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# VALIDATION REPORT

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## Emission Reductions through partial substitution of fossil fuel with alternative fuels in three cement plants of Holcim Philippines Inc

REPORT No. 2007-1035

REVISION No. 01



# VALIDATION REPORT

Date of first issue: 14 May 2007	Project No.: 2007-1035	DET NORSKE VERITAS CERTIFICATION AS
Approved by: Mari Grooss Viddal	Organisational unit: Climate Change Services	Climate Change Services
Client: Holcim Group Support Ltd	Client ref.: Catherine Martin-Robert	Veritasveien 1, 1322 HØVIK, Norway Tel: +47 67 57 99 00 Fax: +47 67 57 99 11 http://www.dnv.com Org. No: NO 945 748 931 MVA

**Project Name:** Emission Reductions through partial substitution of fossil fuel with alternative fuels in three cement plants of Holcim Philippines Inc

**Country:** The Philippines

**Methodology:** ACM0003

**Version:** 04

**GHG reducing Measure/Technology:** Emission Reductions through partial substitution of fossil fuel with alternative fuels

**ER estimate:** 2 076 279 tCO<sub>2</sub>e over ten years or 207 628 tCO<sub>2</sub>e annually

**Size**

☒ Large Scale

☐ Small Scale

**Validation Phases:**

☒ Desk Review

☒ Follow up interviews

☐ Resolution of outstanding issues

**Validation Status**

☐ Corrective Actions Requested

☐ Clarifications Requested

☒ Full Approval and submission for registration

☐ Rejected

In summary, it is DNV's opinion that the "Emission Reductions through partial substitution of fossil fuel with alternative fuels in three cement plants of Holcim Philippines Inc" project in The Philippines, as described in the PDD of 9 April 2008, meets all relevant UNFCCC requirements for the CDM and all relevant host Party criteria and correctly applies the baseline and monitoring methodology ACM0003 Version 4. DNV thus requests the registration of the project as a CDM project activity.

Report No.: 2007-1035	Date of this revision: 9 April 08	Rev. No. 01
Report title: Emission Reductions through partial substitution of fossil fuel with alternative fuels in three cement plants of Holcim Philippines Inc		
Work carried out by: Lai Chee Keong, Kamala Devi Muniandy, Ramesh Ramachandran		
Work verified by: Einar Telnes, Hendrik W. Brinks, Michael Lehmann		

Key words:

Climate Change Kyoto Protocol  
Validation Clean Development  
Mechanism

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### Abbreviations

AFR	Department of alternative fuels and raw materials
BL	Bulacan Plant
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CH <sub>4</sub>	Methane
CL	Clarification request
CO <sub>2</sub>	Carbon dioxide
CO <sub>2</sub> e	Carbon dioxide equivalent
DNV	Det Norske Veritas
DNA	Designated National Authority
DV	Davao Plant
ECC	Environmental Compliance Certificate
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
HPHI	Holcim Philippines Inc
HSG	Holcim Group Support
ILC	In-line calciner
IPCC	Intergovernmental Panel on Climate Change
LG	Lugait Plant
LMCB	Lafarge Malayan Cement Berhad
LN	La Union Plant
MP	Monitoring Plan
MSW	Municipal solid waste
MVP	Monitoring and Verification Plan
NCV	Net Calorific Value
NGO	Non-governmental Organisation
ODA	Official Development Assistance
PDD	Project Design Document
SAP	Business software application
SLC	Separate-line-calciner
UNFCCC	United Nations Framework Convention on Climate Change



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### 1 EXECUTIVE SUMMARY – VALIDATION OPINION

*Det Norske Veritas Certification AS (DNV) has performed a validation of the “Emission Reductions through partial substitution of fossil fuel with alternative fuels in three cement plants of Holcim Philippines Inc” project in the Philippines. The project was earlier titled “Emission Reductions through partial substitution of fossil fuel with alternative fuels in four cement plants of Holcim Philippines Inc”. The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism and host Party criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.*

*The review of the project design documentation and the subsequent follow-up interviews have provided DNV with sufficient evidence to determine the fulfilment of stated criteria.*

*The project participants are Holcim Philippines, Inc. from the host Party Philippines and Holcim Group Support Ltd from Switzerland, the participating Annex I Party. The Parties involved meet the requirements to participate in the CDM. The DNAs from Philippines and Switzerland have provided the approval of voluntary participation in the project, and the DNA of Philippines has provided confirmation that the project assists in achieving sustainable development.*

*The project correctly applies the simplified baseline and monitoring methodologies ACM0003 (version 04).*

*It is demonstrated that the project faces technological and prevailing practice barriers and is thus not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.*

*The total emission reductions from the project are estimated to be on the average 207 628 tCO<sub>2</sub>e per year over the 10 year fixed crediting period. The emission reduction forecast has been checked, and it is deemed likely that the estimated amount is achieved given that the underlying assumptions do not change.*

*The monitoring plan is in line with the approved monitoring methodologies ACM0003. The plan adequately addresses all necessary information for monitoring and reporting of emission reductions due to the project activity.*

*The project requires an Environmental Impact Assessment report which has been submitted to the relevant authorities in connection with an application for an amendment of the Environmental Compliance Certificate (ECC). The Department of Environment has provided a formal notice for supporting the project for reducing the environmental impacts by using alternative fuels. In addition the Holcim Group’s Emission Monitoring and Reporting Standard requires the installation of continuous emissions monitoring equipment, which is more stringent than the local regulatory requirements.*

*In summary, it is DNV’s opinion that the project, as described in the project design document of 9 April 2008, meets all relevant UNFCCC requirements for the CDM and correctly applies the approved simplified baseline and monitoring methodologies ACM0003 (version 04). Hence, DNV requests the registration of the “Emission Reductions through partial substitution of fossil fuel with alternative fuels in three cement plants of Holcim Philippines Inc” project as a CDM project activity.*



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## 2 INTRODUCTION

Holcim Group Support Ltd has commissioned Det Norske Veritas Certification AS (DNV) to perform a validation of the “Emission Reductions through partial substitution of fossil fuel with alternative fuels in three cement plants of Holcim Philippines Inc” project in The Philippines (hereafter called “the project”). This report summarises the findings of the validation of the project, performed on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures, and the subsequent decisions by the CDM Executive Board.

### 2.1 Objective

The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant UNFCCC and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

### 2.2 Scope

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords, and the relevant decisions by the CDM Executive Board, including the approved baseline and monitoring methodology ACM0003/5/. The validation team has, based on the recommendations in the Validation and Verification Manual /4/ employed a risk-based approach, focusing on the identification of significant risks for project implementation and the generation of CERs.

The validation is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.



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### 3 METHODOLOGY

The validation consisted of the following three phases:

- I a desk review of the project design documents
- II follow-up interviews with project stakeholders
- III the resolution of outstanding issues and the issuance of the final validation report and opinion.

The following sections outline each step in more detail.

#### 3.1 Desk Review of the Project Design Documentation

The following table outlines the documentation reviewed during the validation:

- /1/ Holcim Philippines Inc, “*Emission reductions through partial substitution of fossil fuel with alternative fuels in four cement plants of Holcim Philippines Inc.*”, Version 1 dated 12 April 2007 and version 2 dated 9 April 2008.
- /2/ The Department of Environment and Natural Resources (DENR) is the DNA of Philippines: 9 April 2008.
- /3/ The Federal Office for the Environment FOEN, Climate Unit of Switzerland is the DNA of Switzerland: *Letter of Approval dated 20 December 2007*.
- /4/ International Emission Trading Association (IETA) & the World Bank’s Prototype Carbon Fund (PCF): *Validation and Verification Manual*. <http://www.vvmanual.info>
- /5/ CDM Executive Board: “*Emissions reduction through partial substitution of fossil fuels with alternative fuels in cement industry*”, ACM0003, version 04, dated 28 July 2006.
- /6/ CDM Executive Board: “*Tool for the demonstration and assessment of additionality*”, Version 3.
- /7/ CDM Executive Board: “*Tool to calculate the emission factor for an electricity system*”, Annex 12 of EB35.
- /8/ IPCC: “*Guidelines for National Green House Gas Inventories*” 2006.
- /9/ CDM Country Guide for the Philippines 2<sup>nd</sup> edition: <http://enviroscope.iges.or.jp/modules/envirolib/upload/252/attach/CDM-038.pdf>.
- /10/ Philippines Bureau of Agricultural Statistics, 2005  
Sugar Regulatory Administration of Annual Synopsis for the Crop Year 2003-2004  
National Statistics Office & Solid Waste Management Manual.
- /11/ IGES, DENR, and Klima, Manila Observatory: CDM baseline construction for the electricity grids in the Philippines, 2006.
- /12/ Correspondence on the consumption of AFR, extracted from SAP
- /13/ Spreadsheet for CEF calculations  
Luzon-Visayas grid baseline study calculation  
Mindanao grid baseline study calculation.



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- /14/ Letter from Alice Herrera, Energy Efficiency Practitioners Association of the Phillipines Inc. confirming discussion use of CDM for this project during conference 15-17 October 2004 with Holcim, dated 10 September 2007.
- /15/ Environmental Compliance Certificates, Permit to Operate
- /16/ Stakeholder consultation meeting minutes

### 3.2 Follow-up Interviews with Project Stakeholders

	Date	Name	Organization	Topic
/17/	27 June 2007	Ms Maria Rosario L. Chan	Holcim Philippines	<ul style="list-style-type: none"> <li>➤ Historical production capacities.</li> <li>➤ Monitoring, reporting and record keeping procedures.</li> <li>➤ Calibration, internal audit and corrective action procedures.</li> <li>➤ Provisions for training, operation and maintenance.</li> <li>➤ Compliance with existing environmental regulations.</li> </ul>
/18/	27 June 2007	Ms. Catherine Martin-Robert	Holcim Group PLC	<ul style="list-style-type: none"> <li>➤ Estimated emission reductions.</li> <li>➤ Assumptions in baseline determination.</li> <li>➤ Stakeholder consultation process.</li> <li>➤ Provisions for training, operation and maintenance.</li> <li>➤ Technology applied and operational lifetime</li> <li>➤ Project funding sources.</li> </ul>
/19/	28 June 2007	Ms Joy Goco	DNA of Philippines	<ul style="list-style-type: none"> <li>➤ Incentives in place to invest in carbon reduction technologies.</li> <li>➤ Process of obtaining host country approval for CDM projects in Philippines and the status for this project.</li> <li>➤ Sustainable development priorities.</li> <li>➤ Cement companies in Philippines using biomass in clinker production</li> <li>➤ Legal compliance and existing / emerging requirements.</li> <li>➤ Stakeholder consultation process.</li> <li>➤ Official government funding.</li> </ul>



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### 3.3 Resolution of Outstanding Issues

The objective of this phase of the validation was to resolve any outstanding issues which needed be clarified prior to DNV's positive conclusion on the project design. In order to ensure transparency a validation protocol was customised for the project. The protocol shows in transparent manner criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organises, details and clarifies the requirements a CDM project is expected to meet;
- It ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.

The initial validation report of the project identified three corrective action requests and eight requests for clarification which were presented to the project participants (in the form of draft validation report dated 14 May 2007). The project participants responded to DNV's initial findings, which are also included in the final PDD of version 2 dated 9 April 2008, addressed the raised requests to DNV's satisfaction.

The validation protocol consists of two tables. The different columns in these tables are described in the figure below. The completed validation protocol for the Emission Reductions through partial substitution of fossil fuel with alternative fuels in three cement plants of Holcim Philippines Inc project is enclosed in Appendix A to this report.

Findings established during the validation can either be seen as a non-fulfilment of CDM criteria or where a risk to the fulfilment of project objectives is identified. Corrective action requests (CAR) are issued, where:

- i) mistakes have been made with a direct influence on project results;
- ii) CDM and/or methodology specific requirements have not been met; or
- iii) there is a risk that the project would not be accepted as a CDM project or that emission reductions will not be certified.

A request for clarification (CL) may be used where additional information is needed to fully clarify an issue.



