Opinion of the European Economic and Social Committee on ‘The competitiveness of the European glass and ceramics industry, with particular reference to the EU climate and energy package’

(Exploratory opinion requested by the Czech Presidency)

(2009/C 317/02)

Rapporteur: Mr ZBORIL
Co-rapporteur: Mr CHRUSZCZOW

In a letter dated 10 December 2008, pursuant to Article 262 of the Treaty establishing the European Community, Marek Mora, Deputy Vice Prime Minister for European Affairs, asked the European Economic and Social Committee, on behalf of the future Czech Presidency, to draw up an exploratory opinion on

The competitiveness of the European glass and ceramics industry, with particular reference to the EU climate and energy package.

The Consultative Commission on Industrial Change, which was responsible for preparing the Committee’s work on the subject, adopted its opinion on 4 June 2009. The rapporteur was Mr Zbořil and the co-rapporteur was Mr Chruszczow.

At its 455th plenary session, held on 15 and 16 July 2009 (meeting of 16 July), the European Economic and Social Committee adopted the following opinion unanimously.

1. Conclusions and recommendations

1.1 The EU glass and ceramics industry is an integral part of the Community’s economic structure, and is perhaps one of the area’s oldest industries, with a history dating back some 4,000 years. It is currently facing a number of challenges to its competitiveness, many of which have been driven by globalisation, increased environmental regulation and rising energy costs.

1.2 Both sectors are energy-intensive. Both use indigenous raw materials and their products are sold primarily within the EU (however, the container glass and tableware sub-sectors have a large export market, with tableware exported globally and glass packaging used for a major part of the EU’s high end exports). Between them, they have directly created almost half a million jobs and have led indirectly to a far greater number both in the raw material supply sector and in those sectors (notably construction) which use such products.

1.3 The products are absolutely vital at this stage of the Community’s development and there are not many competitive replacement materials readily available. Both sectors are exposed to competition from developing countries, which have profited from the more difficult business environment in the EU.

1.4 In terms of renewable energy generation and energy savings, glass products, if properly recycled, outweigh the energy used and the CO₂ emissions released in production. The use of these products is therefore essential in meeting European environmental objectives for housing, transportation and renewable energy over a service life which can last twenty years or more. Final disposal, after repeated recycling, is always emission free.

1.5 The EESC considers it important to address the key aspects which affect the competitiveness of the glass and ceramics sectors and to make the business environment in the EU more supportive, as has been recommended by both sector analyses (1). The specifics of both sectors should be taken into account, namely: the different applications and uses and the diverse range of products; environmental benefits; levels of energy intensity; the level of concentration in the sectors, together with their regional dimension; the share of SMEs in both sectors.

1.6 Experienced and dedicated labour resulting from the long tradition of the industries and crafts and from good quality education and training, as well as from the cultural and societal heritage in the respective areas and communities, is the most valuable and irreplaceable asset of the glass and ceramics industry. All policies should take into account this simple fact. Unfortunately, the impact certain policies may have on this valuable cultural and historical asset is often underestimated, if not overlooked.

(1) See footnotes 4 and 5.
1.7 Irrespective of the current economic downturn, there is a need to address the key issues of maintaining and enhancing the competitiveness of both sectors since they are systematic, not crisis-related.

1.8 First of all, the sectors should be supported in their drive for innovation as this will help the EU glass and ceramics industry to strengthen its position on the market, to improve its environmental performance and, naturally, to play a greater role in the efforts to mitigate the effects of climate change throughout society.

1.9 Thus, in the light of the sectors’ environmental performance and their expected contribution to mitigating climate change, their inclusion in the EU ETS should ultimately be established in a fair manner, which takes into account the life cycle analyses of the entire sectors, the benefits of which far outweigh the related environmental burdens. In short, all process industries should be exempted for the entire trading period up to 2020 from the auctions of allowances, which would remove considerable investment uncertainties and obstacles. This could significantly enhance the sectors’ competitive positions.

1.10 The impact of the EU energy and climate package on energy prices in the glass and ceramics industry – which also affects upstream supply chains – should be dampened as much as possible by well-functioning energy markets. In this regard, it is vital to promote competition in energy markets and the development of a pan-EU electricity grid that will lead to long-term security of energy supply.

1.11 Efforts geared towards increasing recovery ratios and subsequent use of recovered glass (which result in environmental performance gains due to improved energy efficiency and decreased carbon dioxide emission) should be supported extensively.

