 14~18th September the Panel decided on clarification AM_CLA_0156 "Clarification requested to substantiate WECM would be released to the atmosphere in absence of the project activity in new facility".

The Panel clarified:
"the section of the methodology entitled "Demonstration of use of waste gas in the absence of the CDM project activity" is not applicable in case the CDM project activity is implemented in the context of a Greenfield industrial facility. For those project situations, the release/ incineration of waste gas in the absence of the CDM project activity is to be demonstrated in the "baseline scenario selection" section only."

As indicated in issue 4, the proposed project has been implemented in a new facility and therefore the waste heat utilization in the absence of the proposed project activity will be demonstrated with the baseline scenario selection of ACM0012.

Step 1: Define the most plausible baseline scenario for the generation of heat and electricity using the following baseline options and combinations

W1/ W2: In case of waste heat projects scenario W1 and W2 can be considered as identical. Hence in the response to this question only one scenario will be discussed.
Waste Heat released into the atmosphere is a credible scenario and cannot be excluded in prior.

- è Possible alternative

W3: Waste energy is sold as an energy source:
There are no users of waste heat located near to the Cement industry. This has been check by the audit team during the on-site audit and by checking the following evidences:

- Environmental Impact Assessment (IRL 9), evidencing that no industrial facilities with heat demands are located close to the project. Eight small villages are located close (600~8000m) to the Cement plant, but cannot be considered as possible energy receivers, as they do not have district heating systems in place.
- è Alternative can be excluded

W4 Waste energy is used for meeting energy demand
This is what the proposed project activity does, without the support of CDM.

- è Possible alternative

W5: A portion of the waste gas produced at the facility is captured and used for captive electricity generation, while the rest of the waste gas produced at the facility is vented/flared;

- è Alternative can be excluded, as the project activity does not use waste gas

W6: All the waste gas produced at the industrial facility is captured and used for export electricity generation.

- è Alternative can be excluded, as the project activity does not use waste gas

Conclusion: Only Scenario W2 and W4 are credible baseline scenarios for Waste Heat Utilization before the proposed project.

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Step 2: Identify the fuel for the baseline choice of energy source taking into account the national and/or sectoral policies as applicable

No heating component is needed in the proposed project activity. Hence the identified scenarios for Power generation in the absence of the project activity; are

P1: Proposed project activity not undertaken as a CDM project activity; the fuel used for this alternative is waste heat, and
P6: Sourced Grid-connected power plants; power plants connected to the grid are mostly driven by coal, which is available in abundance in China.

Step 3: Step 2 and/or Step 3 of the latest approved version of the "Tool for the demonstration and assessment of additionality"

As indicated in section B.5 of the PDD and discussed in the Validation report, the financial returns of the proposed project are insufficient to justify the investment. Hence the alternative without CDM support can be excluded as a possible baseline scenario.
The only alternative left is Waste Heat is released into the atmosphere and electricity is sourced from grid connected power plants.

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Issue 6

The proposed project applies Method 3, Case 1 to calculate fcap.
Due to technical limitations to directly measure waste heat this method has been chosen.

The methodology states the following:

"For estimating the theoretical recoverable energy, manufacturer's specifications can be used. Alternatively, technical assessment can be conducted by independent qualified/certified external process experts such as chartered engineers."

The project participant has used two elements to determine the theoretical recoverable energy:

- Technical specifications and efficiencies of the WHR equipment
- Available energy contained in the waste heat at the PH stage and AQC stage

The proposed project activity has been implemented in a new Cement facility. Test data for the available volume and composition of waste heat for the Matoushan Matishan clinker lines have not been available.

The clinker line at Sanyou 1 has already been operating.
The amount and composition of waste heat/ clinker produced in Sanyou 1 clinker line is expected to be the same as what will be produced for Matoushan Matishan clinker lines. This is due to the following reasons:

- The Sanyou 1 clinker line and Matishan clinker line and Matoushan clinker line are implemented by the same project entity, using technology produced by the same manufacturer,
- In all three clinker lines (Sanyou 1, Matishan and Matoushan) a "New dry-process Cement Production Technology" has been implemented, including the same key technobgies and equipments for crushing, pre-calcining, burning and dedusting systems. Furthermore the same raw material and fuel inputs are used to produce the same end product.

Based on these identical conditions for the three clinker lines, TÜV SÜD is of the opinion that the measurement results at Sanyou 1 clinker line are also representative for Matishan and Matoushan clinker lines.
This can furthermore be substantiated by a letter from an independent third party (IRL 66), confirming that the available heat per unit of clinker is the same for the Sanyou 1 clinker line and the Matishan and Matoushan clinker lines, as the design parameters, the production processes, and raw material input are the same.

The technical measurements for Sanyou 1 clinker line have been carried out by an independent certified external process expert (IRL 69). Hence the audit team confirms that they are reasonable and credible.

Please find below the answers of the project participant.

1. ***The DOE shall further clarify on the suitability of the WACC as an appropriate benchmark for the project IRR in accordance with the paragraph 13 of the Guidance on the Assessment of Investment Analysis version 2.1, in particular, application of WACC for similar projects with similar risks, developed by the same company.***

Although the Request for Review is directed to the DOE, the project participant is more than happy to contribute to the clarification of the issue raised by the EB.

Introduction

The "Tool for the Assessment and Demonstration of Additionality" and the "Guidance on the Assessment of Investment Analysis" allow, under certain conditions, the use of a Company Internal Benchmark to analyze a proposed CDM project activity, including its decision making practices. In the absence of a company internal benchmark, the main alternative in China would be to compare a proposed project activity to an industry or market standard. The "Methods and Parameters for Financial Evaluation of Construction projects" (3rd Edition) provides a benchmark for investments in cement by public entities. This policy document clearly states on page 195 to 199 that the given benchmark is not always applicable to private investors and that private investors can determine their own benchmark (WACC is specified as an appropriate model). Additionally, the guidelines in this policy document are applicable to government approvals of projects, and not to internal approvals by the company management. There is nothing to suggest that the benchmark used for internal approval should be the same as the benchmark for government approval. We suggest that the above mentioned industry benchmark (applicable to government approval purposes, and applicable to public entities) should not be considered as the defacto and only applicable standard on which to judge the suitability of investment decisions made by a private cement company in China. A proposed project also has to comply with the internal company standards and follow the internal decision making process.

The "Tool for the Demonstration and Assessment of Additionality" (Version 05.2) and paragraph 13 of the "Guidance on the Assessment of Investment Analysis" (Version 2.1) provide guidance from the EB on the use of a Company Internal Benchmark. In the PDD we have clarified that the proposed project activity confirms to these requirements. [1] In its request for review the EB asked to clarify in "particular, application of WACC for similar projects with similar risks, developed by the same company".

Paragraph 13 of the "Guidance on the Assessment of Investment Analysis" (Version 2.1) that the EB refers to states that the WACC can be applied if it can be demonstrated that it has "been used for similar projects with similar risks, developed by the same company or, if the company is brand new, would have been used for similar projects in the same sector in the country/region".