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<b>Validation Protocol Table 1: Mandatory Requirements for CDM Project Activities</b>				
<b>Requirement</b>	<b>Reference</b>	<b>Conclusion</b>		
<i>The requirements the project must meet.</i>	<i>Gives reference to the legislation or agreement where the requirement is found.</i>	<i>This is either acceptable based on evidence provided (<b>OK</b>), a <b>Corrective Action Request (CAR)</b> of risk or non-compliance with stated requirements or a request for <b>Clarification (CL)</b> where further clarifications are needed.</i>		

  

<b>Validation Protocol Table 2: Requirement checklist</b>				
<b>Checklist Question</b>	<b>Reference</b>	<b>Means of verification (MoV)</b>	<b>Comment</b>	<b>Draft and/or Final Conclusion</b>
<i>The various requirements in Table 2 are linked to checklist questions the project should meet. The checklist is organised in different sections, following the logic of the large-scale PDD template, version 03 - in effect as of: 28 July 2006. Each section is then further sub-divided.</i>	<i>Gives reference to documents where the answer to the checklist question or item is found.</i>	<i>Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.</i>	<i>The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.</i>	<i>This is either acceptable based on evidence provided (<b>OK</b>), or a <b>corrective action request (CAR)</b> due to non-compliance with the checklist question (See below). A request for clarification (CL) is used when the validation team has identified a need for further clarification.</i>

  

<b>Validation Protocol Table 3: Resolution of Corrective Action and Clarification Requests</b>			
<b>Draft report clarifications and corrective action requests</b>	<b>Ref. to checklist question in table 2</b>	<b>Summary of project owner response</b>	<b>Validation conclusion</b>
<i>If the conclusions from the draft Validation are either a CAR or a CL, these should be listed in this section.</i>	<i>Reference to the checklist question number in Table 2 where the CAR or CL is explained.</i>	<i>The responses given by the project participants during the communications with the validation team should be summarised in this section.</i>	<i>This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".</i>

**Figure 1: Validation protocol tables**



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### 3.4 Internal Quality Control

The draft validation report including the initial validation findings underwent a technical review before being submitted to the project participants. The final validation report underwent another technical review before requesting registration of the project activity. The technical reviews were performed by a technical reviewer qualified in accordance with DNV's qualification scheme for CDM validation and verification.

### 3.5 Validation Team

Role/Qualification	Last Name	First Name	Country
Team Leader, CDM Validator	Lai	Chee Keong	Malaysia
CDM Validator	Muniandy	Kamala Devi	Malaysia
Sector Expert	Ramachandran	Ramesh	India
Technical Reviewer (draft report)	Telnes	Einar	Norway
Technical Reviewer (applicant)	Brinks	Hendrik	Norway
Technical Reviewer	Lehmann	Michael	Norway

The qualification of each individual validation team member is detailed in Appendix B to this report.



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### 4 VALIDATION FINDINGS

The findings of the validation are stated in the following sections. The validation criteria (requirements), the means of verification and the results from validating the identified criteria are documented in more detail in the validation protocol in Appendix A.

The final validation findings relate to the project design as documented and described in the revised and resubmitted project design documentation of version 2 dated 9 April 2008.

#### 4.1 Participation Requirements

The project participants are Holcim Philippines, Inc. of the Philippines and Holcim Group Support Ltd of Switzerland. The Parties involved, i.e. Philippines as the host Party and Switzerland as the participating Annex I Party, meet the requirements to participate in CDM. Letters of approval from the DNA's of Philippine and Switzerland have been obtained.

#### 4.2 Project Design

The project is implemented in three cement plants of Holcim Philippines Inc (HPHI) located in Bulacan, Lugait and Davao, located at Region 3, Region 10 and Region 11, respectively. The project activity aims to replace 15% of the heat requirement with agricultural waste and 3.8% with sorted municipal waste in the kiln system with alternative fuels. The agricultural wastes are agricultural by-products namely rice husk, coconut waste, tobacco leaves, bagasse etc. The remaining fuels will be coal, anthracite, petcoke, heavy oil, used/waste oils and industrial waste originating from fossil source.

Biomass will be delivered to a dedicated handling area in the plant. A loader will then be utilised to transfer the biomass to a hopper. For Bulacan plant, the alternative fuels are fed into separate-line-calciner (SLC) whereas for Lugait and Davao plants, the alternative fuels will be fed into the in-line-calciner (ILC). Sorted municipal wastes, as well as agricultural by-products bigger than 20 mm will be fed through a conveyor belt to the designated feeding point (either through the calcinator or the kiln hood). A weight feeder or dosing system will ensure feed rate accuracy. The feeding system will be monitored and controlled. The delivery, dosing and storage systems for the biomass and MSW may be further modified and enhanced as experience is gained.

The technology has been developed by HPHI with the support of experts from Holcim Group. The department of alternative fuels and raw materials (AFR) of Holcim Group Support (HGS) provides an insight into the state of the art technologies, exchanges experiences in the alternative fuels selection plus design of installations, develops tools to limit the impact on production loss and clinker quality and establishes quality control procedures.

Safety training for AFR already conducted in 2005. 2007 Training plan for employees was shown and confirms that training is based on job position and is deemed relevant. The mentioned trainings are planned to be conducted in the last quarter of 2007. The system in identifying training needs up to the planning of the training are deemed appropriate to ensure that the employees are competent in carrying out their responsibilities.



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This project employs alternative fuel as partial substitute of fossil fuel which is in-line with the Philippines' sustainable development policy. It also contributes in environmental improvements and social benefits in:

- a. Use of cleaner, more efficient and sustainable solution to waste disposal by addressing the disposal of wastes in Philippines,
- b. Improving livelihood and economic opportunities in the community by providing income in the need to have additional income for farmers and rice millers as well as man-power for transportation of the alternative fuels, and
- c. Provision of new financial resources by contributing in the additional revenue for local community in generating income from what was previously burnt in open air.

The project is in line with renewable energy and alternative fuel usage, and this has been verified with the local DNA/19/. The validation did not reveal any information that indicates that the project can be seen as a diversion of official development assistance (ODA) funding towards Philippines.

Work on the project activity began in August 2005 with tests and trials being conducted at the Bulacan plant /12/. However, the main investment is waiting for registration as a CDM project. The operational lifetime of the project is estimated to be 15 years and a fixed crediting period of 10 years starting on 1 July 2008 (or after registration date whichever is later) was selected. The expected emissions reductions are estimated to be 2 076 279 tCO<sub>2</sub>e over the ten year fixed crediting period.

### 4.3 Baseline Determination

The project correctly applies to the approved methodology ACM0003, "Emissions reduction through partial substitution of fossil fuels with alternative fuels in cement industry", version 04, dated 28 July 2006 /5/. The project is implemented at three plants are at kiln installed capacities of 5500, 4000 and 3500 tonnes of clinker/day for the plants Bulacan, Lugait Plant Line 2 and Davao Plant, respectively. The following applicable conditions under ACM0003 were also fulfilled:

- Fossil fuels used in the cement manufacturing will be partially replaced by PKS, rice husk and saw dust and sorted waste (rubbers, plastics, papers, etc.),
- The biomass residues are available in excess as by-product and, in the absence of the project activity, would be put in a landfill or burned in an uncontrolled manner without utilizing them for energy purpose. The Philippines CDM Country Guide /9/ has summarized the availability of biomass resources in the country which when not utilized properly are either burned in open fields or left to rot in open spaces, dumped along roadways and waterways. Rice husk which will be one of the alternative fuels in the project, is used as fuel in households and rural industries, fuel for paddy and for brick-making. In many cases, however, they are also burnt and left to decompose in open fields or thrown away. Official reports /10/ provided by different statistics have also demonstrated the availability of previously unused rice husk and coconut waste along with bagasse and residual waste (namely plastics from MSW).
- The biomass residues used by the project activity does not necessitate preparation requiring the use of significant quantity of energy,



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- CO<sub>2</sub> emission reduction is only related to the CO<sub>2</sub> emission generated by fuel burning requirement and not by decarbonisation of raw material,
- Production capacity of the three plants are at installed capacity (3 500 tonnes/ day at Davao and 5 500 tonnes/day for both Bulacan and Lugait plants) for by the time of validation of the project activity.
- The amount of alternative fuels available for the project is at least 1.5 times the amount required to meet the consumption of all users consuming the same alternative fuels, i.e. the project and other alternative fuel users. The 2007 self-survey conducted by HPHI during stakeholder consultation on existing suppliers has demonstrated the availability of alternative fuels, rice husk specifically, in the regions Bulacan, Lugait and Davao where the HPHI plants are located. A survey of availability of bagasse is still in progress. This self survey was extended to study the extent of the availability of the biomass to other users. The survey showed a 75% excess for Lugait site, 47% for Davao and 19% for Bulacan. The survey was, however, only conducted among a limited number of rice mills, with a bias towards mills that already uses rice husk. However, surveys will in the project be conducted annually to determine potential leakage. Surveys for other biomass types used in the project will also be conducted as applicable.

System boundaries for the project are represented in the table below:

	<i>Source</i>	<i>GHGs involved</i>	<i>Description</i>
<i>Baseline emissions</i>	Kiln fuel use	CO <sub>2</sub>	Direct emissions from firing the kiln and processing
<i>Project emissions</i>	Kiln fuel use	CO <sub>2</sub>	Direct emissions from firing the kiln and processing (including supplemental fuels used in the precalciner)
	On site transportation and preparation of alternative fuels	CO <sub>2</sub>	Direct emissions due to AF transportation and indirect emissions from fossil fuels combustion of power plants from the grid due to electricity used
<i>Leakage</i>	Transportation of alternative fuel	CO <sub>2</sub>	Leakage due to transport of AF. Reduced FF transportation is not taken into account for conservativeness.

The most plausible baseline scenarios have been identified using the step-wise procedures in accordance with ACM0003:

### Step 1: Define alternative scenarios for the fuel mix

Scenario 1: Utilisation of fossil fuels based on Holcim global agglomerate data from 2002 to 2004



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For the scenario with evolving fuel mix, public available data from cement manufacturers in the Philippines were not available and global fuel mix for Holcim was used. The baseline scenario that the fuel mix would approach this average was considered.

Scenario 2: Utilisation of fossil fuels based on plant specific fuel mix from 2002 to 2004 (continuation of current practice).

The fuel mix is different for each site based on the amount of coal, anthracite, petcoke, heavy oil, light oil, waste oil and industrial waste used. For Bulacan and Lugait plant the emissions are lower than global average for Holcim (scenario 2).

Both Bulacan and Lugait plants have started with test and trials from 2002 onwards with Industrial waste / scrap / tyres. Percentage of the trial materials in the baseline ranges from 0.4 to 1.1%.

Scenario 3: Fossil fuels are partially substituted with alternative fuels (i.e. the proposed CDM project)

Tests were conducted using rice husks at Bulacan plant and waste carbon (coconut carbon) was tested at Davao plant. The early tests at Bulacan have led an AFR team in studying the process behaviour and technical barriers to minimise losses and improve the quality of clinker produced. With technical support from corporate office and investment, Holcim will be able to upgrade the facilities to cater to the different sizes of the AF as well as the large quantity that is available. With CDM incentives, it is estimated that part of the fossil fuel requirements will be replaced by biomass (15%) and MSW (3.8%).

The baseline given was based on average for all 3 plants, but as the fossil fuel replacement for the plants will be slightly different from each other, emission calculations are done separately.

Step 2: Selecting baseline scenario through barriers analysis

Further analysis was carried out in Section 4.4 to decide on the baseline scenario.

### 4.4 Additionality

The additionality of the project was demonstrated using the “Tools for the demonstration and assessment of additionality” version 3 /6/.

As the activity started on 1 August 2005 and thus before the start of the validation (20 April 2007), evidence of CDM consideration prior to the decision to proceed with the project was requested. A letter dated 10 September 2007 provided by the Energy Efficiency Practitioners Association of the Philippines Inc. confirms discussions with Holcim with regard to the use of the CDM for this project during a conference 15-17 October 2004 /14/. In this context it must be noted that the project is not yet implemented and that so far only trials with small amounts have been carried out. No significant investments have yet been undertaken by Holcim Philippines, Inc and the actual investment decision will only be made if the project is registered as CDM project. In the light of this, the presented evidence to demonstrate that CDM was seriously considered is considered adequate.



