

UNFCCC Secretariat
Martin-Luther-King-Strasse 8
D-53153 Bonn
Germany

20 January 2009

Att: CDM Executive Board

Response to request for review: "Project 1933: Reduction in clinker usage in the production of cement through the increase in the use of additives at Lafarge Malayan Cement Berhad (LMCB)"

Dear Members of the CDM Executive Board,

[Lafarge](#) is a world leader in building Materials, with top ranking positions in all four of its businesses: Cement, Aggregates & Concrete, Roofing and Gypsum. Lafarge is committed towards sustainable development and strives to continually reduce its carbon footprint.

[Lafarge Malayan Cement Berhad](#) was incorporated in 1950 and is the leader in the Malaysian cement industry. Before the implementation of the project activity, Lafarge Malayan Cement Berhad had already undertaken another CDM project activity "Replacement of Fossil Fuel by Palm Kernel Shell Biomass in the production of Portland Cement" at Rawang Plant, Selangor and Kanthan Plant, Perak in 2005 prior to the "Reduction in clinker usage in the production of cement through the increase in the use of additives at Lafarge Malayan Cement Berhad (LMCB)" project activity .

We refer to the request for review raised by three Board members concerning the request for registration of the abovementioned project activity 1933, and we would like to provide the following response to the questions raised by these requests for review, as follows:

Comment 1: *As per the applicable methodology, the evidence to demonstrate additionality should be "substantiated through independent surveys and stakeholder interviews", further evidence is required to determine that the barriers presented are specific to the increase in blending rates achievable in the baseline. In assessing this evidence it should be taken into consideration that Lafarge is an international operating company with broad experience in increasing additives in its cement blends. In addition, claiming barriers while a reduction of clinker will also result in cost savings raises questions about the credibility of the barriers. Finally, the project activity*

is claimed to be the first-of-its-kind in Malaysia, however, this has not been substantiated with evidence as required by the applicable methodology

Response:

As highlighted in the request for review, Lafarge indeed has experience in increasing additives in their blended cement products worldwide, and continues research and development in this area. We would like to assert that the cement products developed as part of this project activity are the first of its kind among Lafarge plants worldwide, and no other Lafarge plants have achieved products of similar characteristics. The research and development (R&D) of the product was carried out entirely in the Host Country. Additionally, the CDM project activity is an activity that faces unique barriers in terms of local circumstances within the Host Country, and should be compared against the baseline scenario. The "Avancrete" product received the "COO Innovation Award 2006" for the most innovative product among all Lafarge plants worldwide. Product brochures on specific products and its characteristics can be found at the Lafarge website; <http://www.lafargemalayancement.com>, under the "Cement>Product" category.

The project activity involves the increase of additives in cement for a product that is designed as a 'premium' Ordinary Portland Cement (OPC) replacement product for the general purpose market, which faces further barriers in implementation, and is distinct from other activities which involves the increase of additives in cement for conventional blended cement products, which are targeted at the blended cement market. There are significant demonstrable barriers that exist in this project activity that are specific to the increase of blending rates achievable in the baseline, and which do not exist in the baseline, or in other conventional blended cement projects. These are:-

- A substantial amount of R&D was carried out in the Host Country since 2004 with significant amount of investment to ensure that the blended cement products (as specified in the Project Design Document) were able to meet or exceed specifications of on OPC product. The resulting products include products that are able to achieve low heat of hydration, good workability, as well as high early strength which is comparable or exceeds the specifications for OPC (please refer to table B.11 in the Project Design Document).
 - Please refer to Annex 1, a sample of an early R&D presentation. Subsequent monthly presentations on R&D activities were done.
 - Please refer to Annex 2, on summary of R&D events from 2005
 - Please refer to Annex 3, which describes the products specifications

- Subsequently speciality grinding aids were developed in collaboration with BASF and Fosroc, as well as extremely stringent quality controls and process tolerances were adopted to produce high quality blended cement products that are even superior to OPC. This is described in Barrier 2(a,b) of the PDD. Additionally, proprietary additives were developed to enhance the quality of the products. No other cement manufacturer in the Host Country has been able to reproduce the quality of Lafarge Malayan Cement Berhad's products.
- A significant marketing effort and education series was carried out to make these products acceptable to consumers who demand an OPC product, In order to gain market acceptance, substantial amounts of cement samples had to be provided to existing customers for free and further technical support had, and still needs to be constantly provided. Furthermore, a method of testing called "MicroConcrete Technique" had to be adapted by Lafarge Malayan Cement Berhad and by its customers to evaluate the premium blended cement products, as standard testing would yield unsatisfactory results and lead to customer rejections. (Barrier 2 (c)).
 - Please refer to Annex 4, on a list of events undertaken by Lafarge Malayan Cement Berhad in order to gain market acceptance.
 - Please refer to Annex 5, on the number of "MicroConcrete Technique" tests carried out.
 - Please refer to Annex 6, on evidence of trials by customers assisted by Lafarge Malayan Cement Berhad's technical team, and trials still ongoing in order to make the premium blended cement products acceptable for the consumers.
- As the products developed as part of the project activity are premium "OPC replacement" products, with the products displacing the OPC consumption of existing customers, the products faced strong market rejection as well as complaints as described in Barrier 4, which also caused damage to Lafarge Malayan Cement Berhad's reputation. Should have the product been a conventional blended cement product, this scenario would not have occurred as the customers requirements, specifications and expectations would have been much different. To further differentiate the two products, conventional blended cement products demand higher cement quantities in a mixture with aggregates to attain similar strength characteristics of an OPC-based mixture. In effect, the net consumption of cement by the consumer is increased, and ultimately the emissions by sources. The premium blended cement products in the project activity are a "1 to 1" or better replacement by weight of OPC, while achieving a higher early strength compared to OPC. Unlike OPC or

