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## **Introduction**

### **1. The UK Cement Industry**

The British Cement Association is the trade and research organisation that represents the interests of the United Kingdom's cement industry in its relations with Her Majesty's Government, the European Union and relevant organisations in the United Kingdom. The members of the BCA (Buxton Lime Industries, Castle Cement, Lafarge Cement UK, CEMEX) are the major domestic manufacturers of Portland cement producing over 90% of the cement sold in the UK. Climate change services are supplied to Quinn Cement by BCA. Consequently, this paper represents the views of all UK domestic cement producers.

Energy represents an ever escalating component of the variable costs of cement manufacture (now well in excess of 60% taking account of electricity and kiln fuel) and it is therefore a primary concern of the industry to take all cost effective measures to improve energy efficiency and thereby reduce emissions of carbon dioxide.

Through their parent companies, Lafarge Cement UK, Castle Cement, and CEMEX UK Cement are committed to carbon reductions through the World Business Council for Sustainable Development Cement Sustainability Initiative, (WBCSD CSI). In addition, Buxton Lime Industries has undertaken to adopt the commitments within the WBCSD CSI.

### **2. Goals and Targets**

Importantly, the energy review recognises that the UK is well on target to meet its Kyoto commitment and as such does not need to take radical decisions to meet its international commitment. To ensure equity with cement industry colleagues in mainland Europe BCA urges UK Government to replace the aspirational goal of -20% CO<sub>2</sub> by 2010 with the UK Kyoto agreed improvement of 12.5%. Alternatively, Government's aspirations could be modified to meet a 20% goal by 2012, consistent with Kyoto, and incorporating reduction in all greenhouse gases not just CO<sub>2</sub>. In addition, BCA notes that carbon dioxide emissions from the UK cement industry are already more than 20% below the 1990 level<sup>1</sup>. In accordance with the Climate Change Agreements the industry has already committed to meeting targets on fuel efficiency and waste derived fuel use, thereby demonstrating the cement industry's commitment to climate change and waste recovery targets and illustrating that further caps on CO<sub>2</sub> emissions are not necessary.

### **3. Climate change policy measures**

BCA believes that consideration should be made to removing the requirement of the UK Climate Change Levy to those installations covered by EU ETS. The Levy, as a domestic driver for energy efficiency, has now been replaced by the EU ETS as an international economic instrument. In accordance with 'cost effective

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<sup>1</sup> 24% reduction in carbon dioxide between 1990 and 2004



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emissions reduction' the additional cost to the cement industry incurred by the levy could be used to further our GHG reductions. The continued duplication of carbon reduction between the UK CCL and the EU ETS is contrary to the interests of "Better Regulation" – a concept espoused by both the Community and UK government.

In addition to requiring duplication of effort by government and industry, the UK Climate Change Levy also has other structural shortcomings. The Levy has the potential to provide distortions in the construction product market. The Levy is applied differently to sectors competing in the same end use markets. At present the steel industry is provided with a concession against the Levy under the Climate Change Levy (Use as Fuel) Regulations where solid and liquid fuels are used for a 'dual purpose'. This concession has not been formally extended to the same degree to industries such as cement where the thermodynamic justifications are identical. The poor science behind the establishment of the regulations associated with the "dual fuels" provisions of the UK CCA, essentially represents discrimination between industry sectors.

The Climate Change Levy Agreements, may have in some sectors contributed to energy efficiency. However, in energy intensive industries such as cement, the efficiency savings have resulted from good business management and product/energy market pressures. Government therefore needs to take account of market pressures as effective drivers to deliver energy efficiency. In this respect, BCA does not believe that the CCL has met its objectives since external factors contributed far greater in managing energy consumption. With the development of the EU Emissions Trading Scheme there now is considerable overlap between policies that are designed to address the same issue of climate change. In the cement sector the CCAs promote the use of alternative fuels and this aspect of the climate change policy should be retained to ensure that the UK does not lose an important waste recovery outlet. However, with the introduction of EU ETS there is no longer any need, beyond Phase I of the EU ETS, for a cement sector climate change agreement. Also given the added complexity of double trading, the added compliance issues, the intricate verification issues and the huge burden on the technical management of industry during the first three months of the year resulting from the overlapping issues for CCA EUETS and Double Counting there is no cost benefit from CCAs for EU ETS operators. In the event that the Chancellor fails to take our advice and refuses to discontinue CCL for EU ETS operators it is essential that the 80% rebate in CCL is automatically accorded to EU ETS operators and their requirement for completing CCA verification and associated bureaucracy is withdrawn.

