THE CERAMIC INDUSTRY AND THE EUROPEAN EMISSION RIGHTS MARKET

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The increasing stringent environmental demands of the European Union raise new challenges for most of the industries located in the Member States. The present study specifically analyses the possible repercussions on the ceramic industry in Castellón province of the limitation of greenhouse gas (GHG) emissions, which the European Commission has imposed in order to implement the agreements of the Kyoto Protocol.

In Kyoto several industrialised countries decided that by 2008-2010 their GHG emissions should be 5.2 % below 1990 levels. The European Union committed itself to reducing these emissions by 8%, by means of the so-called 'bubble' system, i.e. this goal was to be obtained at a summed level but each Member state could have its own reduction target. Spain was allowed to increase these emissions by 15%.

The flexibility mechanisms to be implemented in order to reduce the GHG emissions comprise the emission rights market, the clean development mechanism, and the mechanism of joint implementation, in addition to the enlargement of forest plantations because of their role as carbon sinks. According to Klepper and Peterson[3], the use of these mechanisms enables reaching the reduction targets with smaller costs.

In the last few years the European Union has issued specific Directives that regulate these mechanisms, in particular, Directive 2003/87/CE which regulates the greenhouse gas emission rights trade, and Directive 2004/101/CE which amends the former and regulates the project-based mechanisms[1]. In this way, the affected installations can meet their reduction targets by buying emission rights in the European market and also by acquiring credits from the Clean Development Mechanism (Certified Emissions Reductions) starting in 2005, or from the Joint Implementation projects (Emission Reduction Units) as of 2008. The sectors directly affected by these provisions are the cement, paper, glass and ceramic industries, in addition to the energy sector (refineries and electric power stations) and the steel industry.

This study focuses on the repercussions that this new regulatory framework could have on the ceramic industry in Castellón province and attempts to analyse to what extent the fulfilment of the Kyoto agreement could entail a new challenge for the sector. Since 90% of total Spanish ceramic tile production and more than 90% of that corresponding to the frit, colour and ceramic glaze industry are concentrated in the Castellón area, analysis of the effects that these Directives can have on the Castellón ceramic sector is of great interest, inasmuch as it represents practically the entire Spanish ceramic industry and because of the evident importance this sector has in the economy of Castellón province in terms of job creation and income.

The methodology followed has consisted of considering the CO_2 emissions based on the historical production data of the companies in the ceramic district. Taking into account the rights assigned to the sector and making the different production and emission rights price assumptions, a series of projections have been made that represent a first approach to the additional costs that the sector would have to bear in meeting the environmental demands deriving from the Kyoto Protocol.

Since 1990 production in the ceramic sector has increased tremendously. In absolute terms, this has gone from 225 million square metres in 1990 to 635 million in 2004, involving an increase of 182% in a little over a decade. Growth has occurred mainly in single-firing technology, which was implemented by the sector in the mid 1980s and adopted by the new entrants, together with the replacement of oil with natural gas, a much less pollutant fuel. By the mid 1990s all the companies in the sector had performed this technological upgrading and the cogeneration system had become generalised. This matter is in no way irrelevant from the point of view of CO_2 emissions, since the sector has not undergone any technological modification of that extent since then, which might warrant expecting any significant emission reductions in the near future.

The Ministry for the Environment [4] expects a rate of production growth between 3% and 4%; in our view, this prediction could be excessive, as it fails to take into account the reduction in production in 2003, the effects of the rise in energy prices, and the entry of new tile producing countries in the global market. To this it is further necessary to add the tendency in the sector, which has become more pronounced in the last two years, to focus efforts on developing products with greater added value as opposed to the strategy of increasing the number of square metres produced [2]. Therefore, the growth rate considered in the present study is moderate (maximum

1 Clean development projects (between a country of Protocol Annex B and a developing country) and joint implementation projects (for two countries of Annex B).

annual rate of 1.5%); this would thus lead to a production of 715 million square metres in 2012, which would mean an increase of 217% in regard to 1990.

In the emissions calculation we have taken into account the technological improvement involved in going from 12 kg CO_2 per thousand square metre product in 1985 to 6.6 kg in 1990, and to 5.2 kg at the present time. As the proposal made in the National Assignment Plan [5] considers the specific emissions of the sector could reach 4.22 kg CO_2 per thousand square metres in 2012, we have applied a gradual linear reduction from the present level to that figure for 2012.

Comparing the foregoing data with the rights assigned for 2005-2007 and with the ones foreseen for 2008-2012, we have estimated the rights deficit and the cost for correcting this. At the prices of the rights that are currently being traded in the European markets, the repercussion for the companies in the sector would involve an increase in costs equivalent to 0.5% to 2.6% of turnover, the latter being the foreseeable figure in the most unfavourable situation. These figures both correspond to the following extreme scenarios:

a) Minimum cost: maximum number of rights (2.6 million tons of CO_2) and rights price between 40 and 50 €.

b) Maximum cost: minimum number of rights (1.7 million tons of CO_2 equivalent to 15% in relation to 1990 emissions) and a higher price band (from 50 to 80 €).

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