conventional blended cement, the manufacture of these products to the highest level of quality faces significant barriers as presented in the Project Design Document.

- Please refer to Annex 3, which describes the products specifications, early strength and the mixing quantities required to achieve similar OPC characteristics. As an example: Avancrete to OPC ratio is "0.8:1.0", i.e; A 40kg bag of Avancrete will result in a quality and total mixed quantity similar to a 50kg OPC bag. Thus there in a net effect of a 20% reduced consumption by the consumer, as well as at least a 20% CO₂ emission reductions from production sources. Other premium blended cement products are able to achieve a "1:1" ratio.
- Please refer to annex 7, samples of customer complaints reports in the year 2005 to 2007
- The alternative to the project activity to produce conventional blended cement, which potentially yields Emission Reductions, is an unlikely scenario. The resulting products will only over-supply the already highly saturated blended cement market with low-quality blended cement products, while the OPC market is a sold-out market where Lafarge Malayan Cement Berhad holds the highest overall market share in the Host Country.^{1,2} Lafarge Malayan Cement Berhad is targeting its premium blended cement products for its existing OPC consumers to sustain its existing strong market share. Additionally, the use of blended cement is also limited as most projects and consumers in the Host County specify OPC specifications for use. Lafarge Malayan Cement Berhad had already been producing blended cement products with PFA which were used for specific applications only; however, these products cannot perform as a premium OPC replacement product, and are unsuitable for it's major consumers; the general purpose market.
 - Please refer to Annex 8, which shows the market share of Lafarge Malayan Cement Berhad in relation to the industry as a whole. Lafarge Malayan Cement Berhad. The average OPC market share of Lafarge Malayan Cement Berhad from 2006 to 2008 is approximately 40.6%, and OPC production is continually being displaced by premium blended cement products. As of as of August 2008, 100% of its bag cement products are blended cement products and no longer OPC.

¹ <http://www.scribd.com/doc/6572888/Lafarge-Malayan-Cement-060927>

² <http://www.cementchina.net/news/shownews.asp?id=1889>

The implementation of this project is also the first-of-its-kind in the Host Country. Even as of today, no other cement manufacturing facility in the Host Country has been able to produce premium blended cement products for the OPC market with similar characteristics to the Lafarge Malayan Cement Berhad products, in bag cement as well as in bulk cement form; which requires more stringent levels of product quality.

- o Please refer to Annex 9, which is list of common customers between Lafarge Malayan Cement Berhad and a competitor has been provided to the validation team to substantiate the products in the project activity are indeed OPC replacement quality and this cannot be achieved by the competitor's product. Also included are blind test results against a competitor's product. Testimonials from customers have also been recorded on video.
- o Please also refer to Annex 9, which shows a summary lab of analysis results of strength for Lafarge's product and a leading competitor for benchmarking.

Financially, The project activity may generate some cost savings due to the use of additives which may be cheaper than clinker, however, this is not entirely true for Avacrete and Mascrete Pro cement; which are Lafarge Malayan Cement Berhad's flagship products; as the production costs is higher than that of OPC as stated in Barrier 4(a). The cement products in the project activity are premium blended cement products. As an example, the Avacrete product has a 18% market premium over OPC by weight.¹

- o Please refer to Annex 10, which shows market prices of Lafarge Malayan Cement Berhad's products, with its premium blended cement products priced at the same level as an OPC product. Please note that as of August 2008, 100% of its bag cement products are blended cement products and no longer OPC.

The project activity also incurs significant additional costs and risks due to the Operational, Technological, Infrastructure and Market barriers faced.

Some of these costs can be determined accurately, as was done for instance for the fly ash handling system (Barrier 3(b) in the PDD) and the individual dedicated feeding system (Barrier 1(b)). However, much of the barriers are impossible to convert into exact costs or risk premiums that could be substantiated and documented by project participants, due to their uncertain and qualitative nature, for instance:- risk from other OPC producers lowering their price (Barrier 4(a)); risk from customers rejecting the product if the additional testing process is not done properly (Barrier 2(c)); potential costs to overcome customer reluctance to switch away from OPC (barrier

4b); risk of cross-contamination of blended cement subtypes and risk of frequent full de-burdening (Barrier 1a).