Application of WACC for similar projects with similar risks, developed by the same company

The DOE has been provided with an overview of investment decisions made by the Board of the project developer, demonstrating that the company internal benchmark has been used consistently in the past:

- As listed in Table B.2 (page 26) of the PDD uploaded requesting registration, one previously implemented WHR project was implemented by the same project developer with financial

[1] Should the EB indicate that additional clarification, besides clarification on the "application of WACC for similar projects with similar risks, developed by the same company" (mentioned in this request for review, and addressed below) is required, the Project Participant would be happy to provide.

returns significantly above the Company Internal Benchmark. Note that, even though the IRR was above the Company Internal Benchmark, the project has to augment the steam produced with steam from coal-fired boilers, in order to have sufficient steam for electricity generation.

- As listed in Table B.2 (page 26) of the PDD uploaded requesting registration, the financial returns of all previous "core business" investment decisions (i.e. grinding lines and clinker production lines) of the same project developer have been consistently above the Company Internal Benchmark and the average project IRR after taxes of the previous projects (i.e. 24.23%) is significantly above the Company Internal Benchmark.

Beside that the company internal benchmark has been used consistently in the past, it can be argued that comparing the proposed project activity (i.e. a WHR project) to the Company Internal Benchmark and other core-activity projects previously implemented is conservative for several reasons. On page 23 to 26 of the PDD uploaded requesting registration we have argued that for several reasons it is in the interest of the project developer to invest in its core business and not to invest into energy efficiency measures, and that for this reason several energy efficiency measures have not been implemented. In our arguments we have quoted several research papers by the Word Bank, the International Finance Cooperation (IFC), and the prestigious Tsinghua University,[2] who can be considered experienced and professional entities on the subject area. Among the arguments are:

- The opportunity cost of not implementing core-business production related projects (cement production) and instead diverting resources to non-core business (WHR utilization), incentivizes the project company to favor the implementation of cement production related projects over projects not directly related to the production and sale of cement (such as WHR projects), especially considering the highly competitive industry the cement production facilities operate in. This can be shown by the aggressive expansion plans currently under implementation by the project developer.[3]
- Companies wish to maintain or increase their market share and reduce costs. Once market share is lost, regaining market share becomes much more costly (due to entrenched relationships), while delaying a measure that reduces costs, until a later unidentified point in

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[2] Several documents are referred to in the PDD from page 23 to 26, amongst them:
- IFC (2007), Energy Efficiency Improvement Potential & Opportunities in China's Cement Industry. General Report. International Finance Corporation. The information is provided on p.15
- World Bank (2008), Project appraisal document on a proposed loan in the amount of 200 million US$ and a proposed Global Environmental Facility Trust Fund grant of US$ 13.5 million to the People's Republic of China in support of the energy efficiency financing project, The World Bank, 21 April 2008, Report No. 38641-CN.
- Tsinghua University (2009), GHG emission reduction potential in China's cement sector, Ziwei Mao, Dept. of Environ. Science & Engineering Tsinghua University, 13 May 2009.

[3] Cement lines and grinding mills provide the infrastructure backbone to the core activity of the project company – the production of cement. For a project company specialized in the production and sale of cement, the implementation of projects not directly related to the production and sale of cement (eg the construction of onsite generation capacity) does not support its core activity as electricity can be sourced easily and directly from the grid. The Chinese cement market is rapidly consolidating resulting in significant structural adjustments to the industry over the past few years (see for example the following policy notice from the Ministry of Environment Protection of the People's Republic of China:
http://www.sepa.gov.cn/law/gz/bmhb/gwygf/200604/t20060413_76424.htm
To avoid being taken over by competitors and survive in an aggressive market, it would make sense for Chinese cement producers to invest in additional cement production capacity, and not in energy efficiency measured.

time, does not mean that implementing that measure at a later date will become more costly.[4] This order of events (i.e. first implementing capacity expansion measures) is preferable to implementing the energy efficiency measure first, and retaining the option of expanding production and maintaining/increasing market share at a higher cost later.

- The implementation of WHR projects involves more risks than implementation of cement lines and grinding mills which are the core activity of the project company. Constructing and operating a WHR project is not a core activity for a cement plant, and therefore carries additional risks.

If the EB would indicate more information on the issue of previous investment decisions and the arguments from the World Bank and IFC as quoted in the PDD, the project participant would be happy to provide.

Conclusion:

It is clear that all previous projects implemented by the project developer (including a previous WHR project) are implemented consistently above the company internal benchmark. Additionally, we have argued based on papers from the World Bank, IFC, and Tsinghua University, that is it conservative to compare the proposed project activity (an energy efficiency project) to previously implemented projects relating to the project developers core activity (production of cement), which is also the reason for the low implementation rate of such energy efficiency projects in developing countries (for example, WHR in cement production facilities only started to be commercially implemented in China due to CDM support and in that way CDM can be seen as a genuine success[5]).

2. *The DOE shall further substantiate: (i) the suitability of the input values to the investment analysis in line with the paragraph 111 (c) of VVM, in particular, total investment, annual O&M cost, and annual operational hours; and (ii) why demand/capacity charge, if it would have been paid in the absence of the project activity by the project participant, has not been considered as savings in the investment analysis.*

Although the Request for Review is directed to the DOE, the project participant is more than happy to contribute to the clarification of the issue raised by the EB.

i Suitability of input values

For ease of reference, let us copy paragraph 111(c) of the VVM:

> 111. The Board clarified that in cases where project participants rely on values from Feasibility Study Reports (FSR) that are approved by national authorities for proposed project activities, DOEs are required to ensure that:

[4] Therefore, even when activities which expand production have the same IRR as those that increase energy efficiency, companies would prefer to expand production and maintaining/increasing market share first, retaining the option of increasing energy efficiency at the same cost later.

[5] Please also refer to Step 4 (page 32 and 33) of the PDD: all WHR projects in cement production facilities in the project region are implemented with the support of CDM (besides one demonstration project implemented as a demonstration project with the support of the Central Government).

(c) On the basis of its specific local and sectoral expertise, confirmation is provided, by crosschecking or other appropriate manner, that the input values from the FSR are valid and applicable at the time of the investment decision.

For the calculation of the IRR of the proposed project activity in the PDD uploaded requesting registration, the parameters listed in the Feasibility Study Report (FSR), without exemption, have been used as input values. The FSR has been approved by the appropriate government,[6] and was completed and issued by an independent and certified 3rd party design institute which is qualified to compile design reports for the cement industry.[7] The FSR (including the parameters listed therein which are used as input values in the investment analysis) can therefore be considered an independent assessment of the proposed project activity, which was subsequently approved by the government. The FSR (source for all input values) was completed and issued in November 2006, before the investment decision. Therefore, in accordance with paragraph 111(c) of the VVM, all input values were "valid and applicable at the time of the investment decision".

Below we will provide several arguments as to why the input values estimated by the licensed and qualified design institute are reasonable and appropriate. Besides these arguments, we will in accordance with paragraph 111(c) of the VVM "crosscheck that the input values are appropriate", by comparing the 3 input values specifically mentioned by the EB, i.e. the total investment cost, the annual O&M cost, and annual operational hours, to the values of Chinese Cement WHR projects that are registered to date.[8] We have listed the parameters for all registered cement WHR projects in Annex 1 and based on this data we have performed a regression analysis (analysis has been provided to the DOE and has been summarized in Annex 1, and regression analysis described below) which demonstrates that for all 3 input values mentioned by the EB, the input value of the proposed project activity is either within 2 Standard Errors from the trend, or that the input value assumed for the proposed project activity is conservative compared to the trend.