Government has acknowledged that electricity prices will rise by 6-12%<sup>2</sup> due to the EU ETS. (BCA members are reporting much larger changes and these are reflected in the "forward pricing curves"). In a sector with high energy intensity, such as cement, these price increases, and good management practices, ensure that electricity is used efficiently. The climate change levy rebate should therefore be available to those sectors covered by the EU ETS not only for the EU ETS installation but also to the electricity used by that installation under the current CCA installation boundary. This could be achieved by an adjustment of

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<sup>2</sup> EU Emissions Trading Scheme announcement on the revised UK cap  
27th October 2004 Questions and Answers



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the 90:10 rule to e.g. 60:40. The BCA would advocate the complete removal of the CCL and/ or CCAs for all EU ETS installations, thus removing duplicated effort by both operators and government and thereby helping to meet the objectives of better regulation. The Climate Change Levy is unbalanced in that it perversely taxes sales of electricity from low carbon sources (e.g. nuclear) at the same rate as carbon-intensive sources (e.g. coal) and is applied only to business consumers with the domestic sector being exempt. As such one of the most important aspects of an energy review is the requirement to rationalise and harmonise the disparate elements of energy and climate change measures in order to provide a simple policy mixture to achieve carbon reductions. It should therefore be an imperative of the energy review to remove the existing double regulation for industrial consumer's whilst at the same time providing efficiency and consumption reduction drivers for domestic consumers.

#### **4. Market Framework**

There is no fundamental reason why the UK should fear energy import dependence in itself, but the level of risk this poses to consumers depends on the adequacy of import infrastructure. Although the cement industry uses only a relatively small quantity of natural gas, our industry is not unaffected by the gas market infrastructure which has important consequences for the cost of electricity.

BCA supports the efforts of the UK government and Ofgem in pressing for full liberalisation of European energy markets. Government should recognise that markets alone, will not deliver the sort of levels of long range gas storage or other 'strategic' infrastructure that is, correctly regarded as essential in other import-dependent countries. The cost of not having access to such facilities, as recent price spikes have demonstrated, is a growing vulnerability to supply, leading to volatile and increasingly uncompetitive consumer prices.

BCA believes government should endorse a balanced energy policy, recognising the potential benefits to security of supply of retaining high load capacity whilst developing further low or no carbon options.

The EU Emissions Trading Scheme as it is currently constituted results in windfall profits for the most carbon intensive generators and at the expense of to consumers. This fails to ensure emissions are reduced in the short term or to provide the requisite signal to investors that ensures they are reduced in the long term. This risks the practice of emissions trading (which in principle we support) into disrespect internationally.

The current confusion of trading, targets and non-carbon based taxes has succeeded in distorting the energy markets and raising consumer prices, consequently a single measure is needed to internalise the cost of carbon in power generation and provide transparency for consumers.

#### **5. Demand side reduction**

In the cement sector, significant early action has taken place. The chart in *annex I* identifies the performance of the cement sector under the climate change



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agreements. This demonstrates that between 1990 and 2010 energy efficiency will improve by 25.6%.

However, all sections of the economy should be required to contribute to reductions in emissions, not only industry. On the demand side, the government should ensure that domestic consumers are subject to the same sort of pressure to conserve energy as are applied to industry.

## **6. Security of supply**

Interaction between the liberalised UK market and the less-liberalised continental energy market distorts UK energy prices, and as a nation the UK becomes more reliant on imported gas supplies. A liberalised EU energy market will become increasingly important to ensure energy supply security. Concerns over the impact of liberalisation have been exacerbated over the winter of 2005/06, with the interconnector operating at less than 60% of its upgraded capacity for much of the time. Lack of transparency in the EU market means that it is difficult to determine the exact cause. However, Ofgem can see no evidence that there was a shortage of Continental gas. Indications are that it could be a result of 'security of supply obligation' on suppliers in Europe, which means continental suppliers are not responding to price signals. Ofgem has calculated the cost of this to UK plc as being £3 billion per annum.

Measures that impact on energy intensive industries exposed to international competition should be proportionate and result in a net reduction of global carbon emissions, not merely their redistribution to other parts of the world. Just as important as the security of energy supply is the security of supply of essential building materials. We have seen recently that investments in the UK cement industry have been discouraged by energy and climate change pressures<sup>3,4</sup> with a consequential investment loss of nearly £300m. The energy review should seek to encourage UK industrial investment by providing security and certainty in energy supply along with energy prices which are competitive with the rest of the world.

## **7. Cost of carbon and electricity**

The cost of carbon is being set by the electricity supply industry (ESI), the cost of electricity and the cost of carbon are inextricably linked (*annex II*) by the 'cartel like' approach of the ESI, despite a free allocation of EU ETS allowances. The ESI is passing through to consumers the full cost of carbon on all electricity regardless of whether it is generated by fossil fuel, nuclear or renewable sources. The lack of international competition in the ESI means that large industrial consumers of electricity such as cement are paying for four aspects of carbon

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<sup>3</sup> CEMEX UK Operations (14<sup>th</sup> March 2006) has announced that following the completion of a feasibility study, the company has suspended an application for planning permission for a new cement plant at Barrington, Cambridgeshire "due to uncertainty over the future of CO<sub>2</sub> strategy in the UK".

