

Audit Opinion and Report **Lafarge S.A. – Cement Division** **CO₂-Emissions for 2002 and Emission Reductions since 1990**

1 Introduction

This audit took place within the framework of the Climate Savers Agreement between Lafarge S.A. and WWF as signed in fall 2001. In the Climate Savers Agreement with WWF, Lafarge committed itself to reduce its fuel and process-derived CO₂ emissions from its production of cementitious materials against its 1990 baseline. Targets were set on two levels: a global target expressed as unit-based emissions (tons of CO₂/ ton of cementitious material) and an absolute CO₂ emission target for Lafarge plants in the Annex I countries of the Climate Convention with sub-targets taking and not taking CO₂ from non-biomass alternative fuels into account (compare Table 1).

Table 1: Lafarge reduction targets

Period	Unit based Global Target	Absolute Annex I Target	Absolute Annex I Target
Accounting of alternative fuels	All CO ₂ -neutral	All CO ₂ -neutral	Only Biomass CO ₂ -neutral
2003-2007	-12%	-10%	-
2008-2012	-20%	-15%	-10%

In its emission report for the year 2002 Lafarge S.A. reported CO₂-emission levels and reductions for its cement activities as listed in Table 2.

Table 2: Lafarge CO₂ emission levels and trends (2002 vs. 1990)

Period	Absolute Global	Absolute Global	Unit based Global	Absolute Annex I	Absolute Annex I	Unit based Annex I
Alternative fuel accounting	All CO ₂ - neutral	Only Biomass CO ₂ - neutral	All CO ₂ - neutral	All CO ₂ - neutral	Only Biomass CO ₂ -neutral	All CO ₂ - neutral
1990	72.8 Mt	73.4 Mt	0.755 t/t	52.7 Mt	53.3 Mt	0.751 t/t
2002	78.9 Mt	80.4 Mt	0.680 t/t	46.2 Mt	47.5 Mt	0.674 t/t
Change against 1990	+8.4%	+9.5%	-10.0%	-12.3%	-10.9%	- 10.3%

2 Audit scope and process

We planned and performed our work so as to obtain all the information and explanations deemed necessary to provide us with sufficient evidence to give reasonable assurance that

- the figures for direct CO₂ emissions from Lafarge's cement production for the year ended 31 December 2002,

- trends of respective CO₂ emissions between 1990 and 2002 – reported as absolute and unit-based indicator per ton of cementitious material – are calculated correctly and on the basis of consistent system boundaries, and
- Lafarge's internal protocol to calculate and report CO₂ emissions based on its technical performance data (as laid out in Lafarge's CO₂ report for the year 2002), are free from material misstatement.

In the audit process, Lafarge S.A. was represented by Mr. Michel Picard (Vice President Environment). The audit team of Ecofys GmbH was led by Jochen Harnisch. The audit was carried between October 2003 and February 2004.

The audit focused on the following issues:

- Completeness of emissions report for the year 2002
- Consistency and accuracy of 1990, 2000-2002 data
- Accuracy and consistency of the accounting of additives, including a site audit of the Southfield office (USA).
- Evaluation of the accuracy of the reporting process via plant audits: Alpena (USA), Bath (Canada), Karsdorf (Germany) and Kujawy (Poland)

We obtained evidence to support our opinion that Lafarge's CO₂ emissions for the year ended 31 December 2002, trends of CO₂-emissions since 1990 and Lafarge's internal protocol for the calculation of CO₂ emissions, are free from material misstatement by:

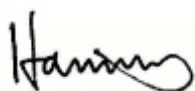
- obtaining an understanding of the systems used to generate, aggregate and report CO₂ emission data at a site and group level;
- conducting site audits, which involved visiting certain selected sites to test their CO₂ and energy data management systems and the associated reliability (such as, completeness, accuracy and consistency) of their reported CO₂-emission data submitted for central consolidation. Our site visits included a detailed evaluation of the application of data collection processes for those emission sources representing the greatest risk of material misstatement;
- performing a high level desk-top review of CO₂-emission data reported by all Lafarge sites;
- correlating findings from the site audits and reviews with our cumulative knowledge of the industry and Lafarge's operations in order to identify the issues (if any) that could impact the presentation of Lafarge's CO₂-emission performance; and
- testing the integrity and accuracy of the central level CO₂ emission data aggregation process.

Throughout our audit, we directed our work to those matters that in our view could materially affect Lafarge's reported CO₂-emissions for the year ended 31 December 2002 and reported emission trends since 1990. We believe our audit provides a reasonable basis for our opinion.

3 Audit Opinion

In our opinion Lafarge's CO₂ emissions for the year ended 31 December 2002, its reported CO₂ trends against the 1990 base year, and Lafarge's internal protocol to calculate CO₂ emissions are free from material misstatement.

February 27, 2004



Dr. Jochen Harnisch, Lead Auditor

Ecofys GmbH, Landgrabenstr. 94, 90443 Nürnberg, Germany;
E-mail: j.harnisch@ecofys.de