-Total investment Cost:

As the construction of the clinker lines and the WHR project took place simultaneously, the construction contracts are all "combined contracts", and it is therefore not appropriate to compare these contracts to the estimated cost of the proposed WHR project. Additionally, the proposed project only recently finished construction and therefore no audited report is available yet. We can however compare the estimated investment cost "Reference document on Best Available Techniques in the Cement and Lime Industries" (2007 draft, latest version), issued by the European Commission. According to this reference document, investment cost of WHR power plants in the cement industry should be around to the 0.8 – 1.2 million EUR/MW.[9] The investment cost of the proposed project activity is 153,225,800 RMB, and its

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6 The FSR has been implicitly approved when the General Project Approval was obtained (3 July 2007), issued by the "Tangshan Development and Reform Commission".

7 The FSR was completed and issued by the "Hebei Province Building Material Industry Design & Research Institute". This entity is It has obtained a "A grade of Engineering Consultation Certificate in cement industry, cement products, and inorganic - non metallic material", issued by the "National Development and Reform Commission" of the Peoples Republic of China.

8 Clarifications on other input values are also available, but we decided to stick to 3 input values specifically mentioned by the EB. If they EB should require additional clarification, the PP would be happy to provide this.

9 See page 108: http://ftp.jrc.es/eippcb/doc/clp_d1_0907.pdf

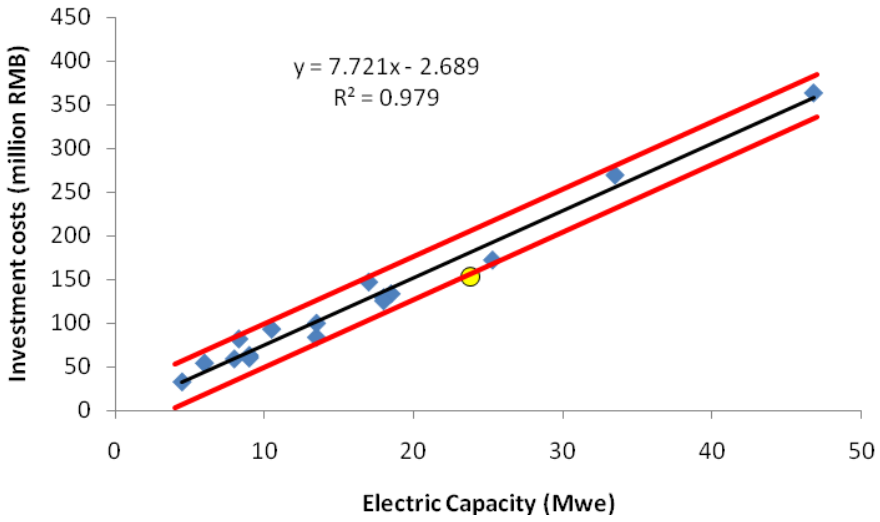
installed nominal design capacity is 23.8 MW.[10] Therefore the unit investment cost of the proposed project is 6.438 million RMB, which is around 0.641 million EUR, far below the average figure quoted by the European Commission.[11] As the estimated figure is significantly below the standard quoted by the European Commission, we can conclude that an estimated IRR based on this lower figure is conservative.

Additional to above, we have compared the investment cost of the proposed project in the FSR (i.e. 153,225,800 RMB) to similar registered projects listed in Annex 1. The projects are plotted in a scatter graph with their Investment costs in million RMB on the (y)-axis and the installed electric capacity in MWe on the (x)-axis. These projects are the basis of the regression analysis. The investment costs were predicted based on the average mean of the Investment cost per total installed capacity and the standard deviation. The regression formula has been defined as:

Inv (million RMB) = 7.721 Cap (MWe) – 2.689

The correlation coefficient of R^2 of 0.979 indicates a high correlation between the capacity and investment costs. The standard error of 12.49 has been calculated based on the difference between the predicted (theoretical) values and the investment costs listed in the PDDs.

The figure below depicts a regression analysis assuming a linear relationship between the investment costs in RMB and installed capacity in MW for similar cement WHR projects. The proposed project activity (yellow dot) is around -2 standard errors (indicated in red line) removed from the black trend line, which means that the estimated Investment cost of the project activity is smaller than the investment cost of similar projects. Hence, we can conclude our "crosscheck" in accordance paragraph 111(c) of the VVM, concludes that an IRR calculation based on the Investment costs of the FSR which we have conducted is conservative as low investment cost will result in an overestimation of the IRR.



[10] This is the official nominal capacity of the installed turbines, as also evidenced by the technical specifications provided by the equipment manufacturer, i.e. Anhui Conch Kawasaki Engineering Co., Ltd. Also note that FSR (page 8, 53) mention the official design capacity is 23.8MW.

[11] Latest exchange rate of 10.0412 RMB/EUR is used: http://finance.yahoo.com/currency-converter/#from=EUR;to=CNY;amt=1

-Annual O&M Cost

The annual O&M cost has been estimated by the independent and certified design institute based on their experience in estimating O&M cost for cement WHR projects. The project has only been operational since a few months and audited actual O&M cost for a significant time period are not available. However, to estimate the O&M cost, the design institute has used unit cost as input values in their model. It is possible to compare these unit costs to the actual current unit costs. Based on this we can conclude that unit costs of materials and labor have all increased significantly compared to the unit costs that the design institute used in their model to estimate the O&M cost. For example, the unit price of materials & chemicals used to estimate the O&M cost have increased on average by 39% since the design institute estimated the O&M cost.[12] Likewise, the average unit cost for labor used in the FSR (page 57), i.e. 40,000 RMB/year, has been compared to the current actual average wage level which is available and is 41,130 RMB/year. Additionally, from the employment list of the project developer, it is shown that instead of the planned 29 staff members (FSR, page 57), the project employed actually 34 staff members. We provide an overview of the increase in main costs in below table:

Wages and benefits	Unit	FSR, p 57	Actual	Source actual
Wage	RMB/year	40,000	41,130	Project's official payroll, stamped by Human Resource Department of project developer
Staff members	Persons	29	34	

Based on the increase in material cost price, wage levels, and amount of employed staff, we can conclude that the estimated O&M cost in the FSR are a conservative estimation.

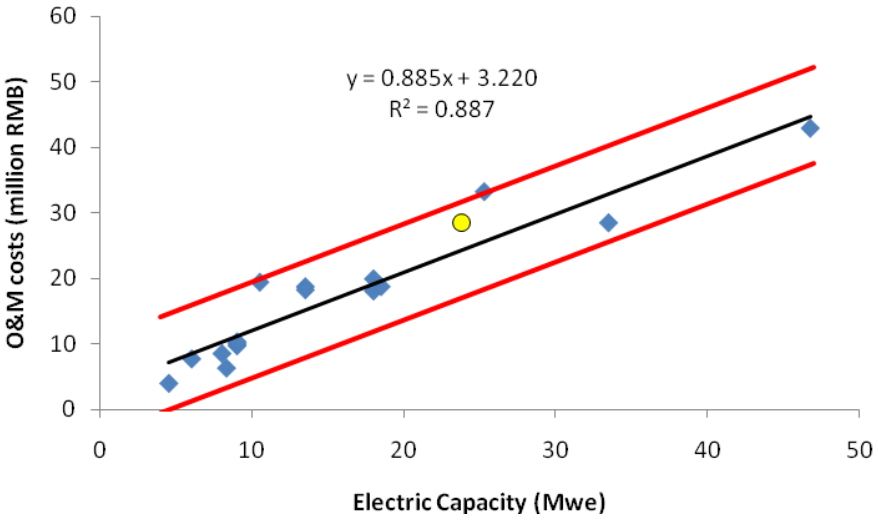
Additional to the arguments provided above, we have compared the annual O&M cost of the proposed project activity in the FSR (i.e 28,530,000 RMB) to similar registered projects listed in Annex 1. The projects were plotted in a scatter graph with their O&M costs in RMB on the (y)-axis and the Installed Capacity in MW on the (x)-axis. These projects are the basis of the regression analysis. The installed capacity was predicted based on the average mean of the O&M cost per installed capacity and the standard deviation. The regression formula has been defined as:

O&M (million RMB) = 0.885 * Cap (MW) + 3.220

The correlation coefficient (R^2) of 0.887 indicates there is a good correlation between the O&M costs and the electric capacity. The standard error (SE) of 3.675 has been calculated based on the difference between the predicted (theoretical) values and the O&M costs listed in the PDDs.

The figure below depicts a regression analysis assuming a linear relationship between the Installed Capacity in MW and the O&M costs in RMB for similar cement WHR projects. The proposed project activity (yellow dot) is within -2 standard errors (indicated in red line) removed from the black trend line, which means that the O&M costs of the project activity can be considered reasonable compared to all other similar projects. Hence, we can conclude our "crosscheck" in accordance paragraph 111(c) of the VVM, concludes that an IRR calculation based on the O&M costs listed in the FSR reasonable.

[12] The unit prices in the FSR (page 57) used to estimate the O&M cost, have been compared to the actual unit prices available at the following trading website: http://b2b.hc360.com/supplyself



-Annual operational hours

Estimated annual electricity generation of the proposed project activity is 159,460 MWh, and the installed nominal design capacity is 23.8 MW.[13] Based on these values, annual operational hours are 6,700 hours.

The amount of electricity (i.e. theoretical electricity generation) that can be generated based on the available energy contained in the waste heat in the clinker production lines is 161,850 MWh (i.e. equaling 6,800 hours). With reference to the uploaded Fcap calculation sheet (uploaded together with the PDD requesting registration), we are happy to clarify the approach taken: As explained under question number 6 below, the amount of available heat per unit of clinker production has been tested by a certified design institute for the Sanyou 1 clinker line, which is in all possible ways identical to the clinker lines of the project activity (i.e. the Matishan clinker line and Matoushan clinker line) and is therefore an accurate estimate for available waste heat that will be available to the proposed project activity. The available energy in the waste heat from the clinker lines of the proposed project activity is 337,937 kJ/ ton clinker.[14] This can be multiplied by the average projected clinker production of the two Greenfield clinker lines (i.e. 2,792,250 tons clinker annually [15]) and after deducting losses taking place before electricity generation,[16] this can be converted from kJ to kWh,[17] to calculate the potential maximum electricity generation of 161,850 MWh (i.e. 6,800 hours). Estimated annual power generation and operational hours in the FSR (i.e. 159,460 MWh and 6,700 hours respectively), which are used for

[13] This is the official nominal capacity of the installed turbines, as also evidenced by the technical specifications provided by the equipment manufacturer, i.e. Anhui Conch Kawasaki Engineering Co., Ltd. Also note that FSR (page 8, 53) mention the official design capacity is 23.8MW.

[14] Available energy at the SP stage and the AQC stage is 166,137 kJ and 171,801 kJ respectively. Please also refer to the tab "Fcap calculation" (field H4 and H7)" in the uploaded Fcap calculation sheet.

[15] As listed in its FSR of the cement clinker lines.

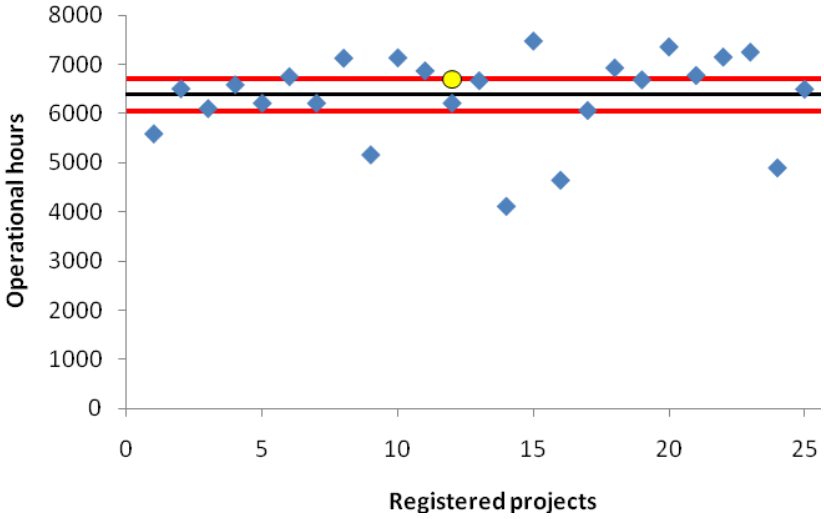
[16] Losses are all taken from official technical design specifications as provided by the equipment manufacturer, i.e. Anhui Conch Kawasaki Engineering Co., Ltd. These losses include heat transmission pipe losses, boiler losses, and turbine and generator efficiency rates. For detailed values provided by the equipment manufacturer, please refer to the tab "Fcap calculation" (field D7 to D12)" in the uploaded Fcap calculation sheet.

[17] Using the standard conversion coefficient of 3,600 Kj/kWh.

the IRR calculation are less than 2% lower than this potential maximum. And therefore it is not possible that the estimated value would increase with more than 2%, as the available waste heat would simply not be sufficient to (note that regardless of this, we have in the sensitivity analysis applied 10% variations in electricity supply).

Additional to the arguments provided above, we have compared the annual O&M cost of the proposed project activity in the FSR (i.e 6,700 hours) to similar registered projects listed in Annex 1. The operational hours of the proposed project activity is above the average of 6,379 operational hours of similar registered projects.

The figure below depicts a scatter plot the operational hours on the vertical axis and each similar project on the horizontal axis. Please note that the location of the project along the horizontal axis is random. The proposed project activity is within the 95% confidence level; hence we can conclude the operational hours are reasonable in comparison to similar projects.



ii Demand/capacity charges

With or without a (WHR) captive power station, the cement production facility has to pay the same amount of electricity demand/capacity charge in any case, as the WHR does not change total electricity demand/capacity of cement plant. In other words, the grid company will charge PO based on the total electricity demand/capacity, irrespective of the fact whether or not a part of this total demand can be supplied by a captive station.

As evidence we have submitted two statements accompanying this response:

1. Statement from the "Tangshan branch of the North China Power Grid Company" to the cement production facility, stating that in accordance with the "Notice for the Tariff Reform Implementing Procedures [18]", the demand/capacity charge for the cement production facility is based on the transformer capacity connecting to the grid, and that this cannot be decreased due to the existence of a captive station. Therefore they conclude that the demand/capacity charge is not influenced by the fact that there is or is not a captive power station.