1.12 There is a need to enforce existing and, if necessary, new regulatory measures which are focused on eliminating unfair trading practices, such as counterfeiting of well-known designs or trademarks. The ‘country of origin’ could be also part of the solution. The EESC also welcomes the activities of consumers’ organisations and believes that they are a natural ally of production with high added value. The support of consumers’ organisations in the EU, but also in non-EU countries, is of the greatest benefit not just to customers, but also to companies producing high-quality goods.

1.13 Further political support and joint EU action could be helpful in terms of:

- removing import barriers in non-EU markets;
- improving access to proper market information for SMEs;
- facilitating access to public procurement exercises in emerging markets;
- removing trade barriers to raw materials from China;
- Promoting closed loop recycling of glass packaging in the EU.

1.14 The excellent environmental performance of many glass and ceramic products (insulation materials, double-glazed windows, etc.) should be promoted as an energy-saving benchmark for the EU construction industry. Furthermore, this technology should be included in any envisaged transfer of technology to those non-EU countries with high energy-saving potential. For example, a great potential exists in the post-Soviet countries in view of upcoming energy policy changes. Joint projects (such as CDM) can also help EU producers to offset their own CO₂ emissions.

1.15 Member State government incentives in the construction industry to favour optimum energy performance of buildings are the best instrument for supporting the glass industry and contributing to climate change policy.

1.16 The EESC recommends that EU authorities revive the Better Regulation concept that has become stranded without, in fact, any tangible (and badly needed) progress. In addition, any new regulatory act should be considered with much greater care, discussed with stakeholders involved and subjected to a far more rigorous impact assessment based on realistic data and not on unfounded assumptions. The business environment should be widened; any further restrictions run counter to sustainability principles.

2. Introduction: competitiveness considerations

2.1 The present Opinion, requested by the Czech presidency, examines the competitiveness of the glass and ceramics sectors as key examples of energy-intensive industries. Furthermore, this analysis, while concentrating on the impact of the EU climate and energy package, also takes into account other factors affecting the competitiveness of energy-intensive industries in general, and of glass and ceramics in particular.

2.2 On this basis, the EESC addresses a number of recommendations to policymakers as to how the glass and ceramics industry should be governed to maintain its competitive position and deliver all the beneficial effects it has to offer within the framework of the EU climate change policy (see previous section).
2.3 Ceramics and glass are basic materials such as steel, aluminium and other non-ferrous metals, chemicals, cement, lime and pulp and paper for instance, the production and transformation of which are energy-intensive and constitute an indispensable basis for industrial value chains (\(^2\)).

2.4 The competitiveness drivers of energy-intensive industries can be listed as follows:

2.4.1 Experienced and dedicated labour resulting from the long tradition of the industries and crafts and from good quality education and training, as well as from the cultural and societal heritage in the respective areas and communities. Such values are often very difficult to transfer elsewhere.

2.4.2 Sustainable technological innovation and product innovation. This is vital to achieve efficient substance and energy consumption, quality, reliability, economic efficiency, durability, environmental effects, and so on.

2.4.3 Availability of basic raw materials, preferably within the EU. Nonetheless, materials imported from politically safe regions at reasonable freight cost are also highly desirable.

2.4.4 Availability of energy, including primary energy sources. Such availability cannot be assessed solely on the basis of a functional energy network and energy pricing; security of energy supplies also plays a crucial role. The energy-related footprint must be judged over the entire value chain.

2.4.5 Competitive operations management and careful investment financing. On the one hand, raw materials and safe energy supply are the major cost items in the energy-intensive industries and account for a rather high percentage of total costs. On the other hand, such industries usually operate at very low margins and are capital intensive. All of this requires an extremely competitive operations management and careful investment financing.

2.4.6 Environmental sustainability and related energy and climate change regulatory framework. In the EU, these are very stringent for such basic energy-intensive industries, even though the environmental performance of energy-intensive industries has dramatically improved in the past two decades and further gradual improvements can be expected as a result of the implemented IPPC directive.

2.4.6.1 Special attention must be paid to the recently adopted EU climate and energy package (\(^3\)), which would severely affect the competitiveness of the energy-intensive industries, as has been generally acknowledged by the EESC, the European Commission, the Council and the EU Parliament in their relevant documents.

