IMPACT ASSESSMENT OF THE PROPOSAL AMENDING THE ETS DIRECTIVE ON THE SPANISH CEMENT INDUSTRY

EXECUTIVE SUMMARY

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drawn up for

by

INTRODUCTION

Background and objectives

Within the framework of the European Emissions Trading System (ETS), the European Commission adopted on 23 January 2008 a proposal on the review of the ETS Directive with a view to the third trading period (2013-2020).

In this context, CEOE has commissioned an independent study to Garrigues Medio Ambiente (Garrigues Environment) to assess the impact of the new emissions trading scheme in the Spanish industry. This document presents the study's executive summary. The analysed sectors correspond to the major CO_2 emitters, whether for being energy-intensive or for process reasons, and are also affected by the ETS Directive review of 23 January 2008: Steel, Refining, Chemicals (Carbonate, Sodium Bicarbonate, Chlorine-Alkaline[1], Ammonia, Nitric Acid, Hydrogen and Synthesis Gas and Basic Organic Chemicals), Pulp, Paper and Board, Cement, Lime, Ceramic Tile, Bricks and Roofing Tiles, Glass Containers, Ceramic Frit.

This document is the executive summary of the report done for the cement industry, developed as part of the overall study.

Fundamentals of the proposal amending the ETS Directive

The maximum cap of each of the 27 Member States' allowances will be replaced by an EU-wide cap: 20% greenhouse gas (GHG) emission reduction in 2020 compared to the emission level in 1990. This represents a 14% reduction compared to the 2005 reported emissions, achieved through a reduction, from now until 2020, of 21%[2] of the emissions of the sectors included in the ETS and a 10% reduction of the sectors that are not regulated, still comparing with the levels in 2005.

The proposal suggests that full auctioning by the Member States should be the rule from 2013 onwards for the power sector. However, the transitional regime of the industry in general will be applied to the corresponding share of thermal energy in high-efficient cogeneration according to Directive 2004/8/EC.

For the other sectors, 80 % of the allowances would be allocated free of charge in 2013 proportionately to the total EU 2005-2007 emissions (which will remain, in any case, below the needs of each activity, even with the best available technologies), and a linear reduction would be applied until arriving at zero free allocation by 2020.

For the sectors where a risk of carbon leakage or relocation exists, until 100% of allowances free of charge can be allocated. The Commission will study, among other things, the cost of allowances in comparison with the production cost and the exposure to international competition. It will also assess the inability to pass through the cost of required allowances in product prices without significant loss of market share. These criteria will not be made public until 30 June 2011.

[1] The Chlorine-Alkaline activity is not covered by the Directive but it has been analysed as it is very intensive in electric energy.

[2] This percentage will be extended if there is an "international agreement" in which case the EU will commit to a global reduction of 30% instead of 20%.

Main Conclusions of the study

As will be set out in greater detail below, the study's results show that total CO_2 costs in the cement industry would increase by approximately €1.091 billion (164.9% of its turnover) should the draft Directive be applied as has been put forward by the EC. In addition, 5,500 direct jobs would be destroyed (77.5% of the industry's current jobs), along with a considerable number of indirect jobs.

Delocalisation and the phasing out of facilities would affect clinker production, and the Spanish cement industry's competitiveness would be exposed to imports from countries not affected by the Emissions Trading Directive, whose shipping, mainly by long-distance sea transport, would increase overall CO_2 emissions.

METHODOLOGY

The impact of the referred proposals is made on the basis of the unit margin decrease once the acquisition costs of CO_2 allowances and the indirect costs derived exclusively from the increase of the average cost of electric generation due to CO_2 are deducted.

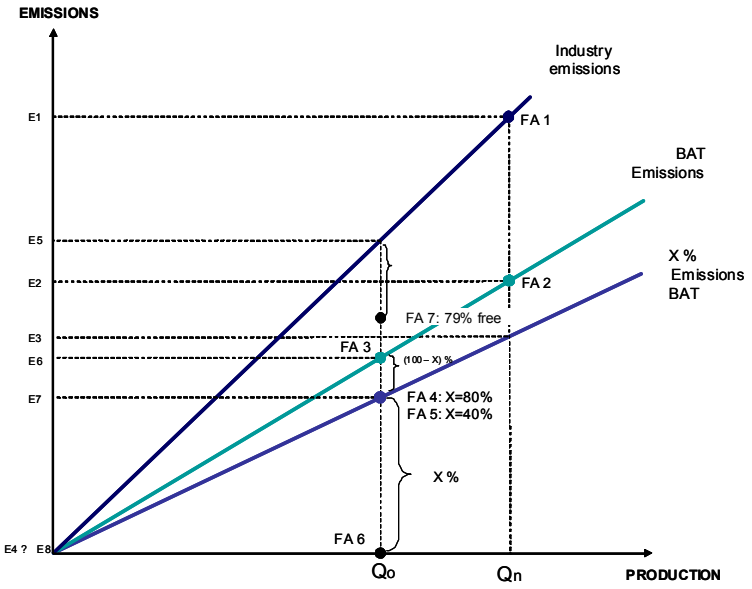
In order to evaluate the cost of CO_2, a modelling of costs has been made. The first step consisted in defining scenarios based on the combination of two variables: average CO_2 purchase price and free allocation[3] (in % of the needed allowances).

