

BCG

THE BOSTON CONSULTING GROUP

ASSESSMENT OF THE IMPACT OF THE 2013-2020 ETS PROPOSAL ON THE EUROPEAN CEMENT INDUSTRY

Final project report – Executive summary



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PROLOGUE

BCG, in collaboration with and upon request of Cembureau, has assessed the impacts of the 2013-2020 ETS proposal on the EU cement industry. The analysis has been focused on the competitiveness of clinker and cement production in EU ETS countries vis-à-vis non-ETS countries in year 2020, in order to assess the risk of relocation of EU production and its related implications in terms of employment, value added and global CO₂ emissions.

To assess relative competitiveness in 2020, BCG has compared the expected cost of producing in the EU, assuming the carbon cost of CO₂ versus the cost of imports, including transportation from the plant of origin in non-ETS countries.

The production and transportation cost assessment has been entirely based on publicly available information. Appropriate methodologies based on such information have been developed to estimate all the cost components by country (or cluster of countries).

The results of the cost assessments have been reviewed on a cost line basis with the local cement associations of the largest EU countries (major cement and clinker producers). Additionally, experts (both belonging to the BCG network and external to it) have been contacted to validate the data.

The following report is an executive summary of the assessment of the impact of the 2013-2020 ETS proposal on the EU cement industry. In order to have a full understanding of the methodology, assumptions and overall conclusions, it is necessary to read the two final deliverables of the study:

- Carbon Leakage Assessment: Final Project Report (Word document)
- Carbon Leakage Assessment: Methodology and Assumptions (PowerPoint document)

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Executive summary

In March 2007 the European Union (EU) agreed to reduce greenhouse gas emissions by 2020 by 20% compared to 1990 levels. The European Trading System (ETS) will be a key mechanism to ensure the achievement of emission reduction targets.

The current proposal of the EU ETS Directive (dated January 2008) for the 2013 to 2020 period limits overall emissions permits available for ETS sectors to the equivalent of 79% of 2005 levels. From 2013, these permits will be allocated through full auctioning for the power generation sector while for all the other ETS sectors (including the cement industry) 20% will be auctioned in 2013 and then linearly increased up to 100% by 2020.

As an exception, the European Commission is considering applying a 100% free allocation to certain industries from 2013 onward, whenever it can be demonstrated that there is considerable risk of carbon leakage. Carbon leakage arises from the cost of CO₂ emission allowances that EU ETS sectors would have to pay. This would damage the competitiveness of certain sectors in favour of countries with no emission constraints, thus leading to offshoring production in these industries. Moreover, emissions will not be decreased on a global level, but rather displaced and possibly increased due to the additional emissions from transportation.

This study examines how the additional carbon cost for the EU cement industry will affect its competitiveness vis-à-vis non-ETS countries, thus putting cement production at risk of carbon leakage¹. In particular, the study analyzes the impact of the proposal of the Directive on clinker production as the key intermediate material for producing cement². Clinker is responsible for 100% of cement's direct emissions and is more exposed to the risk of offshoring because, on the one hand, it is easy to transport, with no need for special equipment, and on the other, customers in the EU are already accustomed to clinker produced in non-ETS countries. The report also analyzes the possibility of importing cement. To do so, a more expensive logistic chain than clinker's is taken into account.

Based on the expected cost of production in the EU assuming the carbon cost of CO₂ versus the cost of producing in non-ETS countries, clinker and cement production in the EU is not competitive without free allowances allocation. As a result, the "wise businessman" will prefer to relocate production to more competitive countries, this leading to production offshoring.

At CO₂ prices above €35/t (expected for the 2013-2020 period³) the current proposal of the Directive will lead to the complete offshoring of the cement industry. At CO₂ price of €25/t⁴, more than 80% of EU clinker production will be at risk of offshoring by 2020:

- 100% of the Italian, Greek, Polish and UK production, almost 100% of Spanish, ~75% of German and 65% of the French
- ~70% of the production of the smaller EU producers⁵

¹ For the purpose of this analysis, no carbon equalisation system has been taken into account to ensure that no distortion affects the cement industry's competitiveness.