Therefore the nature of the barriers and risks involved in the project does not lend itself to a quantitative financial analysis, which is the reason Lafarge Malayan Cement Berhad performed a barrier analysis to demonstrate additionality. Lafarge Malayan Cement Berhad would also like to stress that the barrier analysis is one of the two methods approved by the EB to demonstrate additionality, as per the Additionality Tool.

Comment 2: *The start date of project activity should be as per CDM Glossary of Terms. The DOE is requested to clarify the following inconsistency in project activity start date as stated in the PDD and the validation report: The PDD (p31) refers the project start date of 14 June 2006 as the date when the EPCC contractor selection for Tanjung Bin PFA handling facility tender sign was done, however, the VR (p13) refers this date as date when the signing of PFA (Pulverized Fly Ash) supply agreement was done. In addition, the PP Annual Report 2006 (p13) mentions that in 2005 we secured a long term contract with Tanjung Bin power plant for their exclusive supply of all their fly ash production.*

Response:

The validation report has incorrectly specified the project start date as the date the PFA agreement was signed between Lafarge Malayan Cement Berhad and Tanjung Bin. Lafarge Malayan Cement Berhad would like to assert that the "project start date" is the same as specified in the Project Design Document, 14 June 2006, when award for Tanjung Bin PFA handling facility tender was signed, which signified the earliest date when financial resources were committed.

The agreement for PFA supply between Lafarge Malayan Cement Berhad and Tanjung Bin was done in 2005, with the Tanjung Bin power plant operation expected to commission in mid-2007, with the consequent production of PFA. The signing of the PFA supply agreement is part of Lafarge Malayan Cement Berhad's strategic plan to acquire supply of PFA, however does not imply the implementation of an unlikely baseline alternative of a conventional blended cement project. The PFA supply agreement, and a potential termination of the agreement, has no liability on Lafarge Malayan Cement Berhad before financial resources are committed through the execution of a PFA handling facility and a PFA purchase agreement.

Lafarge Malayan Cement Berhad had already been knowledgeable in CDM, and subsequently requested for proposals from four CDM consultants in March 2006. The proposals were evaluated and the selection of the CDM consultant was made during a Monthly Industrial Meeting on 18th May 2006 which demonstrates that CDM was

considered before the project start date. The project start date is 14 June 2006, when the award for Tanjung Bin PFA handling facility tender was signed, which signified the earliest date financial resources were committed, in line with the CDM glossary of terms.

Comment 3: *The DOE is requested to substantiate the appropriateness of the benchmark clinker content of 86.35% for a plant (Rawang) that has historically lower percentages of clinker than the baseline value used.*

Response:

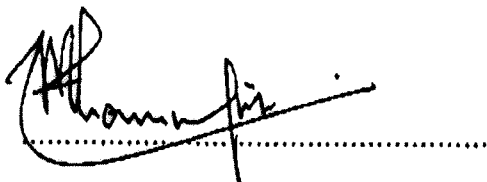
There were two options to determine the benchmark of percentage of clinker in the baseline

- a. The benchmark of 86.35% is a third-party audited figure for the year 2004, provided by the Cement and Concrete Association of Malaysia . The Cement and Concrete Association of Malaysia did not produce an audited statement for the years 2003 and 2005, as specified in page 15 of the Project Design Document. This value is a 'weighted average' value for the clinker content in cement products for all three plants and the values in the audit report were not broken down by plants.
- b. Applying the audited figure for 2004 and the un-audited figures by a third-party for the years 2003 and 2005. The summary of data for 2003-2005 is presented in Annex 3 of the Project Design Document.

The option (a) data was deemed most reliable by the DOE. Lafarge Malayan Cement Berhad is in the opinion that the third-party weighted average value, as deemed most reliable by the DOE, would be an appropriate selected value as the higher benchmark for Rawang plant (lowest baseline clinker content 81.60%) will be offset by a lower benchmark for the Kanthan (lowest baseline clinker content 87.99%) and Pasir Gudang Plant (lowest baseline clinker content 91.22%).

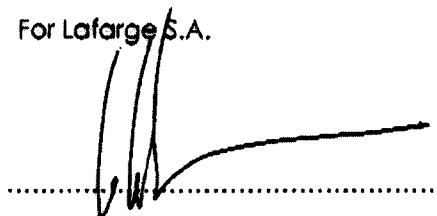
We sincerely hope that the Board accepts the above explanations.

Yours faithfully,
For Lafarge Malayan Cement Berhad

A handwritten signature in black ink, appearing to read 'Mohammad Dit', written over a horizontal dotted line.

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For Lafarge S.A.

A handwritten signature in black ink, appearing to read 'Gaëtan CADERO', written over a horizontal dotted line.

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