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**Att:** CDM Executive Board

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| Your ref.: | Our ref.: | Date: |
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| CDM Ref 3048 | PETMO | 5 March 2010 |

# Response to request for review "Cimentos do Mozambique – Matola Gas Company Fuel Switch Project" (3048)

Dear Members of the CDM Executive Board,

We refer to the requests for review raised by three Board members concerning DNV's request for registration of the "Cimentos do Mozambique – Matola Gas Company Fuel Switch Project" and would like to provide the following initial response to the issues raised by the requests for review.

***Comment 1:***

*The DOE needs to further explain how it has validated: (a) coal price escalation of 20% for the first five year and 3.6% for the rest of the years, and (b) the exclusion of saving from diesel usage in the NPV calculation.*

**DNV Response:**

a) The project proponent has used an actual coal price for the financial analysis. This price is the price paid for coal delivered from their South African coal supplier in April 2007, a month before the decision to proceed with the project was made by the Board of Matola Gas Company on 30 May 2007. DNV has checked the coal purchase receipts from April 2007 from the Cimentos do Mozambique cement plant and crosschecked this with the coal supplier's delivery receipts from April 2007. DNV is hence of the opinion that the coal price used in the financial analysis was a realistic price at the time of the investment decision.

Cimentos do Mozambique saw a sharp increase in the coal prices in the period 2005 – 2007, which was evidenced by transcripts of the SAP accounting system, provided to DNV for verification. During this period, the coal prices increased in average 29% per year. Yearly increases of 29% can however not be expected over many years, so the project proponent selected a yearly price escalation of 20% for the first five years to reflect the recent volatility in the coal market, and a lower escalation of 3.6% per year after that to reflect a 'normal' price development over a longer time period. DNV was able to confirm 3.6% as the average yearly increase of the USA Price Producer Index over the ten years period 1998 – 2008.

The coal prices in South Africa had indeed been very volatile in the period from February 2004 until April 2007, as can be seen in Figure 1 below:


Figure 1: South African coal export monthly prices, February 1990 – December 2008. Source: Index Mundi[1]

From the figure, it is evident that over time spans of several years, large variations in the coal prices would normally not be expected, however fluctuations over a few years can be large. DNV is of the opinion that it was reasonable of the project proponent to anticipate a larger-than-normal increase in the coal prices in the near end of the analysis based on the recent history, while for the long run a more moderate development would be reasonable based on historical data over a longer time period.

b) Diesel was used as a start-up fuel in the kilns prior to the implementation of the project activity, and accounted for 3% of the energy usage. DNV was able to verify the diesel usage from diesel purchase receipts provided by the project proponent. DNV would like to emphasize that the NPV analysis includes the savings from 100% of the energy usage in the kilns prior to the project activity. Accounting for only 3%, the savings from diesel usage was not specifically included in the NPV analysis, but rather included using the coal price for simplicity.
The project proponent has made a revised NPV analysis, as attached to this response. The revised analysis is using the actual price paid for diesel in April 2007, and includes savings for 3% of the energy used prior to the project activity using the diesel price, and for the remaining 97% energy use using coal prices. DNV has verified the diesel price from the receipt for diesel paid in April 2007, provided from the project proponent. The revised NPV analysis shows indeed that the NPV becomes less negative when using the diesel price, increasing from $ -6 282 736 to $ -2 965 746. The NPV is however still on the negative side and the revised analysis does not affect the project's additionality.