2.4.6.2 Numerous impact studies have recently been presented by both the authorities and the interested industries before and after the Package was adopted. These show clearly that energy-intensive industries are sensitive to carbon leakage and that the implementation of the Package must be carefully designed to take into account the economic downturn and the outcome of the COP15 negotiations to be held in Copenhagen in December 2009.

2.4.6.3 The basic material industries, including the glass and ceramics sectors, employ mostly fossil fuels and are affected by the costs of the various energy sources in a variety of ways. In addition to fossil fuels, they also have a rather high consumption of electricity.

2.4.6.4 So far, exposure to the cost impact of climate policy measures is one-sided – limited to EU countries and operations, while non-EU countries do not use instruments similar to the EU ETS on a compulsory basis. Even within the Community, the burden is limited to power-generation facilities and to energy-intensive industries alone.

2.4.6.5 In fact, the European energy-intensive industries have shown their positive attitude towards the climate-change policy and report an absolute reduction of the GHG emissions by 6% based on 1990 emissions, even though production volumes have increased. This demonstrates a real de-coupling of emissions and economic growth. On the other hand, this has not been a cheap exercise and the physical limits of individual technologies within these sectors should be taken seriously into account when further targets and reduction mechanisms are set.

2.4.6.6 While the power-generation sector can transfer the costs of climate-change measures directly into energy pricing policy, the energy-intensive industries have no such option: due to the fierce international competition from countries outside the EU, these sectors can benefit neither from cost transfer nor any windfall profit.

2.4.6.7 Thus, energy-intensive industries are exposed to the impact of the EU ETS twice over: firstly, they have to cope indirectly with the rising prices of electric power; secondly, they have to absorb the direct costs of the EU ETS. It is possible that recent decisions adopted by the Council and by the European parliament may partly alleviate the expected cost burden related to allowance auctioning – though, then again, this is just shifting this auctioning burden mostly into the post 2020 period.


2.4.6.8 The energy-intensive industries have undergone a profound technological change to stay competitive during the past twenty years and, as a result, the absolute reduction by 6% mentioned above has been achieved at a time when there was even an increase in emissions from the power sector. Thus, setting the same base year (2005) and the same reduction targets for power-generation and energy-intensive industries further exacerbates the disadvantageous situation of the latter. This means that they have achieved, in real operations, an absolute reduction of as much as 50% by the year 2005 on the Kyoto 1990 basis and the new emission trading scheme would force them to achieve a further 21% reduction compared to emissions reported in 2005. Under this pressure, those good performers will be penalised and would be forced either to limit their economic growth or even to reduce their economic activities – ultimately moving outside the EU economic area.

2.4.6.9 There is no doubt that such unilateral exposure can lead towards delocalisation and hence also the feared carbon leakage. Neither the current downturn and ensuing potential banking of saved allowances from the present trading period, nor the postponement of auctioning allowances into the future period can change the industry’s vulnerability if no adequate post-Kyoto deal is adopted internationally in 2009.

3. The EU glass and ceramics industry - major competitiveness drivers

3.1 The glass sector (4) broadly consists of manufacturing of flat glass, container glass, tableware (domestic glass), fibreglass and specialties. In 2007, the EU glass sector produced around 37 million tonnes (mt) of various types of glass worth about EUR 39 billion and accounting for 32% of the world’s output. Growth in output in the EU has been quite flat since 2000. In volume terms, container glass accounted for 58% of production in 2007, with flat glass at 27%. Tableware accounted for 4%, while insulating and reinforcement fibres accounted for 6% and 2% respectively, while specialty glass accounts for 3% of glass sector tonnage.

3.2 In terms of location, much is still located in the EU15 in particular, in Germany, France, Italy, Spain and the UK, which together accounted for 68% in 2007. The new EU Member States were responsible for 15%, while the rest of the EU15 accounted for 17%. Germany is the biggest producer overall, while production in the EU12 is concentrated in Poland and the Czech Republic. The glass sector in Germany, the Czech Republic and Poland represents part of the national heritage of these countries given its long history in these areas. Decorative glass and high quality crystal glass are also considered to be traditional art products.

3.3 Employment in the EU glass sector has generally been on a downward trend since 2000, driven largely by a combination of productivity requirements, increased automation, sector consolidation and low-cost competition. In 2007, the EU glass sector employed 234 000 people. The EU12 accounted for almost 40% of employment in 2007, indicative of the differences that exist between the EU12 and EU15 in capital and labour intensities. Most of the jobs in the EU12 lie within Poland and the Czech Republic, which together account for around 71% of employment in the EU12. Productivity per job was 160,5 tonnes in the year 2007.