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### Step 1. Identification of alternatives to the project activity consistent with current laws and Regulations

Three alternative baseline scenarios were identified during the determination of the project's baseline scenario:

Scenario 1: Utilisation of fossil fuels based on global fuel mix data from 2002, 2003 and 2004 levels

Scenario 2: Utilisation of fossil fuels based on plant specific fuel mix data from 2002, 2003 and 2004 levels (current practice)

Scenario 3: Fossil fuels are partially substituted with alternative fuels (i.e. the proposed CDM project)

All three alternative scenarios have been confirmed complying with legislation.

Option 2, selection of baseline scenario using barrier analysis has been chosen to select the most likely situation in the proposed project.

### Step 3. Barrier analysis

Alternative scenario	Technological barriers	Barriers due to prevailing practices	Other barriers
<b>Scenario 1</b>	No technological barriers	This is prevailing practice	No
<b>Scenario 2</b>	No technological barriers. The plant will operate with this scenario in the absence of the project activity, emission factor is more conservative	This is the prevailing practice	No
<b>Scenario 3</b>	A number of trials have been done (mainly in Bulacan) and more are still required for the proposed project activity to optimize the feeding of alternative fuels by feeding of alternative fuels by keeping the clinker characteristics. New facilities and upgrades of some technical components are required.	Operators are not familiar with handling and feeding of alternative fuels and specific installations have to be developed.	The use of alternative fuels reduces the production capacity.

*Sub-step 3a. Identify barriers that would prevent the implementation of the type of the proposed project activity*



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The following barriers are discussed:

a. Technological barrier:

Technology barrier in process have been identified by the corporate AFR technical team who are studying the process behaviour and technical barriers to be overcome to ensure that production losses are minimized and the quality of the clinker is not compromised. These have been identified as:

- i. high variation in the quality of the main fuel and limestone,
- ii. high percentage of the calcination,
- iii. low burner momentum, and
- iv. low oxygen level at the kiln inlet, among others.

These were demonstrated during the site visit using Fuel Mix Optimiser modelling tool. For this reason as well since the beginning of the CDM project in 2005, the level of alternative fuel is still very low. The production losses were also demonstrated in the fuel mix optimizer analysis.

In addition to the technological barrier, another direct barrier is due to the feeding of alternative fuels in keeping production losses minimum and maintaining the clinker characteristics with regulatory standards. The safe and proper handling of materials at different stages of the process, namely material feeding, receiving area contributed by the varying characteristics and properties of the materials are continually studied and improved.

As well established technology is still not yet available for this process and require a lot of study and on-going analysis, it is acceptable that the use of alternative fuel in cement industry poses a technological barrier in the process.

b. Barriers due to prevailing practice:

As use of significant amount of alternative fuels is not the current practice in the Philippines, fossil fuel is still the preferred choice in the industry. This has been confirmed with Philippines DNA.

**Sub-step 3b. Show that the identified barriers would not prevent the implementation of at least one of the alternatives (except the proposed project activity)**

Out of the 3 alternatives identified, both scenarios 1 and 2 have shown that they would not face any of the barriers presented. The fact that the level of substitution for this scenario does not pose any technological barrier not investment needed as manual operation is able to handle the low amount of alternative fuels.

### **Step 4. Common practice analysis**

**Sub-step 4a: Analyze other activities similar to the proposed project activity:**

Information provided by Cement Manufacturers Association of the Philippines (CeMAP) shows that coal is still the major source of thermal energy in the local cement industry. As there is no official data published, confirmation was done with DNA /19/. It was clarified with DNA of Philippines that only one cement plant in Philippines is using biomass for clinker production and this project is currently undergoing validation.



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### **Sub-step 4b. Discuss any similar options that are occurring:**

It was claimed that the project faces various barriers namely investment, production losses, technological issues and prevailing practice standards.

## **4.5 Monitoring**

The monitoring plan is in accordance with the approved monitoring methodology of ACM0003 “Emissions reduction through partial substitution of fossil fuels with alternative fuels in cement industry”, ACM0003, version 04, dated 28 July 2006 /5/.

### **4.5.1 Parameters determined ex-ante**

The following values were determined at the start of the project:

1. Annual production of clinker ( $C_{BI}$ , tonne),
2. Quantity of fossil fuel (coal) used in the baseline ( $Q_{FF,BA \text{ coal}}$ , tonne),
3. Quantity of fossil fuel (anthracite) used in the baseline ( $Q_{FF,BA \text{ anthracite}}$ , tonne),
4. Quantity of fossil fuel (petcoke) used in the baseline ( $Q_{FF,BA \text{ petcoke}}$ , tonne),
5. Quantity of fossil fuel (heavy oil) used in the baseline ( $Q_{FF,BA \text{ heavy oil}}$ , tonne),
6. Quantity of fossil fuel (light oil) used in the baseline ( $Q_{FF,BA \text{ light oil}}$ , tonne),
7. Quantity of fossil fuel (waste oil) used in the baseline ( $Q_{FF,BA \text{ waste oil}}$ , tonne),
8. Quantity of fossil fuel (industrial waste originating from fossil fuel) used in the baseline ( $Q_{FF,BA \text{ industrial waste originating from fossil fuel}}$ , tonne),
9. Lower heating value of fossil fuel (coal) used in the baseline ( $HV_{FF \text{ coal}}$ , TJ/tonne),
10. Lower heating value of fossil fuel (anthracite) used in the baseline ( $HV_{FF \text{ anthracite}}$ , TJ/tonne),
11. Lower heating value of fossil fuel (petcoke) used in the baseline ( $HV_{FF \text{ petcoke}}$ , TJ/tonne),
12. Lower heating value of fossil fuel (heavy oil) used in the baseline ( $HV_{FF \text{ heavy oil}}$ , TJ/tonne),
13. Lower heating value of fossil fuel (waste oil) used in the baseline ( $HV_{FF \text{ coal}}$ , TJ/tonne),
14. Lower heating value of fossil fuel ( industrial waste originating from fossil fuel) used in the baseline ( $HV_{FF \text{ industrial waste originating from fossil fuel}}$ , TJ/tonne),
15. Weighted average annual  $CO_2$  emission factor for the fossil fuel that would have been consumed in the baseline ( $EE_{FF}$ ,  $tCO_2/TJ$ ),
16. Emission factor for electricity used ( $EF_P$ , 0.525  $tCO_2/MWh$  for Bulacan plant; 0.449  $tCO_2/MWh$  for Lugait and Davao plants), and
17. Specific fuel consumption in the baseline ( $HC_{FF}$ ,  $tCO_2/tClinker$ ).

The baseline scenario has been calculated based on the records of three years prior to project start, during the period 2002, 2003 and 2004 which is deemed appropriate, in accordance with the methodology.

Weighted average annual  $CO_2$  emission factor for the fossil fuel that would have been consumed in the baseline has been demonstrated to be the lowest value for the data consumed and monitored *ex-ante* during the year before the validation. This is conservative and has been fixed *ex-ante*.



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The pre-determined values were obtained from annual technical report which is obtained from the monitoring data collected in the data base. Lower heating values for fuels are calculated individually for each kiln, based on the laboratory test report of the fuels tested during each delivery.

Emission factor for grid electricity for Bulacan plant is taken from Luzon-Visaya grid, whereas Lugait and Davao use Mindanao Grid. Data are taken from CDM baseline construction for the electricity grids in the Philippines /11/ where latest data on fuel consumption of power plants has been confirmed available only up to the year 2004. Emission factor has been correctly and transparently calculated using “*Tool to calculate the emission factor for an electricity system*” /7/.

DNV finds the values chosen appropriate and the selection of the values is transparent and conservative.

### 4.5.2 Parameters monitored ex-post

The monitoring of the following GHG indicators will allow for an *ex-post* assessment of project emissions are indicated in B.7.1 of the PDD and are in line with the requirements of the ACM0003 to allow for accurate measurement of project, baseline emission as well as leakage for the project.

The following parameters will be monitored for each plant:

- i. Quantity of alternative fuel (rice husk) ( $Q_{AF \text{ biomass}}$ , Tonne)- measured,
- ii. Quantity of alternative fuel (sorted municipal solid waste) ( $Q_{AF \text{ sorted MSW}}$ , Tonne)- measured,
- iii. Lower heating value of the alternative fuels (rice husk) ( $HV_{AF \text{ biomass}}$ , TJ/tonne fuel-measured,
- iv. Lower heating value of the alternative fuels (sorted MSW) ( $HV_{AF \text{ sorted MSW}}$ , TJ/tonne fuel)- measured,
- v. Heat input from alternative fuels ( $HI_{AF}$ , TJ/year)-calculated,
- vi. Annual clinker production ( $C_{Pr,y}$ , tonne )-measured,
- vii. Moisture penalty for year y ( $MP_y$ , TJ/y )-calculated,
- viii. Specific fuel consumption in project case in year y ( $HC_{AF,y}$ , TJ/t clinker)-calculated,
- ix. Emission factor of alternative fuel used ( $EF_{AF}$ ,  $tCO_2/TJ$ )-calculated,
- x. GHG emissions from alternative fuels ( $AF_{GHG}$ ,  $tCO_2e/y$ )-calculated,
- xi. Weight average annual  $CO_2$  emission factor for fossil fuel consumed and monitored during corresponding verification period ( $EF_{FF}$ ,  $tCO_2/TJ$ )-calculated,
- xii. Transportation fuel used for alternative fuels (rice husk) on site during the year ( $OF_{AF \text{ biomass}}$ , t/y)- measured,
- xiii. GHG emissions from on site transport of alternative fuels ( $OT_{GHG \text{ transportation}}$ ,  $tCO_2/y$  )-calculated,
- xiv. Electricity consumption from on-site alternative fuels transportation with conveyors ( $OP_{AF}$ , MWh/y)- measured,
- xv. Emission factor for electricity ( $EF_P$ ,  $tCO_2/MWh$ )- calculated,
- xvi. GHG emissions from on site electricity consumption for alternative fuels transportation with conveyors ( $OT_{GHG \text{ conveyor}}$ ,  $tCO_2/y$  )-calculated,
- xvii. GHG emissions from on site transport and drying of alternative fuels ( $OT_{GHG}$ ,  $tCO_2/y$ )-calculated,



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- xviii. Amount of biomass residue type j used as alternative fuel that would have been landfilled in the absence of the project ( $Q_{AFLj,x}$ , t/y)-measured,
- xix. Baseline GHG emissions due to anaerobic decomposition of biomass residues in landfills ( $LW_{CH_4,y}$ , tCO<sub>2</sub>e/ y )-calculated,.
- xx. Average truck capacity (rice husk) ( $CT_{AF \text{ biomass}}$ , Tonnes/truck)-measured,
- xxi. Average round trip distance between the alternative fuel supply sites (rice husk) and the cement plant sites ( $D_{AF \text{ biomass}}$ , Km/truck)-measured,
- xxii. Average truck capacity ( sorted MSW) ( $CT_{AF \text{ sorted MSW}}$ , Tonnes/truck)-measured,
- xxiii. Average round trip distance between the alternative fuels supply sites (sorted MSW) and the cement plant sites ( $D_{AF \text{ sorted MSW}}$ , Km/truck)-measured,
- xxiv. Leakage resulting from transport of alternative fuels (sorted MSW) ( $LK_{AF \text{ sorted MSW}}$ , tCO<sub>2</sub>/y)-calculated,
- xxv. Leakage resulting from truck transportation of all alternative fuels ( $LK_{AF}$ , tCO<sub>2</sub>/y)-calculated,
- xxvi. Leakage resulting from transport of alternative fuels less leakage due to reduced transport of fossil fuels ( $LK_{trans}$ , tCO<sub>2</sub>/y)-calculated,
- xxvii. Quantity of alternative fuels prepared off site ( $Q_{AF \text{ prepared off site}}$ , tonne )-measured,
- xxviii. Electricity used for preparation of alternative fuel (rice husk) shredded off site ( $PP_{AF \text{ prepared off site}}$ , MWh/y )-measured,
- xxix. CO<sub>2</sub> emission factor due to power generation, tCO<sub>2</sub>/MWh)-calculated,
- xxx. GHG emissions that could be generated during the preparation of alternative fuels outside the project ( $GHG_{PAFO}$ , tCO<sub>2</sub>/y)-calculated, and
- xxxi. Availability of biomass residue by survey and/or study.