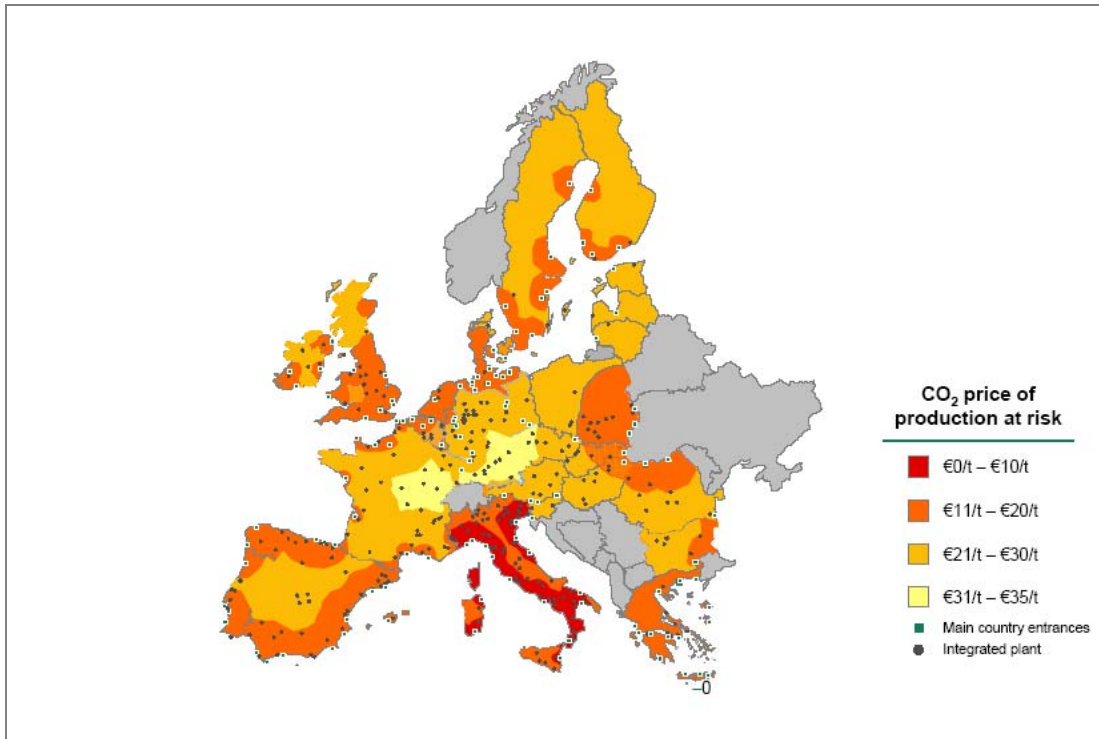
² Cement production is a carbon emission intensive process. A large part (~60%) of direct emissions come from the production process itself, due to the de-carbonation of limestone, the basic material for cement. The rest is related to fuel burning to heat up to 1,450 °C the kilns where clinker is produced.

³ The EU forecast prices between € 34 and €39/t; several analysts €35 - €40/t

⁴ June – September 2008 CO₂ average price ~€25/t

Figure 1 illustrates the EU regions at risk of offshoring for different CO₂ prices.

Figure 1



Sensitivity analyses show that, even with significant changes either in transportation or production costs, carbon leakage will still happen. Additionally, it will not be necessary to wait for 2020 to witness production capacity offshoring, as it will already accelerate in 2013 and continue in the following years if the current proposal of the Directive is applied to the cement industry.

Production capacity in non-ETS countries will not limit the relocation process, as their capacity will adjust according to EU demand. The global cement industry can build enough capacity to supply the EU markets from the most competitive non-ETS countries if it is economically attractive. Likewise, the lack of infrastructure or shortage of resources will not prevent the relocation process either. Coal and petcoke cargos will be diverted from current destinations to non-ETS countries, and infrastructures, if financially appealing, will be built in the medium and long-term.

Cost pass-through, although not likely, will not influence offshoring decisions. EU integrated cement producers will eventually switch off kilns and take advantage of the cost pass-through to stay competitive vis-à-vis non-integrated producers⁶.

