São Paulo, March 14th 2007

**Request for Review UNFCC, dated March 01st 2007for the CDM Project 0754**
"Use of blast furnace slag in the production of blended cement at *Votorantim Cimentos*"

**Request 1**

*"Being a signatory to the "Cement Sustainability Initiative" as such is not enough to claim additionality under step 0 of the Additionality Tool (AT). More substantiated evidence should demonstrate that CDM was seriously considered in the decision to proceed with this specific project activity."*

In 1999, ten leading cement companies – representing one-third of the world's cement production – embarked on the Cement Sustainability Initiative (CSI), a member-sponsored program of the World Business Council for Sustainable Development (WBCSD). The objective was to find new ways to meet the sustainability
CSI holds periodical working group meetings. In June 5, 2000 there was a meeting in Geneva, where was discussed about CDM. Below is transcript the text in the meeting notes:

> "The work on climate change mitigation (Substudy 3.1) needs to include Joint Implementation (JI) as well as trading and Clean Development Mechanisms (CDM). Again, a group at WBCSD is very active in this area and has a project going with World Resources Institute (WRI) called the Greenhouse Gas Initiative, which is geared toward establishing standard approaches for measurement and accounting in this area. We should take advantage of this work, and not re-invent it."

Meeting Notes and Working Group Participants list is annexed to this document.

Votorantim was represented at this meeting by Rocha, J. C. M. who was allocated at Brazil Cement Office at the time. Following Votorantim procedures Rocha has reported to the Environmental team the results from the meeting. With the information about the CDM project undergoing in WRI, Votorantim started to consider CDM registration in all GHG reduction programs undergoing in Votorantim.

As from WBCSD study, half of CO2 emission from a cement plant is from the chemical process of clinker production and 40% from burning fuel also for clinker production. Votorantim has planned to modify cement production in order to result in a decrease in the clinker production, and consequently reducing GHG emissions from calcination of limestone, the raw-material for clinker, and fossil fuel burning at the clinker kiln.

CDM knowledge pushed in a positive way to make the final decision in going forward with this project.

**Request 2**

*"Many of the barriers claimed at step 3 of the AT are not convincing or lack any substantiation. The VR indicates that barriers 3, 4, 5 and 7 are the most important. However barrier 3 is not sufficiently substantiated (which adaptations to the process and why are they a serious barrier?) and the nature of barriers 4 and 5 remain unclear, since these barriers are considered very common for large industries. Also any* ***third party evidence*** *to justify the presented arguments is lacking."*

Barrier 3 (Research Effort)

*Votorantim Cimentos had to develop substantial research effort to enable the increase in blending. Two aspects need to be highlighted: (i)* ***adaptations in the process*** *needed to be implemented and (ii) more* ***stringent quality assurance*** *and quality control procedures needed to be developed and implemented. New raw material and final product were included in the production chain with necessity of new quality tests, new controls and equipment*

After a period from the start of the modification in the cement production process in September 2000, Votorantim realized that the modification in the blending results in a need to modify also the process and quality control to ensure final product properties. After performing internal studies Votorantim started a third party studies.

The following set of technical papers are attached hereto in order to prove that the project owner carried out several studies on cement plus slag, its applications, its behavior, etc. All studies were performed by the Brazilian Portland Cement Association.

| Name of Document | Date of document | Type of document | Performed Date |
|---|---|---|---|
| ABCP Relatório de Ensaio 17697-2001 | 2001 May 23 | Report of the study of evaluation of slag addition in different types of cement and its effects in cement properties | Starting date: 2001 Mar. 14 |
| ABCP Relatório de Ensaio 19452 - 2001 | 2002 Feb. 18 | Report of study on cement using steel slag in different %, and properties studies of blast furnace slag and steel slag. | Starting date: 2001 Nov. 07 |
| ABCP Relatório de Ensaio 21255 -2002 | 2002 Dec. 02 | Report of the study steel slag in the production of Portland Cement | From 2002 Mar. 02 to 2002 Oct. 22 |
| ABCP Relatório de Ensaio 21255/2 - 2001 | 2002 Dec. 02 | Report 2 of the study steel slag in the production of Portland Cement | From 2002 Mar. 02 to 2002 Oct. 22 |
| ABCP Relatório de Ensaio 22415 -2002 | 2002 Dec. 02 | Report of the study comparing 2 types of slag as additives to Portland Cement | From 2002 Mar. 02 to 2002 Oct. 22 |
| ABCP Relatório de Ensaio 23828 - 2002-2003 | 2003 Apr. 16 | Report of the study for improve on initial performance of the blast furnace slag containing cement | From 2002 Oct. 28 to 2003 Feb. 26 |
| ABCP Relatório de Ensaio 24833 - 2003 | 2003 Jun. 21 | Report of the characterization of slag cement | Started 2003 Jun. 03 |