3.4 Production in the glass sector is relatively concentrated in the case of the main sub-sectors (flat, container glass) while concentration in other sub-sectors (domestic, crystal) is not very high. These sub-sectors are therefore exposed to higher risks (market, financing, etc.), since smaller manufacturers suffer from a lack of resources especially in the current more severe business environment.

3.5 Overall, most sector output is sold within the Community; the figure was 90,7% in 2007 (tonnage). 3,496 mt were exported, which represents approximately 9,3% of total output. Domestic and crystal goods (25,4%) and specialties (38,6%) accounted for the vast majority of export tonnage. Export grew by 5,3% in 2007. In contrast, import recorded annual growth of 35,8% over the same period, exceeding exported tonnage (3,601 mt in 2007). The average price of exported glass was € 1 780,1/tonne which is significantly higher than the figure of € 1 159,5/tonne for imported glass. The largest importers by volume are China and Taiwan. Increasing volumes are also being imported by India, Turkey and Japan. Chinese flat glass imports have increased tenfold since 2004.

3.6 The EU glass sector faces a challenging period over 2007-2009 as economic activity slows in the wake of the credit crunch and demand slows. The construction sector looks to be especially vulnerable as household confidence and spending weakens and investment demand is curbed. Such development, of course, has a significant impact on the glass industry: approximately 90% of glass products are destined for industrial sectors manufacturing consumer goods (cars and other vehicles industries, the electrical engineering industry, the chemicals industry, the food industry, etc.) and the construction sector. The glass sector is to a large degree dependent on the stability and development of the above sectors.

3.7 These challenging conditions will be exacerbated by the expansion of capacity in countries neighbouring the EU. Over 2004-2009, an estimated 7,3 mt of production capacity will be added across several countries, including Russia, Ukraine, Belarus, Qatar, UAE and Egypt. Most of this increase will come in flat glass and container glass. With such expansion, trade seems likely to continue to grow and this reinforces the need for policymakers to ensure that EU glass producers are operating on the same terms.

(4) FWC Sector Competitiveness Studies – Competitiveness of the Glass Sector, October 2008.
3.8 The EU glass sector is faced with a number of competitiveness challenges, many of which have been driven by globalisation, increased environmental regulation and rising energy costs. The gradual increase in the number of comparable low-cost glass products being imported from emerging economies is a sign that the EU glass sector’s competitive advantage is diminishing, especially in the low-value product markets.

3.9 The glass sector faces environmental regulation concerning its energy use, CO₂ emissions, pollution prevention and waste, as well as other environmental regulations. Non-EU producers, especially from developing countries, have significantly less strict environmental legislation and thereby fewer production constraints and lower production costs. In addition to these issues, the EU glass sector faces the following competitiveness problems:

3.9.1 Downstream cost-cutting demands. The cost pressure resulting from intensified global competition in European industries, such as car production, consumer electronics, airline and retail, may affect the glass sector negatively. These industries are all direct or indirect customers of EU glass producers in one form or another; hence, globalisation has a knock-on effect on the demand profile of the EU glass sector.

3.9.2 Global excess production capacity in the sector. The European glass sector has excess capacity in several of its sub-sectors, including flat glass. This may adversely affect the European glass sector as it cuts profit margins; on the other hand, ramping up production to meet customer requirements after the crisis is over would be quicker.

3.9.3 Upward pressure on energy (and inputs) prices. Globally, increases in the demand for energy affect long-term supply and costs in the EU glass sector. This is a severe threat to the glass sector since it is one of the most energy-intensive industries and energy costs make up a high share of total production costs. It is important to draw attention to the domino effect of the EU energy-climate package: the glass and ceramics industry is expected to absorb the forecast energy price increase in its operations. This increase is due to a combination of factors, including emission trading, investments in generation capacities and transmission grid and the need to ensure a higher share of renewables in the energy mix in the power generation sector. In addition, the prices of basic raw materials, such as soda ash or sand, could also rise in line with the trend in energy prices.

3.9.4 Working conditions regulations. A number of regulations with respect to working conditions affect input materials and the way they are stored, handled and used in production. Many countries outside the EU have less strict regulation and consequently lower production costs. Nevertheless, EU industry operators accept their responsibility for care in this field.