The following assumptions were made and have been verified and deemed appropriate:

- a. Agricultural by-product and the sorted MSW are CO<sub>2</sub> neutral, hence emission from alternative fuel is zero,
- b. For conservativeness and in regard to the ecological solid waste management act of 2000, the CH<sub>4</sub> emissions due to biomass residues are not taken into account,
- c. For conservativeness GHG emissions due to burning of biomass residue that is used as alternative fuel ( $BB_{CH_4}$ ) is zero,
- d. 50% of biomass residues would have been landfilled in an uncontrolled manner in the absence of the project,
- e. The alternative fuels used are not dried or prepared except at Lugait plant where electricity consumption was calculated for grinding of rice husk

Monitoring data are obtained from the ATR (annual technical report) which is the standard yearly report generated by all plants within Holcim Group for local head office and the corporate.

Following data is taken from ACM0003, which is referring to IPCC default values for US heavy duty diesel vehicles, uncontrolled:

- a. CO<sub>2</sub> emission factor for the transportation of fuel ( $VEF_{CO_2}$ , tCO<sub>2</sub>/ tonne),
- b. CH<sub>4</sub> emission factor for the transportation of fuel ( $VEF_{CH_4}$ , kgCH<sub>4</sub> / tonne), and
- c. N<sub>2</sub>O emission factor for the transportation of fuel ( $VEF_{N_2O}$ , kgN<sub>2</sub>O/ tonne).



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Geographical data will be used which is cross-checked with supplier for monitoring the average round trip distance between the alternative fuel supply sites (rice husk, sorted waste) and the cement plant sites. Weighing post database will also be generated for transport related monitoring.

All monitoring data is stored in database on a monthly basis, which is used to generate the annual ATR. Project monitoring data report is generated on a yearly basis, using information collated in ATR.

Grid emission factor will be updated during verification, considering the power plant data not being released on yearly basis.

### 4.5.3 Management system and quality assurance

The Senior Vice President for Manufacturing has been identified responsible for the CDM project. He has assigned a team who will be responsible in the overall monitoring and reporting of the project activity. The team will also be responsible for data collection and monitoring, including transportation of alternative fuels to the cement plant.

Most of the data are currently already incorporated in the Holcim data collection system in Annual Technical Report (ATR). A specific report, Project Activity Monitoring Report will be prepared for project emission reduction calculation which will include among others:

- a. Method of collection and reporting of data,
- b. Project activity database,
- c. Periodic analysis of traditional and alternative fuels by in-house and accredited third party ,
- d. Regular monitoring of operating parameters,
- e. Equipment used to measure, monitor and control of traditional and alternative fuels,
- f. Laboratory methods and procedures in analysis, and
- g. Regular maintenance and calibration of equipment by in-house and accredited 3<sup>rd</sup> party.

The monitoring data will be kept for at least 2 years after the end of the crediting period.

### 4.6 Estimate of GHG Emissions

The formulas and factors used in the project's emissions calculations are in accordance to the approved baseline methodology "Emissions reduction through partial substitution of fossil fuels with alternative fuels in cement industry", ACM0003, version 04, dated 28 July 2006 /5/. The emission reduction calculations are transparently presented in the calculation spreadsheets.

Baseline emissions were calculated from:

- a. CO<sub>2</sub> emission from fossil fuels displaced by alternative fuels (FF<sub>GHG</sub>),
- b. Anaerobic decomposition of biomass residues in landfills (LW<sub>CH<sub>4</sub>,y</sub>),
- c. Emissions from reduction of on-site transportation of fossil fuel (OT<sub>GHG FF</sub>), and
- d. GHG emissions due to burning of biomass residue that is used as alternative fuel (BB<sub>CH<sub>4</sub></sub>).



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Baseline emission calculations were calculated correctly and conform to the relevant formulas stipulated in ACM0003.

For calculations of fossil fuel displaced used conservative measures for taking into account the little use (<1% on energy basis) before the project starting date of industrial waste. It was not included in the baseline emission factor, which is conservative because the emission factor becomes lower. Furthermore, all use of industrial waste of fossil origin as project emissions ( $AF_{GHG}$ ), not only the excess use of the project. Since only part of the industrial waste of fossil fuel origin will be incinerated in the Philippines, an emission factor of 143 tCO<sub>2</sub>/ (tonne waste of fossil fuel origin) will be used. In this way, no emission reductions could be claimed from continued use of baseline fuel mix.

The project does not claim methane emissions due to reduced transportation of fossil fuel ( $OT_{GHG\ FF}$ ), and the CH<sub>4</sub> emissions (due to biomass residues and in regard to the ecological solid waste management act of 2000). It was assumed that biomass is banned from burning, complying with Ecological solid waste Management Act 2002. However, in project emission, 50% methane land filled is claimed as survey shows that some biomass is still burnt.

Project emissions take into consideration the following:

- a. GHG emission from alternative fuels ( $AF_{GHG}$ ) is deemed appropriate taken as zero in the proposed project activity, as waste oil and industrial waste originating from fossil fuel are calculated with the fossil fuel emissions since they are integrated in the baseline,
- b. Emission from on-site transportation and drying of alternative fuels ( $OT_{GHG}$ ) will be measured and calculated using the grid emission factor,
- c. Leakage from transportation of alternative fuels ( $LK_{trans}$ ) will be taken into account on increased transportation involved, and
- d. GHG emission that could be generated during preparation of alternative fuels  $GHG_{PAGO}$  will only be considered in Lugait plant during the preparation of alternative fuels outside the project as grinding of rice husk by supplier is involved.

The calculation of grid emission factors for the plants use “*Tool to calculate the emission factor for an electricity system*” /7/, based on earlier study on the grid in the Philippines /11/ and has been recalculated using 2006 IPCC emission factors and net calorific values /8/. Luzon-Visayas grid supplying to Bulacan plant has been recalculated using simple OM method because data for dispatch data analysis are not available and low-cost/must-run power plants constitute less than 50% of the electricity generation, while the Build Margin (BM) was calculated using the set of power units that have been built most recently. The simple OM (0.695 tCO<sub>2e</sub>/MWh) and BM (0.368 tCO<sub>2e</sub>/MWh), and CM is equal to 0.531 tCO<sub>2e</sub>/MWh. The emission factor for Mindanao grid, supplying to the plants Lugait and Davao has also been calculated slightly different, average OM have been calculated as the low cost must run resources constitute more than 50% of the total grid generation. The weighted average of the OM (0.695 tCO<sub>2e</sub>/MWh) and BM (0.211 tCO<sub>2e</sub>/MWh) is equal to CM of 0.453 tCO<sub>2e</sub>/MWh. The calculation of the grid emission factor has been verified and formulas are appropriately applied and calculated.

The emissions calculations spreadsheet was reviewed, and it was verified that relevant formulas were correctly used in the baseline and project emissions calculations. Supporting



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evidence for the values used as in Sections B.6.2 and B.7.1 in the PDD were presented to DNV and were found to be acceptable.

The total emissions reductions achieved by the project are calculated by subtracting the leakage and project emissions from the baseline emissions. Based on the calculations in the spreadsheet submitted, the project is expected to generate emissions reductions of 2 076 279 tCO<sub>2</sub>e over its ten year crediting period starting from 2008 to 2018.

### 4.7 Environmental Impacts

The three plants are ISO14001 certified, and have also included the project activity into their systematic review of key environmental impacts, identifying appropriate management and monitoring procedures.

It is also HPHI's responsibilities to comply with local regulatory environmental standards on top of Holcim Group Emissions Monitoring and Reporting Standard which requires installation of continuous emissions monitoring equipment for specific air pollutants.

The project of upgrading the plant facilities does not require Environmental Impact Analysis, and has been confirmed with local DNA/19/. There are no impacts to environment. Plant is ISO14001 certified, hence HPHI has undertaken a systematic review of the key environmental impacts of its operations, has identified appropriate management and monitoring measures of these impacts, and has undertaken a regular management review of its environmental performance.

The operating permits and Environmental Compliance Certificates /15/ are all in place and updated.

### 4.8 Comments by Local Stakeholders

Stakeholder meetings were held separately for the three plants, i.e. 23 March 2007 for Davao Plant, 8 November 2006 for Lugait and 27 October 2006 for Bulacan/16/.

### 4.9 Comments by Parties, Stakeholders and NGOs

The PDD of 12 April 2007 was made publicly available on DNV's climate change website and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from 20 April 2007 to 19 May 2007.

No comments were received.

## **APPENDIX A**

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### **CDM VALIDATION PROTOCOL**

**Table 1: Mandatory Requirements for Clean Development Mechanism (CDM) Project Activities**

Requirement	Reference	Conclusion
<b>About Parties</b>		
The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3.	Kyoto Protocol Art.12.2	OK
The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2.	OK
The project shall have the written approval of voluntary participation from the designated national authority of each Party involved.	Kyoto Protocol Art. 12.5a, CDM Modalities and Procedures §40a.	OK <del>CAR-1</del>
The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof.	Kyoto Protocol Art. 12.2, CDM Modalities and Procedures §40a	OK <del>OK</del>  CAR-1
In case public funding from Parties included in Annex I is used for the project activity, these Parties shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties.	Decision 17/CP.7, CDM Modalities and Procedures Appendix B, § 2	The project does not involve any public funding from an Annex I Party, and the validation did not reveal any information that indicates that the project can be seen as a diversion of official development assistance (ODA) funding towards Philippines.

Requirement	Reference	Conclusion
Parties participating in the CDM shall designate a national authority for the CDM.	CDM Modalities and Procedures §29	OK  The Department of Environment and Natural Resources (DENR) is the DNA of Philippines.  The Federal Office for the Environment FOEN, Climate Unit of Switzerland is the DNA of Switzerland.
The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol.	CDM Modalities §30/31a	OK  Philippines ratified the Kyoto Protocol on 20 November 2003. Switzerland ratified to the Kyoto Protocol on 9 July 2003.
The participating Annex I Party's assigned amount shall have been calculated and recorded.	CDM Modalities and Procedures §31b	OK
The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7.	CDM Modalities and Procedures §31b	OK  Annex-I Party, Switzerland has in place a national system for estimating GHG emissions.
<b>About additionality</b>		
Reduction in GHG emissions shall be additional to any that would occur in the absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases	Kyoto Protocol Art. 12.5c, CDM Modalities and Procedures §43	Comments reserved till the clarifications to various CLs

Requirement	Reference	Conclusion
by sources are reduced below those that would have occurred in the absence of the registered CDM project activity.		are provided.
<b>About forecast emission reductions and environmental impacts</b>		
The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.	Kyoto Protocol Art. 12.5b Yes.	OK
<b>For large-scale projects only</b>		
Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	CDM Modalities and Procedures §37c	OK <del>CL7</del>
<b>About stakeholder involvement</b>		
Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received.	CDM Modalities and Procedures §37b	OK
Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available.	CDM Modalities and Procedures §40	OK  The PDD of Holcim Philippines Inc Emission Reductions through partial substitution of fossil fuel with alternative fuels in three cement plants was made publicly available on <a href="http://www.dnv.com/certification/climatechange/Projects/ProjectDetails.asp?ProjectId">http://www.dnv.com/certification/climatechange/Projects/ProjectDetails.asp?ProjectId</a>

Requirement	Reference	Conclusion
		<u>=1147</u> and Parties, stakeholders and NGO's were invited to provide comments during the period from 20 April 2007 to 19 May 2007. No comments were received.
<b>Other</b>		
The baseline and monitoring methodology shall be previously approved by the CDM Executive Board.	CDM Modalities and Procedures §37e	OK
A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances.	CDM Modalities and Procedures §45c,d	OK
The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure.	CDM Modalities and Procedures §47	OK
The project design document shall be in conformance with the UNFCCC CDM-PDD format.	CDM Modalities and Procedures Appendix B, BE Decision	OK
Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP.	CDM Modalities and Procedures §37f	OK