[18] Fagaijiage [2005:514] issued by National Development and Reform Commission on 28 March 2005

2. Statement from a independent and certified 3rd party design institute (i.e. "Hebei Province Building Materials Industry Design & Research Institute"), stating that the implementation of WHR project will not result in demand/capacity changes for the cement production facility as (1) the total electricity demand of the cement production facility remains the same whether it has the option or not to receive captive electricity, and (2) in order to ensure continued and safe operations of the cement facility even in the case the WHR project is not operational or under maintenance, the charge for cement facility will be determined based on the required transformer capacity to enable the grid company to potentially supply the full electricity demand of the cement production facility to the cement production facility.

In accordance with the above, the FSR of the project activity, and the IRR calculation in the PDD uploaded requesting registration, both do not consider "avoided demand/capacity charges" as avoided cost for the CDM project activity, as these charges cannot be avoided and have to be paid in any case by the cement production facility to the grid company.

Additionally, please note that in accordance with "Jijiaguanzi [2006: 79]", issued by Hebei provincial price bureau, a company installing a captive power station has to pay a "reserve backup capacity" charge. This can be considered as additional cost for the proposed projects activity, and by not accounting for these cost the IRR calculation in the PDD uploaded for registration is conservative.

3. The PP/DOE shall further clarify the existence of the investment barriers to the project activity in accordance with Tool for the demonstration and assessment of additionality version 5.2.

The proposed project activity faced prohibitive difficulties in attracting financing, difficulties that where overcome though the prospects of CER revenues.

The investment barrier can be demonstrated by the fact that the bank loan was approved with specific reference to the availability of additional revenues to the project through CDM in the approval decision by the bank. We will upload together with this response the approval letter from the Tangshan Branch of the Agricultural Bank of China to the Hebei Provincial Branch Office of the Agricultural Bank of China, which specifically mentions CDM as a reason to provide the bank loan.

There are several reasons for the lack of financing available for energy efficiency projects in China, and for WHR projects in the cement industry in China in particular. In the PDD uploaded requesting registration, we mentioned the government restrictions on bank lending to industries with production overcapacity such as the cement industry.[19] At present, banks have already reduced bank lending to the cement industry resulting in cement companies experiencing significant difficulties in obtaining bank loans and credit.[20] It is one of the reasons for the slow implementation of energy Efficiency in developing countries. We have separately uploaded documents from the World Bank and the International Finance Cooperation, why financing of energy efficiency projects encounters prohibitive

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19 The cement industry is defined as an "over-growing" industry by the Chinese government and the Chinese central bank (the People's Bank of China), and treated with a restriction on bank lending: http://www.shgzw.gov.cn/gb/gzw/xxzh/mrjj/jrsc/userobject1ai19192.html

20 State Council (2006), Announcement of the State Council on Structural Adjustments in Industries with Production Overcapacity, Guo Fa [2006] Document No. 11.

barriers. This general argument supports the statement from the bank that approved to provide a loan to the proposed project activity based on considerations of CDM. Please also note that WHR in cement production facilities only started to be commercially implemented in China due to CDM support and in that way CDM can be seen as a genuine success.[21]

4. The DOE shall justify whether the project activity consumes the waste heat from an existing cement facility or a new cement facility in line with ACM0012 version 03.1. Further the DOE shall substantiate whether there are more than two clinker production lines at the cement production facility, if so, what the use of waste heat generated by other clinker production lines is.

As stated in the PDD uploaded requesting registration (page 12), the project activity involves a waste heat recovery project in a new cement production facility. This has been confirmed by the DOE during the on-site visit, and can be and has been evidenced to the DOE by several construction and equipment purchase contracts, which are combined contracts for the construction of the Matishan and Matoushan clinker lines and Matishan and Matoushan WHR project. These contracts have been provided to the DOE for review.

At the cement production facility where the proposed project activity will be implemented there are 3, newly installed, clinker production lines (which has been confirmed by the DOE during the on-site visit, and can be and has been evidenced to the DOE by means of an overall layout of the cement production facility):

- Matishan 4,500 t/d clinker line;
- Matoushan 4,500 t/d clinker line;
- Fengrun 4,500 t/d clinker line.

Waste heat from the two newly installed Matishan and Matoushan clinker lines will be utilized by the proposed project activity.[22] Waste heat available at the newly installed Fengrun clinker line will be utilized as part of the "Tangshan Jidong Cement Fengrun District 12MW Cement Waste heat Recovery Project" requesting registration (clinker line and WHR unit implemented simultaneously).[23]

5. The PP/DOE shall further substantiate that the waste heat utilized in the project activity would be released into the atmosphere in the absence of the project activity in line with the ACM0012 v3.1.

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21 Kindly refer to Step 4 (page 32 and 33) of the PDD: all WHR projects in cement production facilities in the project region are implemented with the support of CDM (besides one demonstration project implemented as a demonstration project with the support of the Central Government).

22 Note for the record that the FSR and approvals of the proposed project, and the FSR of the Fengrun WHR project are separate, and that there are no connecting heat pipes or connecting electricity lines between the two WHR projects, as both connect themselves to the internal grid of the cement production facility at a point after electricity has been monitored.

23 http://cdm.unfccc.int/UserManagement/FileStorage/9GSAL5DMRNZJP3H614T0EWOYBK82Q7

During the Meth Panel meeting of 14-18 September 2009, the Meth panel in response to Clarification request "AM_CLA_0156" (related to demonstration of baseline of waste heat for project using ACM0012) responded that:

> "The Meth Panel would like to clarify that the section of the methodology entitled "Demonstration of use of waste gas in the absence of the CDM project activity" is not applicable in case the CDM project activity is implemented in the context of a Greenfield industrial facility. For those project situations, the release/ incineration of waste gas in the absence of the CDM project activity is to be demonstrated in the "baseline scenario selection" section only."

The proposed project activity is implemented at Greenfield industrial facility as we clarified above under issue 4, and therefore we will demonstrate in accordance with the "baseline scenario selection of ACM0012" that the waste heat would have been released into the air in the absence of the CDM project activity.

Step 1: Define the most plausible baseline scenario for the generation of heat and electricity using the following baseline options and combinations.

Step 1a Baseline scenario for the use of the waste heat resource

In the case of waste heat, both alternative W1 (i.e. WECM is directly vented to atmosphere without incineration or waste heat is released to the atmosphere or waste pressure energy is not utilized) and alternative W2 (i.e. WECM is released to the atmosphere (for example after incineration) or waste heat is released to the atmosphere or waste pressure energy is not utilized) are identical and are baseline alternatives where waste heat can be released in the atmosphere in the baseline. This alternative is applicable and corresponds to the current practice at cement production facilities in the project area. Please also refer to Step 4 (page 32 and 33) of the PDD: all WHR projects in cement production facilities in the project region are implemented with the support of CDM (besides one demonstration project implemented as a demonstration project with the support of the Central Government). Without CDM, cement production facilities do not utilize their waste heat and it is common to release it into the atmosphere.