For the average CO_2 purchase price, 3 possibilities have been explored: 10, 35 and 60 euros per tonne of CO_2.

For the free allocation (FA) in year n, the possibilities explored have been the following:

- FA 1: 100% of needed allowances based on the real emissions annual (all necessary allowances are granted free of charge considering exclusively the cost derived of the increased in the electricity price).
- FA 2: 100% of needed allowances based on the emission corresponding to the Best Available Technology (BAT emissions) (Penalisation for not using BAT).
- FA 3: 100% of needed allowances based on BAT emissions on the activity of the year of reference (2005) (Penalisation for no using BAT and for growth).
- FA 4 and FA 5: respectively 80% and 40% of the allowances allocated under FA 3. (Intermediate alternatives between FA 3 and FA 6).
- FA 6: 0% of needed allowances. No free allocation. This corresponds to the Commission's proposal for 2020.
- FA 7: 79% of 2005 emissions, so that emitters that do not reduce their emissions by 21% compared to 2005 would have to buy rights for them in keeping with the European Commissions reduction target.

[3] The allowances that are not allocated free of charge will have to be purchased.



FA 1: 100% of rights needed on emissions year n

FA 2: 100% of rights needed on BAT* emissions year n

FA 3: 100% of rights needed on BAT emissions year 0 (2005)

FA 4: 80% of rights needed on BAT emissions year 0 (2005)

FA 5: 40% of rights needed on BAT emissions year 0 (2005)

FA 6: 0% of rights needed

FA 7: 79% of rights needed on emissions year 0 (2005)

•Note: Best Available Technologies

To estimate the increase in the electricity price, several hypotheses have been suggested; among which, the inexistence of windfall profits[4]. As a consequence, the increase in the kWh price will be 0.4; 1.4; and 2.4 eurocents depending on the reference price of CO_2, 10, 35 and 60 euros respectively.

To evaluate the impact of the Directive, after calculating the impact of the cost of CO_2 in the outturn accounts of the analysed sectors, a further step consists in developing a model to generate an estimate of the possible increase in the price of products as a consequence of the extra cost of CO_2.

To evaluate the final impact in the margin, it was considered that the ETS will have a positive effect on the emissions reduction if the level of allocation corresponds to BATs, and that this effect will be proportional to the distance to BATs.

The impact of the loss of margin in employment and Gross Added Value (GAV) has also been modelled.

SCOPE OF THE STUDY

This executive summary corresponds to the analysis of the impact that the amendment of the Emissions Trading Directive of 23 January 2008 would have on the Spanish cement industry.

The available data provided by the Association of Spanish Cement Manufacturers (OFICEMEN), which represents 91% of total cement production and all the clinker manufacturers in Spain, was used for the modelling.

According to the data for 2006 thus provided, the cement industry's turnover amounted to approximately €3.737 billion.

In the same year, its Gross Value Added (GVA) amounted to around €1.291 billion, representing 0.81% of the Spanish Industry and Energy sector's GAV in 2006.

[4] The increase in price associated to the marginal variation of the generation cost due to the purchase of allowances and passed on to the generation pool (windfalls profits) have not been considered.

The industry's aggregate direct employment in 2007 totalled 7,100 employees, accounting for 0.2% of the active population employed in the industrial sector in Spain in 2007.

The industry's emissions in 2007 amounted to 27.47 Mt CO_2 .

RESULTS AND CONCLUSIONS

CO_2 costs regarding margin

If the draft Directive enters into effect under the terms put forward by the European Commission (scenario FA6) and estimating a CO_2 price of €35/t as the intermediate hypothesis, which we suppose to be the most likely, the aggregate cost of CO_2 in the cement industry in 2010 will rise to approximately €1.091 billion. This figure is equivalent to 164.9% of its operating margin (€25.66/t of cement). Of this percentage, direct costs (purchase of rights) account for 154.7% of the unit operating margin and indirect CO_2 costs (electricity) for 10.2%.