**Table 2: Requirements Checklist**

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview		<b>Ref.</b>	<b>MoV*</b>	<b>COMMENTS</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<b>A. General Description of Project Activity</b> <i>The project design is assessed.</i>						
<b>A.1. Project Boundaries</b> <i>Project Boundaries are the limits and borders defining the GHG emission reduction project.</i>						
A.1.1. Are the project's spatial boundaries (geographical) clearly defined?		/1/	DR	There are 4 plants involved in this project, situated at different regions within Philippines. More specific locations are required.  (PDD version 02 has been revised, only 3 plants are involved in this project)	<del>CL</del> 4	OK
A.1.2. Are the project's system boundaries (components and facilities used to mitigate GHGs) clearly defined?		/1/	DR	The project systems are clearly defined and consist of all production processes related to clinker production, covering fuel preparation, pyro-processing up to clinker production. On-site transportation and preparation of alternative fuels are also included in the project boundary.		OK
<b>A.2. Participation Requirements</b> <i>Referring to Part A, Annex 1 and 2 of the PDD as well as the CDM glossary with respect to the terms Party, Letter of Approval, Authorization and Project Participant.</i>						
A.2.1. Which Parties and project participants are		/1/	DR	Philippines is the participating Non-Annex 1		OK

\* MoV = Means of Verification, DR= Document Review, I= Interview

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	<b>Ref.</b>	<b>MoV*</b>	<b>COMMENTS</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
participating in the project?			Party, while Annex 1 Party is Switzerland. The project participants of the project activity are Holcim Philippines, Inc and Holcim Group Support Ltd.		
A.2.2. Have all involved Parties provided a valid and complete letter of approval and have all private/public project participants been authorized by an involved Party?	/1/	DR	The Letters of Approval from DNA of Philippines and Switzerland are pending.	<del>OK</del> <b>CAR-1</b>	
A.2.3. Do all participating Parties fulfil the participation requirements as follows: - Ratification of the Kyoto Protocol - Voluntary participation - Designated a National Authority	/1/	DR	Non-Annex I Party - Philippines : - Ratified the Kyoto Protocol on 20 November 2003. - The Letter of Approval from DNA of Philippines is pending. - The Department of Environment and Natural Resources (DENR) is the DNA of Philippines. Annex I Party – Switzerland : - Ratified the Kyoto Protocol on 9 July 2003. - The Letter of Approval from DNA of Switzerland is still pending. The Federal Office for the Environment FOEN, Climate Unit of Switzerland is the DNA of Switzerland.	<del>OK</del> <b>CAR-1</b>	

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.2.4. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance.	/1/	DR I	The project does not involve any public funding from an Annex 1 Party, and the validation did not reveal any information that indicates that the project can be seen as a diversion of official development assistance (ODA) funding towards Philippines.		OK
<b>A.3. Technology to be employed</b> <i>Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.</i>					
A.3.1. Does the project design engineering reflect current good practices?	/1/	DR	Yes, the project design engineering reflects good practices. The project utilises municipal solid waste (MSW) and agricultural by-products.		OK
A.3.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	/1/	DR	It involves alternative fuels selection plus design of the installations, develop tools to limit the impact on production loss and clinker quality.		OK
A.3.3. Does the project make provisions for meeting training and maintenance needs?	/1/	DR	The plants have included training related to AFR in the 2007 training plan. Safety related AFR training was already conducted in 2005. Training related to operation will start in the last quarter of 2007.		OK

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<b>A.4. Contribution to Sustainable Development</b> <i>The project's contribution to sustainable development is assessed.</i>					
A.4.1. Has the host country confirmed that the project assists it in achieving sustainable development?	/1/	DR I	Yes, host Country DNA has confirmed that the project assists in achieving sustainable development.		OK
A.4.2. Will the project create other environmental or social benefits than GHG emission reductions?	/1/	DR	The project will contribute to sustainable development of Philippines by: <ol style="list-style-type: none"> <li>1. Using of cleaner, more efficient and sustainable solution to waste disposal,</li> <li>2. Improving the livelihood and other economic opportunities in the community by creating employment opportunities and generating additional income to not only farmers and rice millers but also to other members of the community, and</li> </ol> Improving the economic status and social well being of the local communities by creating new income sources.		OK
<b>B. Project Baseline</b> <i>The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.</i>					
<b>B.1. Baseline Methodology</b> <i>It is assessed whether the project applies an appropriate</i>					

\* MoV = Means of Verification, DR= Document Review, I= Interview

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	<b>Ref.</b>	<b>MoV*</b>	<b>COMMENTS</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<i>baseline methodology.</i>					
B.1.1. Does the project apply an approved methodology and the correct version thereof?	/1/	DR	The project applies the approved consolidated baseline methodology of ACM0003 Version 04, dated 28 July 2004, "Emissions reduction through partial substitution of fossil fuels with alternative fuels in the cement manufacture".		OK
B.1.2. Are the applicability criteria in the baseline methodology all fulfilled?	/1/	DR	The project fulfils the following conditions under which ACM0003 is applicable : <ul style="list-style-type: none"> <li>- Fossil fuels used in the cement manufacturing are partially replaced by alternative fuels such as biomass residues (rice husk, coconut waste, tobacco leaves, bagasse, etc.) and sorted municipal waste (plastics, rubbers, etc.),</li> <li>- The biomass residues are available as an excess by-product and, in the absence of the project activity, would be put in a landfill or burned in an uncontrolled manner without utilizing them for energy purpose.</li> <li>- The biomass residues used by the project activity does not necessitate preparation requiring the use of significant quantity of energy,</li> <li>- CO<sub>2</sub> emission reduction is only related to</li> </ul>	<del>CAR-2</del>	OK

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<p>the CO<sub>2</sub> emission generated by fuel burning requirement and not by decarbonisation of raw material,</p> <ul style="list-style-type: none"> <li>- The methodology is applicable for the currently installed capacity presented : <ul style="list-style-type: none"> <li>a. La Union Plant: 2 400 of tonnes clinker/day,</li> <li>b. Bulacan Plant : 5 500 of tonnes of clinker/day,</li> <li>c. Lugait Plant Line 2 : 4 000 tonnes of clinker/day,</li> <li>d. Davao Plant : 3 500 tonnes of clinker/day.</li> </ul> </li> </ul> <p>However, it was claimed that the amount of alternative fuels available is at least 1.5 times the amount required to meet the consumption of all users consuming the same alternative fuels. This is not demonstrated in the PDD.</p>		
<b>B.2. Baseline Scenario Determination</b> <i>The choice of the baseline scenario will be validated with focus on whether the baseline is a likely scenario, and whether the methodology to define the baseline scenario has been followed in a complete and transparent manner.</i>					
B.2.1. What is the baseline scenario?	/1/	DR	The baseline scenario has been determined as 'utilization of fossil fuels with limited amount of alternative fuels (industrial	<del>CL</del> 2	OK

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	<b>Ref.</b>	<b>MoV*</b>	<b>COMMENTS</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
			wastes). Since the 4 plants have slightly different fossil fuel mix, a specific baseline is defined for each plant. However, no justification is given in assumptions of the fossil fuel mix for the plants.		
B.2.2. What other alternative scenarios have been considered and why is the selected scenario the most likely one?	/1/	DR	<p>The alternative baseline scenarios considered in the Project Design Document include :</p> <ol style="list-style-type: none"> <li>1. Utilisation of fossil fuels with limited amount of alternative fuels with 2005 as baseline data,</li> <li>2. Utilisation of fossil fuels with limited amount of alternative fuels ( industrial wastes), and</li> <li>3. Fossil fuels are partially substituted with alternative fuels (i.e. the proposed CDM project activity).</li> </ol> <p>Scenario 1 is not a likely baseline scenario due to limited amount of biomass which was used for trial purpose. Justification is needed for not continuing with this practice.</p> <p>Scenario 3 would require capital investment and require new facilities and upgrading of technical components on top of reduced production capacity due to use of alternative fuels.</p> <p>Scenario 2, the prevailing practice is the most</p>	<del>CL2</del>	OK

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview		<b>Ref.</b>	<b>MoV*</b>	<b>COMMENTS</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
				likely scenario as there is no capital investment required and will not encounter technological barriers.		
B.2.3. Has the baseline scenario been determined according to the methodology?	/1/	DR		As required by ACM0003, the following requires clarification: a. Annual production of clinker for baseline not using record of 3 years prior to project start, b. Quantity of fossil fuel (waste oil/used oil) not based on 3 years prior to project record, and c. Weighted average annual CO <sub>2</sub> emission factor for fossil fuel should be given for each fuel.	<del>CL</del> 2	OK
B.2.4. Has the baseline scenario been determined using conservative assumptions where possible?	/1/	DR		As in B.2.2., the first two baseline scenarios have been identified using trial data for experimental purpose carried out in the plants which were conducted in 2004 and 2005. Third baseline scenario is the proposed CDM project, with fossil fuel requirement replaced by biomass and sorted MSW. However, clarification as in B.2.3.is required.	<del>CL</del> 2	OK
B.2.5. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/	DR		Applicable laws and regulations have been taken into account, as well as information from Cement Manufacturers Association of		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			the Philippines (CeMAP).		
B.2.6. Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	/1/	DR	Reference/source for the following information is not referenced in the PDD : a. Cement kiln co-processing is being offered as a disposal alternative for treatment of industrial waste, and b. Existence and the types of landfills.	<del>CL-3</del>	OK
B.2.7. Have the major risks to the baseline been identified?	/1/	DR	No risks to the baseline have been identified.		OK
<b>B.3. Additionality Determination</b> <i>The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.</i>					
B.3.1. Is the project additionality assessed according to the methodology?	/1/ /6/	DR I	The project additionality was demonstrated though the use of Version 3 of “ <i>Tool for the demonstration and assessment of additionality</i> ”: Step 1: Three baseline alternatives were defined in accordance with ACM0003: 1. Continuation of the fuel mix from 2005 2. Fuel mix with reduced amount of alternative fuel (industrial waste) 3. Project scenario without CDM; partial substitution of fossil fuel with	<del>CAR-3</del> <del>CL-3</del>	OK OK

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	<b>Ref.</b>	<b>MoV*</b>	<b>COMMENTS</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
			<p>alternative fuel.</p> <p>Alternative 1 was considered inferior to alternative 2 due to technical challenges, even though it was carried out recently.</p> <p>Step 2: Not chosen</p> <p>Step 3: Barrier analysis has been selected.</p> <p>It was argued that large cost is needed for setting up new infrastructures as well as installation and commissioning activities in all 4 plants. On top of that, maintenance cost is also expected to rise, as in the trial phase. Due to the new technology and infrastructure in the system, effective implementation of the project also will be lacking that developing safe working procedures as well as training of employees to operate the process are required.</p> <p>The identified barriers would not prevent the business as usual scenario.</p> <p>Step 4 :</p> <p>The use of significant amount of alternative fuels is not the current practice in the cement industry in Philippines, and has been confirmed with local DNA.</p> <p>CDM registration will benefit Holcim Group of Companies to dedicate financial and</p>		

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			technical resources to provide real incentives to the industry in reducing CO <sub>2</sub> emissions by using alternative fuels. Project additionality need to be justified for the following assumptions : a. Equipment, as well as installation and commissioning activities, entail large upfront cost, and Indirect costs resulted from the maintenance of equipment in the trial phase.		
B.3.2. Are all assumptions stated in a transparent and conservative manner?	/1/	DR	Further evidence and justification is required to support the assumptions made in B.2.6 and B.3.1.	<del>CAR-3</del> <del>CL-3</del>	OK OK
B.3.3. Is sufficient evidence provided to support the relevance of the arguments made?	/1/	DR	Further evidence and justification is required to support the assumptions made in B.2.6 and B.3.1.	<del>CAR-3</del> <del>CL-3</del>	OK OK
B.3.4. If the starting date of the project activity is before the date of validation, has sufficient evidence been provided that the incentive from the CDM was seriously considered in the decision to proceed with the project activity?	/1/ /12/	DR	The starting date of the project activity is January 2006, which is before the date of validation. Evidence has been submitted showing that communication on CDM project has indeed started from September 2005. Therefore incentives from CDM were seriously considered in the decision to proceed with the project activity. (Starting date of project activity has been revised to 01/08/2005, based on the data		OK