Alternative W3 (i.e. waste energy is sold as an energy source) is not applicable, as there is no requirement for heat near to the cement production facility. According to the approved EIA, no industrial facilities requiring heat and only a few small villages are located in a project radius of 10kmX12km. The industrial facilities do not require any heat or steam for production processes, and the villages:

1. The villages are very small without sufficient demand for heat (average size of these villages is very small, which means in itself their heat demand is by far not meeting the available amount at the cement facility);
2. The villages only have theoretical heat demand during the winter months and not all year round (note also that besides that this lower the demand even below the small demand described above, this also poses another barrier: if part of the waste heat is used for supplying heat to local villages during the winter, the seasonal heat demand of local villages will make the

operation of WHR power plant unstable and it will be hard for PO to decide an appropriate installed capacity); [24]

3. The villages do not have a district heating system installed that heat could be supplied to (i.e. every individual household heat their own household as is common in Chinese small villages) and do not have a water piping system for hot water or a drainage system for discharge of waste water.[25]

It would make no economic sense (a calculation can be provided to the EB if the EB would requests this) for the project owner to either invest in a piping system over a long distance, installing pipes to every small individual household, in order to supply (part of its available) waste heat to these small villages only during the winter period, or alternatively to invest in long distance piping infrastructure to industrial facilities.[26]

Alternative W4 (i.e. waste gas/heat/pressure is used for meeting energy demand) if interpreted as implying any other use of waste heat than generating electricity, is not applicable as the cement plant will be self-sufficient in heat in accordance with the design does not require steam, heat, or hot water (which is consistent with current practice of cement production facilities in the project area). Alternative W4, if interpreted as utilizing the waste heat for electricity generation, is what the proposed project activity does with the support of CDM.

Alternatives W5 and W6 are not applicable as the proposed project activity does not utilize waste gas.

Conclusion: We conclude that alternative W2, atmospheric release of waste heat, and W4, the use of waste heat to meet electricity demand (as the proposed project activity does with the support of CDM), are the possible baseline alternatives for the use of waste heat available at the cement production facility. Therefore, if the proposed CDM project activity would not utilize the waste heat, the waste heat would be vented in the absence of the CDM project activity.

Step 2: Identify the fuel for the baseline choice of energy source taking into account the national and/or sectoral policies as applicable.

This step is skipped, because both alternative combinations identified in Step I in the PDD do not give rise to the selection of a fuel. The reasons are: (1) there is no heating component; (2) the two alternatives for the power supply do either use no fossil fuel (the proposed project activity undertaken without the support of CDM), or use the generation mix of the grid.

Step 3: Use Step 2 and/or step 3 of the latest approved version of the "Tool for the demonstration and assessment of additionality" to identify the most plausible baseline scenarios by eliminating non-feasible options

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[24] According to regulation "Tangzhengfa [1998 : No 5)", issued by the People's Government of Tangshan City, heating is only required during the period from the 15th of November to the 15th of March.

[25] This has been confirmed by a statement from the government.

[26] Note that according to the "MOHURD and The state Planning Commission Notice Regarding Strengthening the Planning and Management Work of Urban Heating Supply (1995.3.14 Cheng Jian Zi NO.126)", the transport distance of the Heating network for steam should not exceed 4 km, while for hot water should not exceed 10km. Available at: http://www.hgc.sdu.edu.cn/v2/html/faguizhidu/gongrexiangguan/zhongyangwenjian/200809/03-300.html..

As the proposed project activity without CDM support is no alternative, as argued in section B.5 of the PDD uploaded requesting registration, the only credible "heat baseline alternative" is that heat would be released into the atmosphere in the absence of the project activity.

6. The DOE shall further clarify how the means of calculation of fcap is in line with the ACM0012 v3.1, in particular, use of data of another similar clinker production line (Sanyou 1) to calculate the theoretical recoverable energy.

Although the Request for Review is directed to the DOE, the project participant is more than happy to contribute to the clarification of the issue raised by the EB.

In the current PDD requesting registration, the proposed project activity applies for "case 1" approach of the "method 3" in line with the methodology ACM0012: Method 1 is not applicable as the project is implemented in a new cement production facility and three-year data on production is unavailable. Method 2 is not applicable as it is impossible the continuously monitor the amount of waste heat due to technical limitation (i.e. high dust concentration in the air containing the waste heat and strong fluctuations in pressure and flow). For the proposed project activity we apply the "Case-1" approach as the proposed project involves the capture of waste heat in waste heat recovery equipment (boilers) that converts the energy into steam, (i.e. the Waste Energy Containing Medium). Energy is subsequently converted to electricity (i.e. final output energy) which provides a reliable basis for determination of fcap and monitoring.

Case 1 of Method 3 defines the theoretical recoverable energy as:

> *"For estimating the theoretical recoverable energy, manufacturer's specifications can be used. Alternatively, technical assessment can be conducted by independent qualified/certified external process experts such as chartered engineers"*

In order to determine the theoretical recoverable energy for the proposed CDM project activity, two elements have been used: (a) the available energy contained in the waste heat at the PH stage and AQC stage, and (b) the technical specifications and efficiencies of the WHR equipment. The theoretical recoverable energy has been determined as follows:

1. As a new cement production facility (see also our response to question No. 4 above), technical test data for the available volume of waste heat in the Matoushan clinker line and Matishan clinker line is not available;
2. The technical assessment of Sanyou 1 clinker line was carried out by an independent qualified/certified external process expert (i.e. Tangshan Guye Environment Measuring & inspecting office, who holds a China Metrology Accreditation) in February 2007 and provides reliable test results for the amount of waste heat exhaust per unit of clinker produced in the Sanyou 1 clinker line;
3. The amount of waste heat per unit of clinker produced in Sanyou 1 clinker line is identical to what can be expected for the Matoushan clinker line and Matishan cement line:
    - The Sanyou 1 clinker line and Matishan clinker line and Matoushan clinker line are implemented by the same project entity, using technology produced by the same manufacturer;
    - An identical production technology, i.e. a "New Dry-process Cement Production Technology", is implemented at the Sanyou 1 clinker line and the Matoushan clinker line and Matishan clinker line, including the same key technologies and equipments for crushing, precalcining, burning, and dedusting systems, and including the same type of

raw material (i.e. sand stone, lime stone, steel slag, and bauxite) and fuel input (coal)[27], and the end product of Sanyou 1 clinker line (i.e. the produced clinker) is also identical to the clinker produced in the greenfield clinker lines of the project activity.

- The independent 3rd party (i.e. Hebei Building Materials Industry Design & Research Institute, who prepared the FSR for the proposed project activity) issued a statement stating that the available heat per unit of clinker would be identical for clinker production facilities employing the same processing technology.[28] Note that the Matishan clinker line and Matoushan clinker line employ the same design parameters, production processes, and raw material input as the Sanyou 1 clinker line as explained above.

As the production process, the equipment, and the raw material used in the Sanyou 1 clinker line is identical to what will be used in the clinker lines of the proposed project activity, the amount of waste heat per unit of clinker produced in Sanyou 1 clinker line can be assumed equal to that of the Matishan and Matoushan clinker lines. If we multiply this number by the amount of clinker produced by the Matishan and Matoushan clinker lines, we have the theoretical available annual waste heat exiting the clinker lines of the project activity.

4. To calculate the theoretical recoverable energy we have multiplied the available heat at the clinker lines by the official manufacture's specifications of the WHR equipment, provided by the equipment supplier, i.e. Anhui Conch Kawasaki Engineering Co., Ltd.

To conclude that the means of calculation of fcap is in line with methodology ACM0012, in particular, a technical assessment quoted by an independent qualified party in the Sanyou 1 clinker production line with the same key technologies and equipment provides an applicable data to the proposed project to calculate theoretical recoverable energy, as well as the manufacture specifications of the WHR equipments are valid to calculate the fcap.