**Table 1 – List of Documents about slag cement research**

Barrier 4 (Logistics for additives supplying):
*Development of **logistics** for additives supplying. The use of additives in a reliable and continuous manner required the development and control of a new supply chain in the process involving different sites and suppliers.*

There was a significantly increase in the slag consumption in the 6 (six) plants involved in the project activity.

This increase causes among others the following effects:

- Increase in transportation demand;
- New pathways;
- Eventual contingencies.

**Increase in transportation demand**
Comparing with the Baseline years 1998-2000, the slag consumption has increased in 53% in 2001 production year. The main impact was the increase in necessary transportation truck fleet. The increase in the number of trucks was directly proportional to the increase in consumption of slag. There was an increase from 142 round-trips per day in 2000 to 220 round-trips per day in 2001. In 2005, it was necessary 337 round-trips per day.

To supply this increase in the transport demand, it was also necessary to increase the quantity of contracted independent vehicles. As independent vehicles, there is no fixed price to the transport service and variation on truck hiring price is common. Price is linked to the other goods transport hire in the market. When there is a high offer of goods to be transported in the market, the hiring fee is increased, causing a negative impact on the slag transportation cost.

**New Pathways**
In 2003, Itaú de Minas plant started to consume slag from supplier Belgo located in João Monlevade City. To start blended cement operation it was necessary to adequate the truck fleet. The cargo quantity was initiated with 5 (five) per day to attend the necessary volume, being incremented gradually until reach 7 (seven) cargos per day.

**Eventual contingencies**
Slag suppliers periodically have to stop blast furnace operation to maintenance works, leading to a stop in the slag supply to a specific cement plant. To overcome slag demand in that cement plant, there are needs to increase slag take out from another supplier. This results in necessity to contract extra transportation vehicles to the slag supplier path that will cover the contingent amount, affecting directly the hiring cost. The extra hiring could increase up to 20% on the normal fee.

Table and figure below compares the average costs between purchased slag and produced clinker at the Salto plant. Slag is transported from 3 different suppliers to 3 different plants where is dried and then send to Salto plant.
“Slag cost” is the price paid to the slag suppliers and “Transport cost” the price paid to hired trucks.
It is possible to notice that slag had a higher cost in four of the first five years of the project activity, demonstrating that from the economic standpoint, the use of slag is not the most attractive alternative historically.

| Year → | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|---|
| Slag cost CB | 20.45 | 23.72 | 27.83 | 32.32 | 36.92 |
| Transport cost CB | 12.00 | 14.00 | 16.00 | 18.00 | 20.00 |
| Total CB | 32.45 | 37.72 | 43.83 | 50.32 | 56.92 |
| Slag cost VR | 19.25 | 22.14 | 28.96 | 34.91 | 40.15 |
| Transport cost VR | 20.00 | 23.00 | 26.00 | 29.00 | 32.00 |
| Total VR | 39.25 | 45.14 | 54.96 | 63.91 | 72.15 |
| Slag cost SH | | | | 45.55 | 57.86 |
| Transport cost SH | | | | 3.00 | 0.00 |
| Total SH | | | | 48.55 | 57.86 |
| **Slag average cost (incl. transportation)** | **35.85** | **41.43** | **49.395** | **54.26** | **62.31** |
| **Clinker average cost (incl. transportation)** | **33.01** | **43.54** | **48.03** | **52.52** | **48.66** |