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<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			extracted from the SAP)		
<b>B.4. Calculation of GHG Emission Reductions – Project emissions</b>  <i>It is assessed whether the project emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					
B.4.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/	DR	Project emissions calculations were documented in accordance with ACM0003. The calculations are complete and transparent. The followings need to be justified: <ul style="list-style-type: none"> <li>a. Clarification is requested for assuming that GHG emission from alternative fuels is zero, as waste oil and industrial waste will not have neutral emission factor,</li> <li>b. The types of waste and emission factors need to be considered in order to include future plan of including waste as alternative fuel, and</li> <li>c. Grid emission factors for the four plants have to be recalculated/ re-determined. Source of reference to be made available in the PDD which is traceable to the latest data available,</li> </ul>	<del>CL4</del> <del>CL3</del>	OK OK

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	<b>Ref.</b>	<b>MoV*</b>	<b>COMMENTS</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
			<ul style="list-style-type: none"> <li>d. Source and emission factor for grid is applicable to all 4 plants,</li> <li>e. Emission factor is reviewed according to the latest ACM0002 Methodology or latest available data,</li> <li>f. Recording frequency for the data should be specified,</li> <li>g. Reference where geographical data is obtained in trip distance to be made available,</li> <li>h. The same emission factor of alternative fuels especially sorted municipal waste,</li> <li>i. Data for lower heating values are from which year,</li> <li>j. The source of survey for availability of biomass to be elaborated on availability of biomass vs potential of landfill to include the scale of the companies that is surveyed,</li> <li>k. Description of measurement to be elaborated (e.g. electricity consumption), and</li> </ul> <p>Data for baseline GHG emissions due to anaerobic decomposition, <math>LW_{CH_4,y}</math> is obtained from survey.</p> <p>(Note: In revised PDD, “<i>Tool to calculate the</i></p>		

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CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
				<i>emission factor for an electricity system” has been used to calculate the emission factor of grid.)</i>		
B.4.2.	Have conservative assumptions been used when calculating the project emissions?	/1/	DR	Same as in C.1.1.	<del>CL</del> 4	OK
B.4.3.	Are uncertainties in the project emission estimates properly addressed?	/1/	DR	Same as in C.1.1.	<del>CL</del> 4	OK
<b>B.5. Calculation of GHG Emission Reductions – Baseline emissions</b> <i>It is assessed whether the baseline emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>						
B.5.1.	Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/	DR	Baseline emissions calculations were documented in accordance to ACM0003. The calculations are complete and transparent.		OK
B.5.2.	Have conservative assumptions been used when calculating the baseline emissions?	/1/	DR	A specific baseline has been defined for each plant on the selected scenario. However, no justification is made on how the figures were arrived at.  Bituminous coal is used at the cement plants, but the emission factor for sub-bituminous coal is used in the calculation of emission	<del>CL</del> 2  CAR4	OK

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			factor. Updated calculations and PDD are requested.		
B.5.3. Are uncertainties in the baseline emission estimates properly addressed?	/1/	DR	Please refer to C.2.2	CL2	OK
<b>B.6. Calculation of GHG Emission Reductions – Leakage</b> <i>It is assessed whether leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					
B.6.1. Are the leakage calculations documented according to the approved methodology and in a complete and transparent manner?	/1/	DR	Leakage calculation has been documented according to the methodology ACM0003, Consolidated approved baseline methodology “Emission reduction through partial substitution of fossil fuels with alternative fuels in cement manufacture’.		OK
B.6.2. Have conservative assumptions been used when calculating the leakage emissions?	/1/	DR	The following assumptions were made: <ol style="list-style-type: none"> <li>1. Leakage due to biomass residues being burnt is not taken into account due to the prohibition of open burning of agricultural wastes in open air,</li> <li>2. Consideration of 50% of rice husk will be burned in open air and 50% will be land filled in uncontrolled manner, and</li> </ol>		OK

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			Leakage due to reduced transport of fossil fuel is not taken into account.		
B.6.3. Are uncertainties in the leakage emission estimates properly addressed?	/1/	DR	There are no major uncertainties regarding the leakage emission calculations.		OK
<b>B.7. Emission Reductions</b> <i>The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.</i>					
B.7.1. Are the emission reductions real, measurable and give long-term benefits related to the mitigation of climate change.	/1/	DR	The project is estimated to reduce a total of 4 103 861 tCO <sub>2</sub> e over its ten year crediting period. (Note: The emission reduction calculation has been reviewed and is now estimated to be a total of 2 076 279 tCO <sub>2</sub> e over its ten year crediting period)		OK
<b>B.8. Monitoring Methodology</b> <i>It is assessed whether the project applies an appropriate monitoring methodology.</i>					
B.8.1. Is the monitoring plan documented according to the approved methodology and in a complete and transparent manner?	/1/	DR	Yes, the project applies to the approved “Emissions reduction through partial substitution of fossil fuels with alternative fuels in cement industry”, ACM0003, version 04, dated 28 July 2006.		OK
B.8.2. Will all monitored data required for verification and issuance be kept for two years after the end of	/1/	DR	The archiving period for all monitoring data was not indicated in the PDD.	CL-5	OK

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<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?			All monitoring data should be kept for at least two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.		
<b>B.9. Monitoring of Project Emissions</b> <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
B.9.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	/1/	DR	The monitoring plan provides for the collection of all relevant project emissions data.		OK
B.9.2. Are the choices of project GHG indicators reasonable and conservative?	/1/	DR	Yes, baseline indicators chosen are in accordance with ACM0003.		OK
B.9.3. Is the measurement method clearly stated for each GHG value to be monitored and deemed appropriate?	/1/	DR	Yes. Measurement methods are specified in the Monitoring Plan, B.7 in the PDD.		OK
B.9.4. Is the measurement equipment described and deemed appropriate?	/1/	DR	Measurement equipments are listed in the Monitoring Plan and are deemed appropriate.		OK
B.9.5. Is the measurement accuracy addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	/1/	DR	Data collection and monitoring is handled by a team headed by the Senior Vice President. Procedures for addressing erroneous	<del>CL-5</del>	OK

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			measurements have not been identified. The project proponent is requested to incorporate the same in the project design. Relevant procedures should be implemented prior to the implementation of the project.		
B.9.6. Is the measurement <i>interval</i> identified and deemed appropriate?	/1/	DR	Measurement intervals for the monitoring parameters are not specified in the PDD.	CL5	OK
B.9.7. Is the <i>registration, monitoring, measurement</i> and <i>reporting</i> procedure defined?	/1/	DR	General description has been mentioned in Section B.7.2 in the PDD. Data will be registered in the database, and compiled in the annual technical report (ATR). Detailed procedures for the registration, monitoring, measurement and reporting must be prepared and implemented prior to the commencement of the project.	CL5	OK
B.9.8. Are procedures identified for <i>maintenance</i> of monitoring equipment and installations? Are the calibration intervals being observed?	/1/	DR	Procedures for the maintenance and calibration of monitoring equipment in accordance to industrial standards and/or manufacturer's established procedures have not been incorporated in the project design. The project proponent is requested to implement the relevant procedures.	CL5	OK
B.9.9. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance	/1/	DR	The monitoring plan contains general statements regarding the procedures for day-to-day records handling. Such procedure	CL5	OK

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CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
documentation)			should be established and implemented prior to the implementation of the project.		
<b>B.10. Monitoring of Baseline Emissions</b> <i>It is established whether the monitoring plan provides for reliable and complete baseline emission data over time.</i>					
B.10.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	/1/	DR	The data during crediting period are reported in the calculation database.		OK
B.10.2. Are the choices of baseline GHG indicators reasonable and conservative?	/1/	DR	Yes, baseline indicators chosen are in accordance with ACM0003.		OK
B.10.3. Is the measurement method clearly stated for each baseline indicator to be monitored and also deemed appropriate?	/1/	DR	Yes. Measurement methods are specified in the Monitoring Plan, B.7 in the PDD.		OK
B.10.4. Is the measurement <i>equipment</i> described and deemed appropriate?	/1/	DR	Measurement equipments are listed in the Monitoring Plan and are deemed appropriate.		OK
B.10.5. Is the measurement <i>accuracy</i> addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	/1/	DR	The accuracy of the equipment used for the monitoring of project emissions are not indicated in the project design.  Procedures for addressing erroneous measurements have not been identified. The project proponent is requested to incorporate	<del>CL-5</del>	OK

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			the same in the project design.		
B.10.6. Is the measurement <i>interval</i> for baseline data identified and deemed appropriate?	/1/	DR	Measurement intervals for the monitoring parameters are in accordance with the methodology.		OK
B.10.7. Is the registration, <i>monitoring</i> , <i>measurement</i> and <i>reporting</i> procedure defined?	/1/	DR	Most of the data are already collected in the annual technical report (ATR). Project proponent will prepare a specific project activity monitoring report to facilitate verification process.		OK
B.10.8. Are procedures identified for <i>maintenance</i> of monitoring equipment and installations? Are the calibration intervals being observed?	/1/	DR	The procedure for maintenance of monitoring equipment and installation is part of ATR as in D.2.7.		OK
B.10.9. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/1/	DR	The procedures for day-to-day records handling is part of ATR as in D.2.7.		OK
<b>B.11. Monitoring of Leakage</b> <i>It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.</i>					
B.11.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/	DR	Yes. The monitoring plan provides for the collection of relevant leakage emissions data.		OK
B.11.2. Are the choices of project leakage indicators	/1/	DR	Project leakage indicators take into account		OK

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reasonable and conservative?			truck capacity, round trip and emission factor of fuel. The choices are deemed reasonable and conservative.		
B.11.3. Is the measurement method clearly stated for each leakage value to be monitored and deemed appropriate?	/1/	DR	Yes, the measurement methods are specified in B.7 in PDD.		OK
<b>B.12. Monitoring of Sustainable Development Indicators/ Environmental Impacts</b> <i>It is assessed whether choices of indicators are reasonable and complete to monitor sustainable performance over time.</i>					
B.12.1. Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?	/1/	DR I	There is no requirement.		OK
B.12.2. Does the monitoring plan provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?	/1/	DR	The Monitoring Plan does not provide collection of data related to environmental, social and environmental impacts. There is also requirement from the methodology. However, the plants have environmental management system in place, and they undertake regular management review of their environmental impacts.		OK
B.12.3. Are the sustainable development indicators in line with stated national priorities in the Host	/1/	DR	Yes, confirmed with local DNA.		OK

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
Country?					
<b>B.13. Project Management Planning</b> <i>It is checked that project implementation is properly prepared for and that critical arrangements are addressed.</i>					
B.13.1. Is the authority and responsibility of overall project management clearly described?	/1/	DR	The SVP of Manufacturing has assigned a team for overall monitoring and specific reporting of the project activity.		OK
B.13.2. Are procedures identified for training of monitoring personnel?	/1/	DR	Procedures for training of monitoring personnel were not identified in the project design. The project proponent is requested to implement the relevant procedures prior to the operation of the project activity.	<del>CL-5</del>	OK
B.13.3. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR	No such emergencies were identified in the monitoring plan. It is not clear if such emergencies are likely to occur.	<del>CL-5</del>	OK
B.13.4. Are procedures identified for review of reported results/data?	/1/	DR	A team has been assigned to undertake the responsibilities. The procedures for reviewing reported data were not identified in the Monitoring Plan. The project proponent is requested to implement the relevant procedures prior to the operation of the project activity.	<del>CL-5</del>	OK

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview		<b>Ref.</b>	<b>MoV*</b>	<b>COMMENTS</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
B.13.5. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?		/1/	DR	Corrective action procedures were not included in the PDD. The project proponent is requested to incorporate the same in the project design document.	<del>CL-5</del>	OK
<b>C. Duration of the Project/ Crediting Period</b> <i>It is assessed whether the temporary boundaries of the project are clearly defined.</i>						
C.1.1. Are the project's starting date and operational lifetime clearly defined and evidenced?		/1/ /12/	DR	Yes. The project has started in January 2006, and the project is estimated to have an operational lifetime of 15 years. The project starting date has been reviewed and was revised in the latest PDD(version 02) to 01/08/2005 based on data extracted from SAP.		OK
C.1.2. Is the start of the crediting period clearly defined and reasonable?		/1/	DR	A 10 year renewable crediting period starting on 1 2007 has been selected. The start date of the crediting period should be after the date of the project registration. (In the revised PDD version 02, crediting period has been amended to start from 1 July 2008 or after the registration date)	<del>CL-6</del>	OK
<b>D. Environmental Impacts</b> <i>Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.</i>						