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[27] Theoretical energy consumption and waste energy for such technologies are similar, see also: "Reference Document on Best Available Techniques in the Cement and Lime Manufacturing Industries", page 36, issued by European Commission, available at: http://ftp.jrc.es/eippcb/doc/clp_d1_0907.pdf

[28] This statement from the "Hebei Building Materials Industry Design & Research Institute" will be uploaded together with this response.

Annex 1

The following table depicts all registered cement waste heat recovery CDM projects in China. Please note that the numbers are rounded. In order to crosscheck the operational hours of the proposed project activity, we have compared them to the operational hours of all projects in the list. In order to crosscheck the O&M cost and the Investment cost, we have compared to projects 1 to 16, as project number 17 is replacing a captive coal-fired power station registered based on a marginal cost comparison, and projects 18 to 27 perform a barrier analysis in the PDD and therefore input values for the IRR are not provided and have not been crosschecked by the DOE during validation and the EB during registration.

No.	UNFCCC Ref.	Project Title	MWe	O&M RMB million	Investment RMB million	Full time hours
1	1427	Low-temperature waste heat recovery for electricity generation project of Anhui Huaibei Mining (Group) Cement Co. Ltd.	5	3,97	32,37	5593
2	1674	Waste Heat Recovery and Utilisation for Power Generation Project of Jiande Conch Cement Company Limited	8	6,3	81,63	6510
3	1696	Power Generation by Waste Heat Recovery Project of Xinjiang Tianshan Cement Co. Ltd. in Urumqi City, Xinjiang Autonomous Region, P. R. China.	6	7,69	53,89	6107
4	1450	8MW pure low temperature waste heat recovery (WHR) for power generation in SDIC Hainan Cement Co., Ltd	8	8,52	58,76	6591
5	1622	Huanghe Tongli WHR Project	9	9,7	62,73	6216
6	1624	Pingyuan Tongli WHR Project	9	9,97	61,14	6756
7	1623	Yulong Tongli WHR Project	9	10,3	59,86	6216
8	1673	Waste Heat Recovery and Utilisation for Power Generation Project of Huaining Conch Cement Company Limited	18	18,07	128,99	7130
9	1659	13.5MW WHR1 Project in Hunan Niuli Cement Co.	14	18,72	83,52	5167
10	1672	Waste Heat Recovery and Utilisation for Power Generation Project of Digang Conch Cement Company Limited	19	18,72	133,45	7138
11	1402	BBMG Cement WHR for 10.5 MW power generation project in Beijing	11	19,40	92,86	6873
12	1619	Yuhe Tongli WHR Project	18	19,9	125,32	6215
13	1309	Jiangsu Qingshi Cement Plant's Low Temperature Waste Heat Power Generation Project	14	18,24	99,62	6673
14	1676	Waste Heat Recovery and Utilisation for Power Generation Project of Zongyang Conch Cement Company Limited	34	28,47	269,57	4119
15	1874	25.3MW WHR Project of Zhejiang Leomax Group	25	33,21	172,15	7479
16	1675	Waste Heat Recovery and Utilisation for Power Generation Project of Tongling Conch Cement Company Limited	47	42,89	363,86	4650
17	1730	Inner Mongolia Wulanchabu Volan Cement Waste Heat Recovery Project	17	n.a.	n.a.	6068

18	1225	30 MW WHR Project of Hongshi Group	30	n.a.	n.a.	6933
19	1878	Zhonglian Julong Cement Waste Heat Recovery as Power Project	17	n.a.	n.a.	6691
20	1643	Liaoyuan Jingang Cement Waste Heat Recovery as Power Project	13	n.a.	n.a.	7360
21	366	Taishan Cement Works Waste Heat Recovery and Utilisation (NM79)	13	n.a.	n.a.	6780
22	898	Ningguo Cement Plant 9100KW Waste Heat Recovery and Utilisation for Power Generation Project of Anhui Conch Cement Co. Ltd	9	n.a.	n.a.	7154
23	1038	6.5MW WHR Project in Huasheng Tianya Cement Co., Ltd	7	n.a.	n.a.	7253
24	1046	Gansu Qilianshan Cement 6000kW Waste Heat Recovery Project	6	n.a.	n.a.	4900
25	1353	Hebei Quzhai Cement 9000kW Waste Heat Recovery Project	9	n.a.	n.a.	6500
26	1714	Baofeng County Waste Heat Recovery for Power Generation	8	n.a.	n.a.	6557
27	1723	Henan Xichuan Waste Heat Recovery for Power Generation	9	n.a.	n.a.	6611
		Proposed project activity	23.8	28,53	153,26	6700

Reference No.	Document or Type of Information
1.	Project Design Document for CDM project "Tangshan Jidong Cement Matoushan Matishan 25MW Cement Waste heat Recovery Project" , Hebei Province, China ", version01.
2.	Consolidated baseline methodology for GHG emission reductions for waste gas or waste heat or waste pressure based on energy system ,ACM0012 ,Version 01.
3.	Tool for the demonstration and assessment of additionality , version 03.
4.	Participant list of on-site interview, signed on 18th, Sep, 2007.
5.	On-site interviews at the project site in Wangguanying Mining area ,Fengrun District , Tangshan City ,Hebei Province, China. conducted on Sep, 18th, 2007 by auditing team of TÜV SÜD: Validation team: Ms. LIU fang — TUV SÜD Beijing Branch — CDM Auditor Interviewed persons: Ms. Liu Wei — Hebei Tangshan Jidong Cement Co., Ltd. — Project Manager Mr. Zhao Yonghong — Gansu tonghe consulting Co., Ltd. — CDM manager Mr. Joost van Acht — Chief Representative of CVDT consulting
6.	Feasibility Study Report for CDM project "Tangshan Jidong Cement Matoushan Matishan 25MW Cement Waste heat Recovery Project". issued by Hebei Constructing Material Design Institute, dated July, 2007.
7.	Initial FSR of "Tangshan Jidong Cement Matoushan Matishan 25000KW Waste Heat Recovery Project", issued by Hebei Building Materials Industry Design&Research Institute, dated November 2006
8.	Approval of "Tangshan Jidong Cement Matoushan Matishan 25MW Cement Waste heat Recovery Project" issued by Hebei DRC, indicated that the capacity of the two project revise from 19MW(9.5 MW+9.5 MW) to 25MW(2007-240), dated 3rd,July.2007.