**CB: Cubatão plant; VR: Volta Redonda Plant; SH: Santa Helena plant**

**Table 2 – Slag and Clinker Cost Comparison (BRL/tonne)**

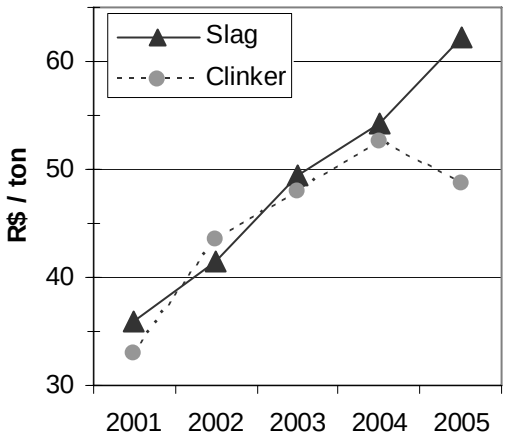


**Figure 1 – Slag and Clinker Cost Comparison**

Barrier 5 (Lack of infrastructure):

*Lack of infrastructure for implementation of the technology. The use of additives in a reliable and continuous manner also required that* ***new infrastructure*** *was* ***installed*** *in some of the plants involved in the project activity.*

In the document titled: "Itens maior custo Z8 e Secagem escória.xls", there is a list of the field materials, equipment and manpower involved in the project, and their respective costs.

Table 3 shows a simplified cash flow, which refers to the slag dryer installation at the Santa Helena (SH) unit, with an IRR of 13.29%, much less than the practice currently required at the company to select projects, which is approximately 20%, and than the long-term interest rate as used by the government at the time of the investment, greater than 15%.

| | | | |
|---|---|---|---|
| Previewed Total Investment | R$ | 6,777,360.00 | |
| Investment Time Life | | 10 | |
| WACC | | 11.23% | |

| | Cash Flow | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Benefits | Annual Savings using Dryer | | 1,472,648 | 1,472,648 | 1,472,648 | 1,472,648 | 1,472,648 | 1,472,648 | 1,472,648 | 1,472,648 | 1,472,648 | 1,472,648 |
| | | | | | | | | | | | | |
| | Total Benefits | - | 1,472,648 | 1,472,648 | 1,472,648 | 1,472,648 | 1,472,648 | 1,472,648 | 1,472,648 | 1,472,648 | 1,472,648 | 1,472,648 |
| Costs | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | Total Costs | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | **EBITDA** | **-** | **1,472,648** | **1,472,648** | **1,472,648** | **1,472,648** | **1,472,648** | **1,472,648** | **1,472,648** | **1,472,648** | **1,472,648** | **1,472,648** |
| | Depreciation | | (677,736) | (677,736) | (677,736) | (677,736) | (677,736) | (677,736) | (677,736) | (677,736) | (677,736) | (677,736) |
| | Income Tax | | (270,270) | (270,270) | (270,270) | (270,270) | (270,270) | (270,270) | (270,270) | (270,270) | (270,270) | (270,270) |
| | **Net Savings** | **-** | **524,642** | **524,642** | **524,642** | **524,642** | **524,642** | **524,642** | **524,642** | **524,642** | **524,642** | **524,642** |
| | Depreciation | | 677,736 | 677,736 | 677,736 | 677,736 | 677,736 | 677,736 | 677,736 | 677,736 | 677,736 | 677,736 |
| | Tax Recovery | | 110,460 | 110,460 | 110,460 | 110,460 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Investment | (6,777,360) | | | | | | | | | | |
| | **Free Cash Flow** | **(6,777,360)** | **1,312,838** | **1,312,838** | **1,312,838** | **1,312,838** | **1,202,378** | **1,202,378** | **1,202,378** | **1,202,378** | **1,202,378** | **1,202,378** |

**TIR= 13.29%**

**Table 3 -Slag Dryer Investment Cash Flow**

**Request 3**

*"The argumentation for the Common practices (no access to information) is not acceptable; the common practice check should be more elaborated and substantiated."*

Table 4 presents a compilation of raw data on the production of type CPII and CPIII cements, and Figure 2 shows the percent change gradient at *Votorantim Cimentos* and at the domestic market.