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview		<b>Ref.</b>	<b>MoV*</b>	<b>COMMENTS</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
D.1.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?						
D.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?		/1/ /19/	DR I	EIA is not required for upgrading project. This has been confirmed with DNA.		OK
D.1.3. Will the project create any adverse environmental effects?		/1/	DR	Environmental impacts were predicted and corresponding mitigating measures were identified during the various stages of the project.		OK
D.1.4. Are transboundary environmental impacts considered in the analysis?						
D.1.5. Have identified environmental impacts been addressed in the project design?		/1/	DR	Environmental impacts have not been addressed in the PDD.	<del>CL-7</del>	OK
D.1.6. Does the project comply with environmental legislation in the host country?		/1/ /15/	DR	Project is in full compliance with all local regulatory standards including : - Philippine Clean Air, - International Standards (including Alternative Fuels and Raw Materials Group of Holcim Corporate). Permit to Operate for air emission submitted for all four plants.		OK
<b>E. Stakeholder Comments</b>						

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<i>The validator should ensure that stakeholder comments have been invited with appropriate media and that due account has been taken of any comments received.</i>					
E.1.1. Have relevant stakeholders been consulted?	/1/	DR	Relevant stakeholders have been consulted. However, no information is given regarding the representatives consulted, issues raised and due accounts taken.	<del>CL-8</del>	OK
E.1.2. Have appropriate media been used to invite comments by local stakeholders?	/1/	DR	Same as in G.1.1.	<del>CL-8</del>	OK
E.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	/1/	DR I	Not required by DNA.		OK
E.1.4. Is a summary of the stakeholder comments received provided?	/1/	DR	Same as in G.1.1.	<del>CL-8</del>	OK
E.1.5. Has due account been taken of any stakeholder comments received?	/1/	DR	Same as in G.1.1.	<del>CL-8</del>	OK

**Table 3: Resolution of Corrective Action and Clarification Requests**

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>OK</p> <p>CAR 1</p> <p>The Letters of Approval from DNA of Philippines and Switzerland are pending.</p>	<p>A.2.2.</p> <p>A.2.3.</p>	<p>The LoA from DENR (DNA-Philippines) was conducted on April 9, 2008.</p> <p>Presentation to TWG of DNA was conducted last August 8, 2007.</p> <p>The revised LoA from Switzerland has been received on the 20th of December 2007.</p>	<p>LoA from DNA of Switzerland has been received.</p> <p>CAR is closed</p>
<p>CAR 2:</p> <p>Even though it was claimed that the amount of alternative fuels available is at least 1.5 times the amount required to meet the consumption of all users consuming the same alternative fuels, this is not demonstrated in the PDD. Supply location/ mileage and the quantity to be supplied will clarify the abundant supply of the biomass.</p>	<p>B.1.2.</p>	<p>The official source shows that the estimated amount of rice husk available in each region is more than 9 times the amount proposed to be used by the project activity. As the official source doesn't take other users into account, HPHI has done an investigation on a limited number of rice mills owners, the most active one in term of rice husk utilization and therefore the investigation is highly conservative. An update of the investigation will be done during verification. The investigation gives a conservative overview of the current practice in each region. In combination with the official data, an estimation of the net amount available (taking out the amount consumed by</p>	<p>The local rice mill survey shows that the total production divided by the total consumption of rice husk is 1.75, 1.47 and 1.19 for each site. However, since rice mills included in the survey are the ones that are interested in utilization of rice husk, the real number is probably higher.</p> <p>Annual survey of leakage is included in the monitoring of the project. Hence, a new survey will be necessary in order to prove excess biomass before the verification.</p> <p>The CAR is therefore closed.</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		other users) is possible. We have considered that the amount available is the amount that will be either landfilled, burned in open air and the amount which is already sent to HPHI.	
<p>CAR 3:            Additionality :            Project additionality need to be justified for the following assumptions :</p> <p>a. Use of alternative fuels in the cement kiln is not yet well established in Philippines,</p>	<p>B.3.1.            B.3.2.            B.3.3.</p>	<p>a. The DNA has confirmed that the use of alternative fuels is not common practice in the Philippines.</p>	<p>a. Confirmation from DNA/19/ has indeed been accepted for cement industry in Philippines not yet developing into using alternative fuels. Internal memo dated December 2005 has also demonstrated that discussion on CDM was already taking place then.</p>
<p>b. Equipment, as well as installation and commissioning activities, entail large upfront cost,            c. Indirect costs resulted from the maintenance of equipment in the trial phase, and            d. Indirect costs related to clinker as a result of alternative fuels.</p>		<p>These costs are in the updated version of the PDD only included as additional information.</p>	<p>Use of the barrier related to the investment barrier was removed from the PDD.            CAR is closed.</p>
<p>CAR 4            Bituminous coal is used at the cement plants, but the emission factor for sub-bituminous coal is used in the calculation of emission factor. Updated calculations and PDD are requested.</p>		<p>94.6 tCo<sub>2</sub>/TJ has been used in the revised pdd and calculation.</p>	<p>Correct emission factor for bituminous coal is used.            CAR is closed.</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>CL 1:</p> <p>There are 4 plants involved in this project, situated at different regions within Philippines. More specific locations are required, e.g. coordinates.</p>	A.1.1.	<p>Coordinates of each plant are given page 5.</p>	<p>OK. The coordinates of the three plants (previously four) have been included in the PDD.</p> <p>CL is closed.</p>
<p>CL 2</p> <p>The baseline scenario has been determined as 'utilization of fossil fuels with limited amount of alternative fuels (industrial wastes). Since the 4 plants have slightly different fossil fuel mix, a specific baseline is defined for each plant. However, no justification is given in assumptions of the fossil fuel mix for the plants.</p> <p>Scenario 1 was identified as not a likely baseline scenario due to limited amount of biomass which was used for trial purpose. Justification is needed to show why this is not continued.</p> <p>In the calculation of baseline scenario, the following requires clarification:</p> <p>1. Annual production of clinker</p>	B.2.1. B.2.2. B.2.3. B.2.4. B.5.2. B.5.3.	<p>On the PDD V02 page 12, the baseline scenario 1 has been modified, integrating plant records from 2002 to 2004, the 3 years prior to the starting date of the project. The data are taken from the 3 annual technical reports which have been checked during validation. All data (2002 to 2004) are presented in the calculation file worksheet "3 plants" and "clinker production".</p> <p>Scenario 2 outlines the plant specific emissions factor of year 2002-2004 which is more conservative than the global emission factor outlined in scenario 1. The scenario 2 is therefore the baseline scenario and it is based on plant specific data from 2002-2004.</p> <p>The project has started in 2005 with tests and trials. The revised version of the PDD establishes the baseline on the</p>	<p>OK. Baseline scenario has been recalculated using 2002 to 2004 data, i.e. as required by methodology three years prior to project start. Project started in with one year trial research (2005) on the use of alternative fuels &amp; raw materials (AFR) in the cement kilns.</p> <p>OK. Scenario 1 was not considered baseline due to the fact that the emission factor being calculated higher than scenario 2, hence was not considered as baseline.</p> <p>OK. Annual production and related consumption of fossil fuels for the years 2002 to 2004 have been used in</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>for baseline not using record of 3 years prior to project start,</p> <p>2. Quantity of fossil fuel (waste oil/used oil) not based on 3 years prior to project record, and</p> <p>3. Weight average annual CO<sub>2</sub> emission factor for fossil fuel should be given for each fuel.</p>		<p>2002-2004 data (production of clinker, quantity of fossil fuel, emission factor, etc)</p>	<p>calculating the baseline.</p> <p>CL is closed.</p>
<p>CL 3 :</p> <p>Reference/source for the following information is not referenced :</p> <p>-Cement kiln co-processing is being offered as a disposal alternative for treatment of industrial waste,</p> <p>-Source of reference for grid emission factors for the four plants, and</p>	<p>B.2.6.</p> <p>B.3.1.</p> <p>B.3.2.</p> <p>B.3.3.</p> <p>B.4.1.</p>	<p>In 2005, HPHI-Davao was identified by the environmental management bureau as the only facility that had the capability to treat the activated carbon waste in such huge quantity.</p> <p>The CO<sub>2</sub> emission factor due to power generation (tCO<sub>2</sub>/MWh) is based on the tool to calculate the emission factor for an electricity factor - annex 12 EB 35 (combined margin) using latest published data stemming from the CDM baseline construction for the electricity grids in the Philippines, version 2006 (data 2004) Luzon Visaya grid:0.531t/MWh which includes Bulacan plant Mindanao grid which</p>	<p>OK. This has also been confirmed with DNA /19/ that HPHI has been appointed in disposing waste from environmental disasters.</p> <p>OK. Grid emission factors have been transparently calculated using tool to calculate emission factor for an electricity system. There are two grids supplying to the three plants involved in this project. The emission factors have been calculated individually using latest publicly available data up to the year 2004.</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		includes Lugait and Davao: 0.453t/MWh .The complete calculation sheets have been shown during validation. An overview is shown on the appendix 2 of the PDD.	