3.9.5 Trade restrictions and counterfeiting may hinder export to non-EU markets. Many export markets impose tariffs on goods from the EU. A high rate of duty is imposed, for instance, on EU products sold in the United States. The competitiveness of many EU glass manufacturers has suffered due to the counterfeiting of EU-origin designs by non-EU firms. This is currently a severe problem for many producers and is expected to continue to be so in the future if not tackled properly and thoroughly. At the same time, design-related industries benefit from support in the form of initiatives such as the Commission’s China IPR SME Helpdesk, customised training materials and workshops and individualised front-line advice on IPR problems.

3.10 In 2006, the EU ceramics sector produced and sold around EUR 39bn worth of various ceramics products. Growth in output has been very modest in recent years. The two largest sub-sectors are the wall & floor tile sub-sector and the bricks & roof tiles sub-sector. Together with vitrified clay pipes, they constitute the group of building clay materials accounting jointly for 60 % of the ceramic industry in product value. Refractory products, table and ornamental ware, sanitary ware and technical ceramics represent respectively 13 %, 9 %, 10 % and 5 % in terms of product value. The major producing regions are Germany, the UK, Spain and Italy. Germany is a major producer across most of the sub-sectors, as is the UK; Italy and Spain are both major centres of production for ceramic tiles, bricks and roof tiles and, to a lesser extent, sanitary ware. Production in the new Member States (NMS) of the EU appears to be strongest in the Czech Republic, Poland, and Hungary, which all have strong ceramics sectors and have traditionally exported to other EU countries. However, the NMS’ share in the EU ceramics sector is relatively low.

3.11 It is worth mentioning that while most of the factors characterising and affecting the glass sector also apply to the ceramics sector, one significant difference remains. Whereas the glass sector is quite highly concentrated, the ceramics sector has very few large concentrated and integrated production plants.

3.12 Employment in the EU ceramics sector has generally been on a downward trend since 2000. The level has been falling, driven largely by a combination of productivity requirements in the face of increasing low-cost competition. In 2006, the EU ceramics sector employed 330 000 people, down slightly from the 360 000 in 2003. The largest employers are the wall & floor tile and the bricks & roof tiles sub-sectors. In 2006, they together accounted for around 52 % of employment in the ceramic sector, followed by the table and ornamental ware sector with 22 %.

(©) FWC Sector Competitiveness Studies – Competitiveness of the Ceramics Sector, October 2008; Eurostat 2006.
3.13 Typically, around 20-25 % of the EU ceramics output (more than 30 % for wall and floor tiles) is exported beyond the EU. Import penetration varies from 3-8 % in, for example, floor & wall tiles and refractory products to over 60 % in tableware and ornamental ware. The major export markets for the ceramics sector are the US, then Switzerland and Russia. The recent trend has been for a deterioration in the trade balance due to increased low-cost competition in EU markets from the likes of China and Turkey, continued restricted access to some non-EU markets and the gradual appreciation of the Euro against most currencies since 2000. Consequently, trade, and in particular the terms of trade for EU exporters, have become fundamental issues for the ceramics sector.

3.14 The EU ceramics sector is faced with a number of competitiveness challenges, many of which have been fuelled by globalisation and increased environmental regulation.

3.15 In some product categories, particularly in the tableware sub-sector, the EU’s competitive advantage, based on innovation and design, is increasingly being eaten away as a result of low-priced exports from emerging countries to the EU and to other key markets. The EU is still nevertheless a major global player in many sub-sectors, especially in wall and floor tile manufacturing.

3.16 The second key competitiveness factor that the EU ceramics sector faces is increased environmental regulation and control in general, but more particularly the burden generated by the EU ETS. Although energy costs represent on average 30 % of production costs in the ceramic industry, CO₂ emissions per ton are low. The ceramic industry has accounted for more than 10 % of all industrial installations under the EU ETS but less than 1 % of CO₂ industrial emissions covered. As a result of the adopted revision of the ETS Directive, around 1 800 ceramic installations should be covered by the EU ETS in 2013. These installations will represent less than 1.5 % of CO₂ industrial emissions covered by the ETS. It is important to stress that ceramic plants are mainly small installations, with 40 % of installations emitting less than 25 000 tCO₂/year and 70 % less than 30 000 tCO₂/year.