***Comment 2:***

*DOE needs to further explain how it has validated the efficiency of the project activity in accordance with ACM0009 v03 page 6.*

**DNV Response:**

The methodology ACM0006 v03 states:

*The energy efficiencies have to be determined for each element process for the project activity ($\varepsilon_{project,i}$) and the baseline scenario ($\varepsilon_{baseline,i}$). The efficiencies should be determined by undertaking measurements at the element process firing the relevant fuels.*

*(…)*

[1] http://www.indexmundi.com/commodities/?commodity=coal-south-african&months=240

*Baseline efficiency ($\varepsilon_{baseline,i}$) is calculated as:*

*(…)*

***Option C:*** *Measure efficiency monthly during 6 months before project implementation and the 6 months average should be used for emission calculations. All measurements should be conducted at a representative load factor (or operation mode), following national or international standards. Where a representative load factor (or operation mode) cannot be determined, measurements should be conducted for different load factors (or operation modes) and be weighted by the time these load factors (or operation modes) are typically operated. The same load factor(s) (or operation mode(s)) and weight factors should be used in the determination of $\varepsilon_{project,i}$ and $\varepsilon_{baseline,i}$.*

The efficiency of the project was validated as the energy input divided by the clinker output over six months of operation. The most recent six months prior to the investment decision are November 2006 – April 2007. However, due to maintenance and low clinker production in November and December 2006, the data from these two months were replaced by data from September and October 2006 in order to provide a more representative load factor as required by the methodology. The efficiency, being energy input per product output, is not measured directly in the kiln, but is calculated by the coal usage in the kiln divided by the clinker output. The clinker output is furthermore calculated from the raw meal usage multiplied by a fixed raw meal-to-clinker ratio. The ratio was verified from a report from an independent company[2], provided to DNV by the project proponent.

DNV has verified the energy usage in the relevant months by checking monthly statistical reports from Cimentos do Mozambique from the period August 2006 – April 2007. The reports contain the coal consumption and the raw meal consumption on a monthly basis. DNV can confirm that the reports correspond to the efficiency calculated in the financial analysis spreadsheet. The irregular production in November and December 2006 was reported by the project proponent, and confirmed from the 2006 Minerals Yearbook by the U.S. Geological Survey, that explicitly mentions the downtime of the clinker production[3].

The efficiency of a process is defined as the ratio between the useful energy output and the input. In an energy conversion process like e.g., a boiler, the output i.e., the steam can easily be measured. In the case of a rotary kiln in clinker production, the useful output energy drives a chemical reaction inside the kiln. A direct measurement of this energy output is difficult, and not usually done in a cement plant. A calculated value for the efficiency, analogue to the parameter Energy intensity $EI_{p,y}$ in the approved methodology AM0024 has been used instead. This can also be seen used in another CDM project, project 0834, submitted for registration.

DNV is hence of the opinion that the efficiency of the project activity has been determined in the most accurate way as practically possible for a cement plant.

***Comment 3:***

*DOE is requested to further explain how it has validated the remaining lifetime of the element process as required by the methodology is in accordance with EB 50 Annex 15.*

**DNV Response:**

The lifetime of the element process is in this project determined by the lifetime of the rotary kiln and the lifetime of the burner. The remaining lifetimes of the rotary kiln and the burner were verified to be 25 and 15 years respectively, as confirmed from the plant manager of Cimentos do Mozambique, and in a letter from Cimpor Tec, the technical centre of the Cimpor Group located in Portugal. Cimpor is a large Portuguese cement and construction material producer, with presence in 13 countries. Cimpor is the owner of Cimentos do Mozambique, however DNV considered the

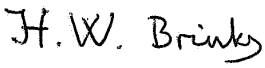
[2] Centro Tecnico e de Desenvolvimento industrial: 'Fabrica da Matola', dated August 2001.
[3] U.S. Geological Survey: 2006 Minerals yearbook Mozambique, published October 2007.

statement from Cimpor's technical centre as a reliable source for the lifetime of the equipment in the element processes.

DNV would also like to point out that the proposed project was sent for registration on 22 October 2009, while EB 50 Annex 15 was published on 16 October 2009. At the time of the publishing of Annex 15, the validation report was already sent for DNV's internal completeness check, and reference to Annex 15 was unfortunately not made.

We sincerely hope that the Board accepts our aforementioned explanations.

Yours faithfully
for DET NORSKE VERITAS CERTIFICATION LTD



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