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
-Existence and the types of landfills.		Although a survey has been done to demonstrate that most of the rice husk will be land filled in an uncontrolled manner, it was difficult to determine the amount of rice husk decomposing anaerobically from that decomposing non-aerobically. Therefore the emission reduction (methane) from anaerobic decomposition has been, for conservativeness, taken out of the global emission reductions.	OK. Methane emission from biomass residue landfill no longer considered for conservativeness.  CL is closed.
<p>CL 4 :</p> <p>Project emission:</p> <p>The followings need to be justified:</p> <p>a. Assuming that GHG emission from alternative fuels is zero, as waste oil and industrial waste will not have neutral emission factor,</p> <p>b. The types of waste and emission factors need to be considered in order to include</p>	<p>B.4.1.</p> <p>B.4.2.</p> <p>B.4.3.</p>	<p>Waste oil and industrial waste are not considered alternative fuels as it is common practice for HPHI. HPHI co-process a small amount of industrial waste ( and get paid for it) on specific need ( about 0.8%). The emissions are calculated in the baseline and are part of the fossil fuel calculation. Emission factors for industrial waste is 143 tCO<sub>2</sub>/TJ and waste oil 73.3 tCO<sub>2</sub>/TJ</p> <p>b. In addition to the current fuel in the baseline, the project wishes to use biomass</p>	<p>For calculations of fossil fuel displaced used conservative measures for taking into account the little use (&lt;1% on energy basis) before the project starting date of industrial waste. It was not included in the baseline emission factor, which is conservative because the emission factor becomes lower. Furthermore, all use of industrial waste of fossil origin as project emissions (AF<sub>GHG</sub>), not only the excess use of the project. Since only part of the industrial waste of fossil fuel origin will be incinerated in the Philippines, an emission factor of 143 tCO<sub>2</sub>/ (tonne waste of fossil fuel origin) will be used.</p> <p>b. OK. PDD section B.7.1. has been revised. Emission factors of alternative</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>future plan of including waste as alternative fuel, and</p> <p>c. Grid emission factors for the four plants have to be recalculated/ re-determined,</p> <p>d. Source and emission factor for electricity is applicable to all 4 plants,</p> <p>e. Emission factor is reviewed according to the latest ACM0002 Methodology or latest available data,</p> <p>f. Recording frequency for the data should be specified,</p> <p>g. Reference where geographical data is obtained in trip distance to be made</p>		<p>and sorted MSW. The emission factor from rice husk and sorted MSW has been determined using chemical analysis by a third party accredited laboratory. The PDD V02 (and calculation) has been modified since the lab analysis shows that rice husk has 0.012TJ/t and sorted MSW has 0.02TJ/t.</p> <p>The CO<sub>2</sub> emission factor due to power generation (tCO<sub>2</sub>/MWh) is based on the tool to calculate the emission factor for an electricity factor - annex 12 EB 35 (combined margin) using latest published data stemming from the CDM baseline construction for the electricity grids in the Philippines, version 2006 (data 2004) Luzon Visaya grid:0.531 t/MWh which includes Bulacan plant Mindanao grid which includes Lugait and Davao: 0.453 t/MWh .The complete calculation</p> <p>f. The recording frequency is in line with the methodology ACM003. The specificities are written in the monitoring table (p34+) under "Description of measurement methods and procedures to be applied".</p> <p>g. A table with the trip distance for rice husk has been added in the PDD V02 page</p>	<p>fuels will be monitored ex-post.</p> <p>OK. Grid emission factor has been recalculated using "Tool to calculate the emission factor for an electricity system"/7/.for two grids that connect the three plants (previously project covers four plants). The grid emission factor will be reviewed every three yearly, considering that data is not released yearly.</p> <p>OK. Recording frequency of parameters have been specified in the PDD Section B.7.2.</p> <p>OK. Furthest distance has been used for conservativeness.</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>available,</p> <p>h. The same emission factor of alternative fuels especially sorted municipal waste,</p> <p>i. Data for lower heating values are from which year,</p> <p>j. The source of survey for availability of biomass to be elaborated on availability of biomass vs potential of landfill to include the scale of the companies that is surveyed,</p> <p>k. Description of measurements to be elaborated (e.g. electricity consumption), and</p>		<p>10. To be conservative, the calculation for transport has been reviewed and now takes into account the farthest suppliers and not the average.</p> <p>h. The PDD V02 (and calculation) has been modified since a specific lab analysis (done by CRL environmental corporation) shows that sorted MSW has 0.02/t.</p> <p>i. The Lower heating value of rice husk and sorted MSW have been reviewed in the PDD V02 (and calculation) referring to specific lab analysis (see the CRL letter). The lower heating value for the fossil fuels (baseline) stems from the annual technical report average 2002-2004 which is a weight average value of the lab analysis done in 2002-2004.</p> <p>j. For conservativeness, the emission reductions from anaerobic decomposition have been taken out of the global emission reductions in the PDD V02 and therefore the specific survey is not presented anymore.</p> <p>k. The "Description of measurement methods and procedures to be applied" (p35+) has been checked and confirmed.</p>	<p>OK. Emission factor for alternative fuels will be monitored and calculated separately.</p> <p>OK. It has been clarified that data for lower heating values are taken from the years 2002 to 2004.</p> <p>OK. Biomass being landfilled has been taken out for conservative reasons.</p> <p>OK. Electricity consumption will be measured from electricity meter, which will be recorded either automatically or written in a log book</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
Data for baseline GHG emissions due to anaerobic decomposition, $LW_{CH_4,y}$ is obtained from survey.		For conservativeness, the emission reductions from anaerobic decomposition have been taken out of the global emission reductions in the PDD V02 and therefore the specific survey is not presented anymore.	OK. A survey shows that 90,8% of biomass residues would have been landfilled in an uncontrolled manner in the absence of the project. For conservativeness, the $CH_4$ are not taken into account. This decision is taken as it is difficult to ascertain that the decomposition will be anaerobic. CL is closed.
<p>CL 5 :</p> <p>The archiving period for all monitoring data was not indicated in the PDD.</p> <p>All monitoring data should be kept for at least two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.</p> <p>Procedures for the following are not addressed in the PDD:</p> <ul style="list-style-type: none"> <li>- how to deal with erroneous measurements,</li> <li>- registration, monitoring, measurement and reporting,</li> <li>- maintenance of monitoring equipment and installations,</li> <li>- day-to-day records handling,</li> <li>- measurement accuracy,</li> <li>- review of reported results/data,</li> <li>- training of monitoring personnel,</li> <li>- emergency preparedness,</li> <li>- measurement accuracy, and</li> </ul>	<p>B.8.2.</p> <p>B.9.5.</p> <p>B.9.6.</p> <p>B.9.7.</p> <p>B.9.8.</p> <p>B.9.9.</p> <p>B.10.5.</p> <p>B.13.2.</p> <p>B.13.3.</p> <p>B.13.4.</p> <p>B.13.5.</p>	Additional information has been integrated on page 34 of the PDD.	<p>As plant is ISO 9001 and ISO 14001 certified, procedures have been included for QA/QC procedures.</p> <p>CL is closed.</p>

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
- corrective actions in order to provide for more accurate future monitoring and reporting.			
CL 6 : A 10 year fixed crediting period starting on 1 July 2007 has been selected. The start date of the crediting period should be after the date of the project registration.	C.1.2.	The crediting period will start once the project will be registered. We today estimate that the crediting period could start 01/07/2008.	OK. Crediting period will start 1 <sup>st</sup> July 2008 or after registration date.  CL is closed.
CL 7 : Environmental impacts have not been addressed in the PDD.	D.1.5.	The project doesn't affect negatively the environment. Each of the plant has a continuous emissions monitoring system that measures continuously the stack emission. All the plants are ISO14001 accredited and are periodically reviewed and audited for compliance. The Department of Environment and Natural Resources (DENR) has confirmed that Holcim Philippines is in full compliance to all local regulations and that the project will not provide negative impact (PDD p.50).	OK. The project involves upgrading of current facilities which also utilize wastes. There are no impacts to environment. Plant is ISO14001 certified, hence HPPI has undertaken a systematic review of the key environmental impacts of its operations, has identified appropriate management and monitoring measures of these impacts, and has undertaken a regular management review of its environmental performance.  CL is closed.
CL 8 : Relevant stakeholders have been conducted. However, no information is given regarding the representatives consulted, issues raised and due accounts taken.	E.1.1. E.1.2. E.1.4. E.1.5.	The minutes of meeting, list of participants and photos has been given during validation. The PDD V02 p.51 shows the participant's attendance.	OK. PDD has updated the participants attendance. The meeting minutes have been incorporated in the PDD, and also sighted /16/, and all due accounts have been attended accordingly. No major environmental related issues were raised.  CL is closed.

## **APPENDIX B**

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### **CERTIFICATES OF COMPETENCE**



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## CERTIFICATE OF COMPETENCE

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***Chee Keong Lai***

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-  
CDMJi-i1)

<b><i>GHG Auditor:</i></b>	Yes		
<b><i>CDM Validator:</i></b>	Yes	<b><i>JI Validator:</i></b>	--
<b><i>CDM Verifier:</i></b>	--	<b><i>JI Verifier:</i></b>	--
<b><i>Industry Sector Expert for Sectoral Scope(s):</i></b>	--		

Høvik, 30 October 2007

*Michael Lehmann*

Michael Lehmann

*Technical Director, International Climate Change Services*



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## CERTIFICATE OF COMPETENCE

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***Kamala Devi Muniandy***

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-  
CDMJ1-i1)

<b><i>GHG Auditor:</i></b>	Yes		
<b><i>CDM Validator:</i></b>	--	<b><i>JI Validator:</i></b>	--
<b><i>CDM Verifier:</i></b>	--	<b><i>JI Verifier:</i></b>	--
<b><i>Industry Sector Expert for Sectoral Scope(s):</i></b>	--		

Høvik, 5 February 2007

Einar Telnes  
*Director, International Climate Change Services*

Michael Lehmann  
*Technical Director*



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## CERTIFICATE OF COMPETENCE

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***Hendrik Brinks***

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJ1-i1)

<b><i>GHG Auditor:</i></b>	Yes		
<b><i>CDM Validator:</i></b>	Yes	<b><i>JI Validator:</i></b>	--
<b><i>CDM Verifier:</i></b>	--	<b><i>JI Verifier:</i></b>	--
<b><i>Industry Sector Expert for Sectoral Scope(s):</i></b>	Sectoral scope 1, 2, 3 & 12		
<b><i>Technical Reviewer for (group of) methodologies:</i></b>			
<b><i>ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G</i></b>	Yes	<b><i>AM0013, AM0022, AM0025, AM00379, AMS-III.H, AMS-III.I</i></b>	Yes
<b><i>ACM002, AMS-I.A-D, AM0019, AM0026, AM0029, AM0045</i></b>	Yes	<b><i>ACM0006, AM0007, AM0015, AM0036, AM0042</i></b>	Yes
<b><i>ACM0004, ACM0012</i></b>	Yes		

Høvik, 30 October 2007

*Michael Lehmann*

Michael Lehmann

*Technical Director, International Climate Change Services*



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## CERTIFICATE OF COMPETENCE

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***Ramesh Ramachandran***

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJ1-i1)

<b><i>GHG Auditor:</i></b>	Yes		
<b><i>CDM Validator:</i></b>	Yes	<b><i>JI Validator:</i></b>	--
<b><i>CDM Verifier:</i></b>	Yes	<b><i>JI Verifier:</i></b>	--
<b><i>Industry Sector Expert for Sectoral Scope(s):</i></b>	Sectoral scope 4, 5, 13		
<b><i>Technical Reviewer for (group of) methodologies:</i></b>			
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029, AM0045		Yes	

Høvik, 22 December 2006

Einar Telnes  
*Director, International Climate Change Services*

Michael Lehmann  
*Technical Director*



## CERTIFICATE OF COMPETENCE

***Einar Telnes***

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJ1-i1)

<b>GHG Auditor:</b>	Yes		
<b>CDM Validator:</b>	Yes	<b>JI Validator:</b>	--
<b>CDM Verifier:</b>	Yes	<b>JI Verifier:</b>	--
<b>Industry Sector Expert for Sectoral Scope(s):</b>	Sectoral scope 1, 2, 3 6 & 10		
<b>Technical Reviewer for (group of) methodologies:</b>			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	Yes	AM0027	Yes
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029, AM0045	Yes	AM0030	Yes
ACM003, ACM0005, AM0033, AM0040	Yes	AM0031	Yes
ACM0004, ACM0012	Yes	AM0032	Yes
ACM0006, AM0007, AM0015, AM0036, AM0042	Yes	AM0035	Yes
ACM0007	Yes	AM0038	Yes
ACM0008	Yes	AM0041	Yes
ACM0009, AM0008, AMS-III.B	Yes	AM0034	Yes
AM0006, AM0016, AMS-III.D, ACM0010	Yes	AM0043	
AM0009, AM0037	Yes	AM0046	
AM0013, AM0022, AM0025, AM0039, AMS-III.H, AMS-III.I	Yes	AM0047	
AM0014	Yes	AMS-II.A-F, AM0044	Yes
AM0017	Yes	AMS-III.A	Yes
AM0018	Yes	AMS-III.E, AMS-III.F	Yes
AM0020	Yes		
AM0021, AM0028, AM0034, AM0051	Yes		
AM0023	Yes		
AM0024	Yes		

Høvik, 5 February 2007

**Einar Telnes**  
*Director, International Climate Change Services*

**Michael Lehmann**  
*Technical Director*



# CERTIFICATE OF COMPETENCE

**Michael Lehmann**

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1)

<b>GHG Auditor:</b>	Yes		
<b>CDM Validator:</b>	Yes	<b>JI Validator:</b>	Yes
<b>CDM Verifier:</b>	Yes	<b>JI Verifier:</b>	Yes
<b>Industry Sector Expert for Sectoral Scope(s):</b>	Sectoral scope 1, 2, 3		
<b>Technical Reviewer for (group of) methodologies:</b>			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	Yes	AM0027	Yes
ACM002, AMS-IA-D, AM0019, AM0026, AM0029, AM0045	Yes	AM0030	Yes
ACM003, ACM0005, AM0033, AM0040	Yes	AM0031	Yes
ACM0004, ACM0012	Yes	AM0032	Yes
ACM0006, AM0007, AM0015, AM0036, AM0042	Yes	AM0035	Yes
ACM0007	Yes	AM0038	Yes
ACM0008	Yes	AM0041	Yes
ACM0009, AM0008, AMS-III.B	Yes	AM0034	Yes
AM0006, AM0016, AMS-III.D, ACM0010	Yes	AM0043	
AM0009, AM0037	Yes	AM0046	
AM0013, AM0022, AM0025, AM0039, AMS-III.H, AMS-III.I	Yes	AM0047	
AM0014	Yes	AMS-II.A-F, AM0044	Yes
AM0017	Yes	AMS-III.A	Yes
AM0018	Yes	AMS-III.E, AMS-III.F	Yes
AM0020	Yes		
AM0021, AM0028, AM0034, AM0051	Yes		
AM0023	Yes		
AM0024	Yes		

Høvik, 5 February 2007

Einar Telnes  
Director, International Climate Change Services

Michael Lehmann  
Technical Director