| | Market | | Votorantim | |
|---|---|---|---|---|
| | CP II | CP III | CP II | CP III |
| 2001 | 29,493,546 | 3,043,918 | 3,761,922 | 663,110 |
| 2002 | 28,618,833 | 3,286,905 | 3,375,815 | 774,984 |
| 2003 | 24,392,601 | 4,423,673 | 2,361,552 | 1,232,105 |
| 2004 | 23,829,155 | 5,155,370 | 1,837,246 | 1,806,859 |
| 2005 | 24,779,953 | 6,522,554 | 1,801,772 | 1,825,306 |

**Table 4 – Cements CPII and CPIII at Votorantim and in Brazilian National Market [1] in tonnes per year**

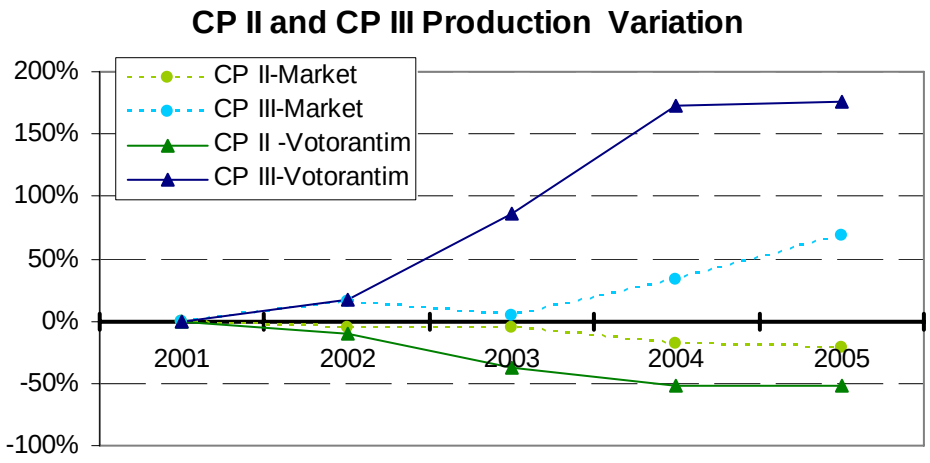


**Figure 2 – Gradient of the transition to CP III at *Votorantim Cimentos* (Votorantim amount is excluded from Market values)**

The figure shows that the change at *Votorantim Cimentos* in comparison with the common practice (i.e., the market excluding *Votorantim Cimentos*) is significantly bigger, it was carried out much earlier, and in a more intensive manner throughout the years. In that sense, it is reasonable to consider that *Votorantim Cimentos*, being the market leader, has partially induced other cement producers towards change, since the cement is a product governed by the ABNT Brazilian standards, with total transparency to the market, and whose composition and product

[1] Sindicato Nacional da Indústria de Cimento ("Brazilian National Cement Industries Trade Union"). *Annual Report 2005*. (available at http://www.snic.org.br/25set1024/index.html).

type must be described on the packaging. It is worth pointing out again that Votorantim has signed the CSI, and has been seeking ways to reduce emissions, and that slag is an alternative made viable by the carbon credits.

Additionally, the project participants reaffirm that the change in the production profile, from CPII to CPIII, has not led to a new business line, but to a shift towards a product that emits less greenhouse gas emissions. The table shows that there has been a profile change without an increase in the overall production, and without a market increase, which evidences product interchangeable utilization.

Also worth mentioning is the fact that the revised PDD (Version 3, dated 21 July 2006) presents data on the cement production in Brazil, which characterize the use of slag and the production of blended cement, serving as empirical evidence to substantiate the common practice.

This is noteworthy, as there are proponents for other similar CDM projects under development in Brazil. However, it is not possible for the project proponents to precisely quantify how much of the change observed in the market is due to activities that have considered the CDM. Finally, the project proponents believe that they have provided a reasonable amount of evidence that indicate having considered the CDM and the intention to achieve greenhouse gas emission reductions while performing their industrial activity, thus contributing to Brazil and the world within the Kyoto Protocol proposal; also, this technology can be transferred to any interested party in the future.