3.17 The cost structures of energy-intensive ceramics producers are being disadvantaged by increasing input prices – a feature of some of the EU ceramics sub-sectors is that they are highly reliant on a range of virgin raw materials, an increasing proportion of which is being imported from non-EU countries. The review illustrates how the lack of competitiveness of inputs into the ceramics manufacturing process, especially in energy markets, is hindering the competitiveness of EU ceramics producers.

3.18 The main competitiveness problem that the EU ceramics sector faces is a sharp rise in the volume of ceramics imports from non-EU countries where environmental regulation is less stringent and health and safety laws are more relaxed. Relatively high levels of EU regulation have meant that EU ceramics producers are no longer competing on a level playing field in the global environment and this has created a number of competitiveness challenges, but also a diverse range of competitiveness prospects.

3.19 In this context, the cost structure of the ceramic industry (high energy and labour costs), the relatively low profitability of the sector and the growing competition both in the EU and on exports markets will make it extremely difficult for ceramic producers to pass on to the consumer the additional costs linked to CO₂ allowances. Moreover, the technologies and techniques used in ceramics production to minimise energy use by kilns are already advanced and major increases in efficiency are unlikely in the near future.

3.20 The ceramics sector needs a highly-skilled workforce and must have the necessary tools and skills to operate the technologies and cooperate across different departments, regardless of their location. This represents a challenge for both SMEs exploring global opportunities and large companies operating across several countries, as can be seen in the case of the brick sub-sector. The skills base can be improved by focusing on life-long learning, by making the sector more attractive and through targeted training programmes.

4. How can the glass and ceramics industry contribute towards EU sustainability, including the Copenhagen Conference agenda?

4.1 Bearing in mind sustainability in its entirety, we should assess the pros and cons of both the glass and ceramics industries. Both sectors are based on indigenous, domestic mineral resources abundant enough to secure their longevity in the EU economic area and also globally. These sectors have to a large extent managed their environmental impacts and do not pose any special risk to human health, either occupational or public.

4.2 We should not currently expect any breakthrough in innovation in the glass and ceramics production processes. Glass is melted and ceramics fired at very high temperatures, which means that there are physical limits to the reductions which can be made in terms of carbon dioxide emissions, limits which these sectors are fast approaching. Unfortunately, these physical limits were not taken into consideration when drawing up the revised EU ETS as they were not included in with other energy intensive industries with inherent emissions from their manufacturing technologies.
4.3 Technologies and processes used in these sectors are also advanced in terms of energy consumption and carbon intensity. They are not a climate problem, but rather an integral part of its solution. The glass sector, for instance:

- helps to reduce carbon dioxide emissions by saving energy, through its use as an insulator,

- helps to generate carbon-free power in renewable energy production,

- has associated carbon emissions which are far lower than the carbon benefits, and

- has diverse other societal benefits, such as medical and food preservation, which make them sustainable.

4.4 Glass belongs to a group of materials which have a very high recycling rate. Typically, there are recycling loops in the manufacturing process. It is, in certain respects, a waste-free technology. Recovered glass makes up a substantial part of the material used, primarily in the manufacture of container glass. Its recyclability does not have any physical limits in terms of this material's life cycle. Recycling systems have been organised throughout Europe achieving a recycling rate of 62% in 2007 for container glass. Any efforts to increase the recovery ratio and use of recovered glass can improve the resulting environmental performance in three ways: (1) it can improve energy efficiency: 1% increase of recovered glass ratio lowers energy consumption by 0.25%; (2) it can lower carbon dioxide emissions: 1% increase of recovered glass ratio reduces CO₂ emissions by 0.47%, and (3) it can save raw materials: using 1 tonne of recycled glass to make new glass saves 1.2 tonnes of virgin raw materials.

4.5 In practical terms, glass products can help to reduce energy consumption and thereby the emissions of CO₂, e.g. in buildings by the use of insulation glass fibre or low-emissivity glazing. Roof and wall insulation could save 460 mt per annum (p.a.) (more than the EU's total Kyoto commitment). For instance, should all single/double glazing in the EU be replaced by low-emissivity double/triple glazing, this could avoid annual emissions of 97 million tonnes of CO₂. That is equal to 21 mt of oil equivalent or the annual energy consumption of buildings for 19 million inhabitants. Fibreglass used to reinforce plastics in wind turbines and glass materials employed in the automotive industry (e.g. to reduce energy demand through reduced air conditioning requirements) are other applications resulting in CO₂ emissions reduction.