Reference No.	Document or Type of Information
9.	EIA of "Tangshan Jidong Cement Matoushan Matishan 25MW Cement Waste heat Recovery Project EIA(1214), issued by Hebei Gegraphy Science Research Institute, dated July, 2007.
10.	Approval of EIA of Tangshan Jidong Cement Matoushan Matishan 25MW Cement Waste heat Recovery Project, issued by Hebei EPB, dated 31st,July, 2007
11.	The Bank loan promise (2007-08), issued by China Agriculture bank Tangshan branch bank, 219,750,000RMB, dated 7th.Aug.2007.
12.	Notice of how to charge the power that provide by themselves(2006-79), The price administration bureau document No.(2006) 79, indicates the charge for 0.02-0.04/KWh, dated 12th, Sep, 2006.
13.	The Design and Equipment purchase contract, singed with Anhui Hailuo Chuanqi Engineering Co.,ltd, dated 30th.Mar.2007.
14.	Questionnaire for stakeholders' comments with 17 persons signature, Dated 9th, Aug, 2007.
15.	The paper inform of stakeholders' comments, published on Tangshan Laodong daily news, dated on 30th,July,2007;
16.	CERs purchase agreement, signed between Tangshan Jidong Cement Co., Ltd., and Climate Change Capital Carbon Managed Account Limited ,Climate Change Capital Carbon Fund II s.à.r.l.IXIS ,signed Dec.2006.
17.	CDM resolution board meeting minutes, dated 28th, Jan, 2007.
18.	Attendance list of " Tangshan Jidong Cement Matoushan Matishan 25MW Cement Waste heat Recovery Project " stakeholder consultation meeting with 15 persons signatures.
19.	Construction Start Note of Tangshan Jidong Cement Matoushan Matishan 25MW Cement Waste heat Recovery Project, issued by

Reference No.	Document or Type of Information
	Hebei ZhongCheng consulting Co., Ltd, dated Aug,10th , 2007.
20.	The business license of Tangshan Jidong Cement Co., Ltd., registered capital 962,170,600RMB, issued by Hebei Industry and Commerce Administration, dated May ,8th,1994.
21.	Internal Income Stat. Analysis of Tangshan Jidong Cement Group for Investment Construction Project, 10 projects has the IRR from 19.49% to 49.74%, issued by Tangshan JiDong Cement Group.
22.	Initial FSR of Tangshan Jidong Cement Matoushan Matishan 25MW Waste Heat Recovery Project, dated November 2006
23.	LoA of China, issued in January 2008
24.	Excel IRR calculation file 20070917
25.	Overview on Cement WHR Projects in China, issued by Tianjing Cement Institute on May 2006
26.	FSR of Boading Huadian Electric Power Design & Research Institute Co., Ltd. , issued December 1999 (Jidong Cement Co., Ltd. WHR Demonstration Project)
27.	Announcement of the State Council on Structural Adjustments in Industries with Production Overcapacities
28.	International Finance Corporation, Energy Efficiency Improvement Potential & Opportunities in China's Cement Industry, General Report issued August 2007
29.	Feasibility Study Report of „Tangshan Jidong Cement Matoushan Matishan 25000KW Waste Heat Recovery Project", issued by Hebei Building Materials Industry Design&Research Institute, dated November 2006
30.	Restriction on bank lending for over-growing industries, issued by State Owned Assets Supervision and Administration Commission

Reference No.	Document or Type of Information
	of Shanghai Municipal Government, dated 09/10/2008
31.	CDM contract between CCC and Casper van der Tack, dated 05/06/2007
32.	Letter of Exclusivity, between Climate Change Capital and Tangshan Jidong Cement Co., Limited, dated December 2006
33.	Demonstration of efficiency of main equipment in the WHR projects of Tangshan Jidong Cement Co., Ltd., issued by Anhui Conch Kawasaki Engineering Co., Ltd on 24-10-2007
34.	Cement WHR power generation system, issued by Luoyang Mining Machinery Engineering Design Institute, 21/01/2009
35.	Education Added Expenses and Local Education Added Expenses, issued by Hebei Local Taxation Bureau,
36.	Regulations on Collecting and Using Local Education Added Expenses in Hebei Province, issued by Hebei Local Taxation Bureau,
37.	Notice of Heibei Provincial Office of the State Administration of Taxiation on Printing and Issuing "the Rules on Collecting City Maintenance & Construction Tax in Hebei Pronvince", issued by Hebei Local Taxation Bureau
38.	Notice of Hebei Provincial Pricing Administration on adjusting power price, issued 29 June 2006
39.	the "Ninth Session of the Fifth Board meeting", dated 28/01/2007
40.	WACC calculation issued by Bloomberg
41.	Consolidated baseline and monitoring methodology for GHG emission reductions from waste energy recovery projects (ACM0012 vers.3.1)
42.	Minutes of Thematic Meeting with respect to return on the Investment and other relative issues regarding to the Matoushan and Matishan Cement Production Lines, issued by Tangshan Jidong Cement Limetd Liability Company, dated 08/05/2006
43.	Purchasing contract of AQC boiler, dated on Mar. 11th, 2006, Digang conch Cement Company Limited and Jiangsu Nantong Wanda Boiler Co., Ltd., submitted on Feb. 08th, 2007
44.	Purchasing contract of PH bolier, dated in Jan., 2005, Digang Conch Cement Company Limited, submitted on Feb. 08th, 2007

Reference No.	Document or Type of Information
45.	Purchasing contract of turbine and generator, dated on June 2nd, 2005, Digang Conch Cement Company Limited and Nanjing Steam Turbine Co., Ltd., submitted on Feb. 08th, 2007
46.	National major construction project Beijing Cement Plant
47.	Extract from 2006 Broker Report for Jidong, 12/04/2006 by United Securities
48.	Extract from 2006 Broker Report for Jidong, 11/04/2006 by GF Securities
49.	Extract from 2006 Broker Report for Jidong, 08/08/2006 by Haitong
50.	Extract from 2006 Broker Report for Jidong, 10/08/2006 Guotai Junan Securities
51.	Financial Report for Jidong 2005
52.	Wharton Financing School, WACC calculation
53.	Jidong share price 30;June 2006; Historical Prices by Google Finance
54.	State Council (2006), Announcement of the State Council on Structural Adjustments in Industries with Production Overcapacity, Guo Fa [2006] Document No. 11
55.	Dividend paid by Jidong per share (http://www.cninfo.com.cn/gszx/fhpg_fh000401.html)
56.	LoA issued by british DNA (Department for Environment Food and Rural Affairs) for Cliamte Change capital Fund II S.a.r.l. („C4F2), dated 25 June 2008
57.	LoA issued by british DNA (Department for Environment Food and Rural Affairs) for Cliamte Change capital Carbon Managed Account Limited (C4MA), dated 25 June 2008
58.	Wordlbank Report No.: 38641-CN; project appraisal document on a proposed loan in the amount of US$200 million and a proposed grant from the global environment facility trust fund in the amount of US$13.5 million to the people's republic of china in support of the energy efficient project, Transport, Energy and Mining Sector Unit sustainable development department east asia and pacific, 21 April 2008.
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60.	Reference document on Best Available Techniques in the Cement and Lime Industries (2007 draft, latest version European Commission)
61.	"Jijiaguanzi [2006: 79]", issued by Hebei provincial price bureau
62.	Single line diagram of Fengrun, Matishan and Mathoushan clinker lines
63.	"Tangzhengfa [1998 : No 5)", issued by the People's Government of Tangshan City
64.	"Central heating design manual"

Reference No.	Document or Type of Information
65.	"China Electricity Publishing Press"
66.	Statement from "Hebei Building Materials Industry Design & Research Institute" on the availability of heat
67.	Notice on publishing the Acts on electricity price innovations issued by NDRC-Fagaijiage [2005] No.514
68.	Statement on transformer capacity, Tangshan branch of the North China Power Grid Company
69.	Certificate of Design institute, Hebei Builiding Materials Industry Design & Research Institute
70.	Sanyou 1 test report
71.	Payrolls from Matoushan Matishan; dated 18/09/2009