Of the aforementioned unit cost of cement of €25.66/t, €24.08/t of cement correspond to direct costs (which in absolute terms amounts to €980 million) and €1.59/t to indirect unit costs (equivalent to €112 million of indirect costs), as can be seen in Figure 1.

CO2 COSTS (DIRECT AND INDIRECT) COMPARED TO UNIT OPERATING				
Free allocation scenarios		Average CO2 purchase prices (€)		
		10	35	60
FA1	100%of real rights	2,9%	10,2%	17,5%
FA2	100%BAT	4,7%	16,5%	28,3%
FA3	100%BAT 2005	7,7%	26,8%	46,0%
FA4	80%BAT 2005	15,6%	54,4%	93,3%
FA5	40%BAT 2005	31,3%	109,6%	188,0%
FA6	0	47,1%	164,9%	282,6%
FA7	79%of 2005 emissions	14,5%	50,8%	87,1%

Table 1: CO_2 costs (direct and indirect) compared to unit operating margin (%) Source: Oficemen; Analysis: Garrigues Medio Ambiente

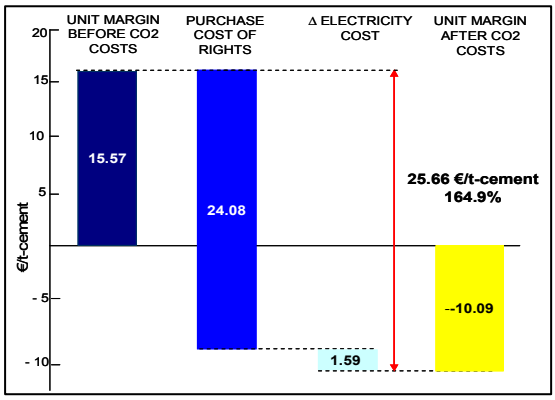


Figure 1: Economic impact on unit operating margin in the scenario broached by the European Commission for 2020 (scenario FA6) at a price of €35/emission right (%). *Source: Oficemen; Analysis: Garrigues Medio Ambiente*

Should the European Commission require a 21% reduction in emissions compared to emissions in 2005 (FA7), the aggregate cost of CO_2 would amount to approximately €336 million, which is equivalent to 50.8% of the operating margin (€7.91/t of cement). Neither the FA6 nor the FA7 scenario would turn out to be technologically or economically viable in the Spanish cement industry, which is among those with the best available technologies (BAT).

Exposure to international competition

The output of cement companies in Spain is sized to meet regional demand due to the high availability of raw materials near the plants and it is not focused on exporting because of the high costs of transporting cement. Nevertheless, the European cement industry is exposed to international competition as regards clinker (an intermediate product in cement manufacturing) and Spain is one of the most exposed due to ease of access through ports.

There is therefore a high risk of Spanish clinker production being delocalised to countries not affected by the Emissions Trading Directive. These would mainly include countries in the Mediterranean basin like Morocco, Algeria, Libya, Egypt, Turkey and Tunisia due to low

shipping costs to Spain and foreseeable increases in clinker and cement production capacity between 2008 and 2012. There is likewise a potential risk of a rise in imports from other countries not affected by the Directive like China and India given their low manufacturing costs. As an example, Figure 2 shows the current and future situation should clinker be imported from Egypt. It forecasts that in the future Spanish prices (average and marginal) will rise due to the cost of CO_2 and that Egyptian prices (average and marginal) will be more competitive.

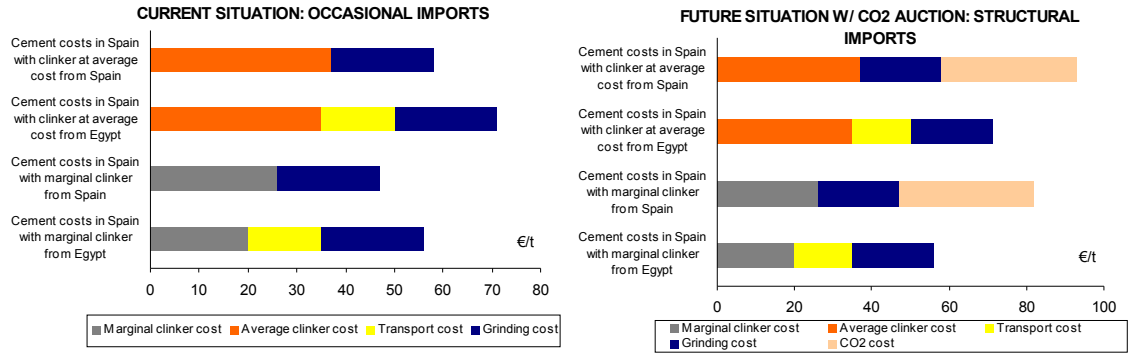


Figure 2: Current and future situation of exposure to clinker imports from Egypt. Source: Oficemen; Analysis: Garrigues Medio Ambiente