⁵ Remaining EU countries. Countries with significant amount of exports can be particularly affected by the competition of imports from non-ETS countries. The study has not considered the potential impact of the ETS linked to the loss of export sales.

⁶The cement production occurs in the grinding mills where clinker, gypsum and other additions are reduced to particle size. Some players in the market simply grind the clinker produced elsewhere.

Considering a CO₂ price of €25/t price, the study assesses four scenarios, based on the number of free allowances allocated in 2020, for the EU integrated cement industry and the related impact on the EU in terms of production, employment and value added losses and the increase in global CO₂ emissions (Figure 2). Overall, ~240 Mt of clinker production will be at stake. This number includes ~190 Mt of production based on 2005 emission levels and ~50 Mt of production increase driven by the demand expected for 2020.

The first scenario is based on full auctioning (as stated in the current draft of the Directive). If this happens, more than 80% of the expected production, equivalent to ~210 Mt of clinker, will be at risk of carbon leakage in 2020⁷. This will imply a loss of ~35,000 direct jobs (~87% of expected employment in 2020), and ~€3,600M value added (~87% of expected value added in 2020). It will also increase global CO₂ emissions between 7 and 38 Mt, due to imports from Turkey and the Middle East, respectively.

The second scenario considers a 21% reduction of permits and 100% free allocation. If the 21% reduction is also applied to the cement sector, this scenario represents the exception that the proposal of Directive suggests for the sectors where there is relevant risk of carbon leakage. In this case, 86 Mt of clinker production will be offshored⁸ and approximately one third of the integrated cement industry will be affected.

The third scenario uses an allocation of a number of CO₂ emission allowances equivalent to the 2005 emission levels. In this scenario, the entire foreseen increase in clinker demand until 2020 will be completely covered by imports. Not satisfying this demand increase through EU production of clinker would imply an opportunity loss in terms of new jobs (10,000 FTE⁹s or ~25% of employment expected in 2020) and value added (€950M or ~25% of the value added expected in 2020).

The fourth *scenario* is based on 205 Mt of free CO₂ allowances. It would make it competitive to produce the same amount of clinker as in 2005 and cover the expected growth in EU demand.

⁷ 2020 imports will account for production offshoring and 9 Mt of clinker (2005 imports level) that we assume not related to carbon leakage.

⁸ See previous footnote.

⁹ Full time equivalent

Figure 2

Scenario	Total auctioning for 2020	Applying 21% reduction (no auctioning)	Keeping '05 clinker production level	Covering EU clinker demand
CO ₂ free allowance allocation (Mt)	0	131	160	205
EU clinker production (Mt)	32	156	189	242
Clinker imports to EU (Mt)	219 (210+9)	95 (86+9)	62 (53+9)	9
EU employment (direct FTEs)	5,500	25,000	30,000	40,500
Gross value added (M€)	530	2,700	3,200	4,200
Global CO ₂ emissions increase (Mt)	7 - 38	3 - 15	2 - 12	-
Carbon leakage impact	> 80% of industry offshoring	~1/3 of industry affected	Carbon leakage driven by demand growth	No additional carbon leakage

We believe that maintaining a sustainable integrated cement industry in the EU is possible and will benefit both the environment and the economy. The EU integrated cement industry is a positive contributor to the Sustainable Development Initiative. With net emission factors between 3% and 35% lower than non-ETS countries, this industry meets the most demanding environmental standards and provides a waste management solution, as it replaces 18% of traditional fuels in kilns with alternatives, including waste. The EU clinker production is also sustainable from an economic perspective with more than 30,000 people employed and more than €3,200M value added. Additionally, cement will be critical to ensure the fulfilment of adaptation policies which are instrumental in reducing the total cost from sea level rise due to climate change.

As a conclusion, there are two scenarios in terms of free allowances for the EU integrated cement industry to avoid significant production offshoring. Free allowances of 205 Mt will make it competitive to produce enough clinker to satisfy both the current demand and the increase expected in the EU (a total of ~240 Mt), while free allowances of 160 Mt will make it attractive to produce the same amount of clinker as in 2005.

If no free allowances are allocated, the EU should design alternatives to level the playing field and ensure that no distortions affect the cement industry's competitiveness.

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