4.6 Solar technologies are projected to expand enormously over the next ten years, with glass currently playing a key role in transparent materials for photo-voltaics and concentrating solar power systems including solar chimneys, solar biofuel generation, solar photo-catalysis, water purification and desalination. These applications have a short GHG payback time and environmental compatibility with sustainable energy principles. The various subsectors responsible have a key role to play in supporting and developing these applications and their continued location in the EU is of paramount importance both from an academic and a manufacturing viewpoint.

4.7 GHG emissions amount to 20 mt in the entire glass sector and to 27 mt p.a. in the ceramic sector. In both sectors the inherent reduction potential is very limited. This means that the inclusion of the glass and ceramics sectors in the EU ETS makes little physical or economic sense. What is more, it risks jeopardising the potential GHG savings. Similar estimates can be presented for nearly every basic, energy-intensive industry and any excessive costs should be avoided when taking decisions on the carbon leakage issue and benchmark-based allocation for the third trading period. Separate benchmarks are needed to take into account the diversity of the different sectors and subsectors. These should take account of the different production techniques, energy requirements and the physical potential for plants to reduce emissions.

4.8 Due to the low level of concentration, the wide variety of products and the low quality of publicly available statistics, fair implementation of the EU ETS will be very problematic for the ceramic industry. Concerning the assessment of the exposure of the ceramic industry to carbon leakage, the issue of data availability and consistency can only be solved by aggregating the relevant data at a 3-digits level (NACE rev. 2-2008). At such a level of aggregation, exposure to 'carbon leakage' can be demonstrated for three ceramic sub-sectors, namely 'refractory products' (NACE 23.2), 'clay building materials' (NACE 23.3) and 'other porcelain and ceramic products' (NACE 23.4).

4.9 The ceramics sector does not have the same potential in terms of GHG savings as the glass sector, although the thermal insulation properties of modern bricks and tiles and mineral fibre deserve to be mentioned. Nevertheless, the ceramics sector is a good example of sustainable consumption and production thanks to inherent product properties such as durability and hygiene, as well as aesthetic values. Once produced, most ceramics have a potentially long life and many require no further maintenance.

4.10 There is one very important sub-sector within the ceramics sector; the production of refractory materials. Such materials are vital for many industries which operate at high temperatures: iron and steel, glass, lime and cement. These chemicals could not exist without high-performance refractory materials that support and facilitate the use of the most efficient technologies in the above sectors.
4.11 The major requirement for progress in terms of general competitiveness and particularly of energy efficiency and environmental performance is extensive and efficient R&D. This is true for all sectors of both glass and ceramics but particularly for the special glass sub-sector which generally dedicates the highest proportion of its revenue to innovation due to the rapidly developing nature of the manufactured product. Though this is not a major one in terms of tonnage and employment, it is of the utmost importance for the evolution of this subsector that it remains located within the EU.

4.12 In the short term, the stringent environmental and energy regulations and, in addition, the absence of an international level playing field, will place immense pressure on EU SMEs and stifle the private funding of innovative investments and R&D. However, environmental regulations also provide an incentive to invest in R&D for the purpose of improving energy efficiency and limiting the dependency on traditional energy sources. As a consequence, the share of energy in total production costs can decrease. Yet, these are long-term effects which will require significant entrepreneurial action and risk taking.

4.13 To date, recent regulation requirements and tightened standards have led to increased innovations in energy efficiency and the optimisation of products in environmental and health and safety terms. New recycling techniques are also being developed. Nevertheless, further progress in ceramics recycling is somewhat limited due to the nature of the product.

4.14 With further research, ceramics can be made even more attractive as a cleaner alternative. One example of recent products is clay blocks with improved thermal insulation that are energy intensive in production and can also help save energy when used in construction. Another example would be the use of ceramics in automobiles. Here they can serve as the enabling technology for many critical components in engines of the future because of their unique heat, wear and corrosion resistance, light weight, and electrical and heat-insulating properties. Cars of the future may use ceramics integral to their engine structures as well as in wear-resistant applications in fuel systems and in additional components in valve trains, such as valves and valve seats. Cars of the future may use ceramic fuel cells for near-emission-free operation.


The President of the European Economic and Social Committee
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