Availability of technology to reduce emissions

The Spanish cement industry has reduced its energy consumption significantly over the last twenty-five years and has improved its energy efficiency by modernising facilities and displacing clinker production to larger, more efficient kilns. Spanish factories are therefore among the most efficient plants in the world (on a par with Japan and Korea).[5]

Thanks to the efforts undertaken, the cement industry is among those with the Best Available Technologies (BAT), at a distance of 4.26 % from the BAT minimum. The marginal CO_2 reduction cost to reach the BAT minimum through the industry's main emission reduction measures (energy savings and efficiency, the employment of additives and slag, and the use of alternative fuels) turns out to be very high and/or is distorted by factors that are external to the industry. It therefore turns out to be practically impossible to reduce emissions at an economically viable cost.

Impacts on employment and Gross Value Added (GVA)

The impact on employment and gross value added would mainly come about in the clinker production process in Spain, while the grinding business would survive.

Using the model described above to assess the loss of employment in scenario FA6 and at €35/ t of CO_2 the following are estimated:

- A loss of 5,500 jobs in the industry, amounting to 77.5% of all the cement industry's employees (7,096 employees). In addition, a significant amount of indirect employment

[5] Average unit emissions in Spain between 2005 and 2006 were approximately 0.860 t of CO_2 / t of clinker compared to the European average of 0.872 t of CO_2 / t of clinker and the world average of 0.873 t of CO_2 / to of clinker according to the WBCSD.

linked to clinker production would be destroyed, which could even exceed the loss of direct employment described above.

- The annual loss of gross value added is estimated to amount to approximately €1 billion, equivalent to the GVA generated by clinker production in Spain.

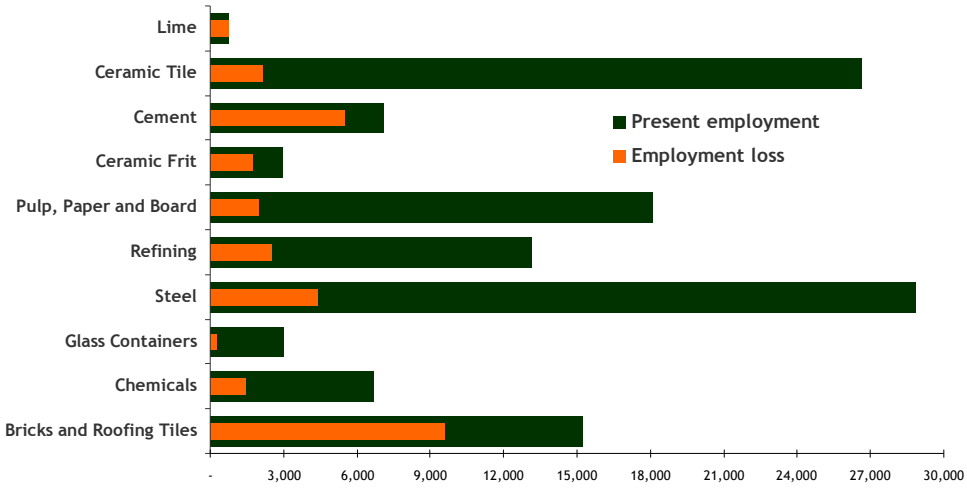


Figure 3: Employment loss (number of jobs) of the analysed sectors.

Conclusions

Clinker production would be affected most due to both the loss of employment as well as to the phasing out of facilities. However, the grinding business, which has less added value than the cement manufacturing process, would continue operating.

Delocalisation and the phasing out of facilities would commence in the short-term as a result of a lack of investment and would progressively gather force up to 2020, when the aforementioned figures would come about.

The figures set out above make us reflect on the need the industry has of receiving free emission rights on the basis of its development capacity to attain best available technologies (BAT). In this regard, the Spanish cement industry, which has been investing in optimising the energy efficiency of its production process for years, would be very close to obtaining 100% of the emission rights for free, as it only has a 4.26% possibility of improvement compared to the BAT minimum.

The necessity of being able to use uncapped CERs (certified emission reductions), once a certain proximity to BAT, is reached is set out.