<sup>4</sup> Lafarge Cement UK (21<sup>st</sup> May 2004) confirmed that it is delaying the development of its new cement works at Snodland in the Medway Valley



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dioxide, twice for direct process and combustion emissions and twice for electricity carbon from both non-carbon and carbon generation. **Annex III** describes the windfall profits received by the ESI.

## **8. Nuclear**

BCA does not see why the nuclear industry should require different treatment from other generating technologies, whether in respect of subsidies for fuel production, waste management, decommissioning, or otherwise. It is now time for government to take a decision on the future of nuclear. Further deferral of this decision will only provide more uncertainty for UK consumers and investors. Government have not incentivised enough the use of self-generation for industrial uses. Planning and financial considerations continue to provide barriers concerning wind generation. The cement industry is a large electricity user but due to regulatory constraints and the lack of incentives this presents barriers to the development of self generation.

## **9. Load management**

Short term security of supply in the electricity industry is traditionally provided by having spinning generators available to take up emergency supply requirement and high cost fuel generators waiting on standby for fast run up to generation. The heavy industrial users of electricity such as cement manufactures have the ability to load manage, to shed load quickly in an emergency and to reduce load considerably through periods of predicted shortfall. This was shown by these installations signing up to systems such as TRIADS etc. The use of efficient load management techniques are not encouraged by the current electricity pricing arrangements and consequently the generating system is not running at its optimum efficiency.

## **10. Renewable and waste derived fuels**

In the UK, the power generation sector has been set increasing targets of up to 10% renewables by 2010 by the Renewables Obligation. Renewable Obligation Certificates can be sold by the renewables generator either with, or separately from, the electricity generated. The incentives and penalties associated with the Renewables Obligation offer restrictions to the use of renewables to the power generation sector. As such those industries, such as cement, that have the technical ability to use biomass fuels are constrained from doing so by the influences and distortions of the biomass fuel market by the Renewable Obligation Certificates.

At the national level BCA would like to see an open and unbiased market in biomass to facilitate the replacement of traditional fossil fuels in all sectors.

One means of facilitating the uptake of biomass fuels would be to incentivise the growth of energy crops in the agricultural sector. As such Government should adopt the recommendations of the Royal Commission on Environmental Pollution



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study on the use of biomass for heat and power production<sup>5</sup>. Furthermore the use of non-bio waste as fuels could be expanded with a provision that creates a zero carbon consideration for both bio and non-bio waste derived alternative fuels. Waste derived fuel use is considered carbon free under the climate change agreements but under the EU ETS only biomass is considered carbon free.

The cement sector is unique within manufacturing industry as it is a net user of waste-derived materials as replacement raw materials or as fuels. Through targets in the Environment Agency sector plan, the industry is committed to further reduce its own waste arisings, whilst increasing the quantity of waste-derived materials used. The cement industry contributes as a significant waste recovery option for UK industrial and domestic waste producers. In this regard Government should recognise ‘replenishable’ waste energy in the same regard as ‘renewable’ energy.

The use of renewable obligation certificates by the electricity generators has two effects on the cement industry. Firstly it increases the cost of electricity because with the current pricing arrangements for the generating industry all added costs are passed on to industrial customers through the forward pricing curve; secondly the resulting high price of renewable fuels that can be used by generators cannot be afforded by those not earning ROCs.

### **11. Low carbon technologies**

There is a role for government in supporting research to accelerate the development of new carbon abatement technologies, whether in research institutions or private industry. The cement industry is committed to a clear path of carbon dioxide reduction<sup>6</sup> and has begun to investigate the opportunity for Carbon Capture and Storage (CCS). At present research into CCS is dominated by the ESI and oil companies. As one of the largest single point emitters of carbon dioxide with a higher carbon dioxide concentration in the exhaust gasses than other industries the cement industry provides an ideal opportunity for CCS research. Government should do more collaborative research to investigate CCS options for industrial emitters such as the cement industry and not concentrate its research funding on the ESI and oil sectors.

### **12. Use of Thermal to reduce heating and cooling energy in buildings**

In addition to encouraging the use of CHP in buildings and greater use of renewable technologies, there is still plenty of scope for the Government to capitalise on energy saving improvements to the building fabric, especially in the field of thermal mass. However, uptake of this technology would benefit from greater recognition within government initiatives such as the Code for

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<sup>5</sup> Biomass – as a renewable energy source. Royal Commission on Environmental Pollution. Special Report Launched 11 May 2004

<sup>6</sup> Working Towards Sustainability – a report from the UK cement industry on its progress towards sustainability



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Sustainable Homes and the Building Regulations; recent revisions to Part L1 of the Building Regulations, which deals with conservation of fuel and power in dwellings, have largely failed to credit the use of thermal mass and much more will need to be done to realize the full potential of this simple but effective technology.

Thermal mass is a term used to describe the ability of a material to absorb and retain heat. It can be used to good effect in the fabric of a building by allowing it to absorb excess heat gains during the day and subsequently releasing them at night with the aid of natural or mechanical ventilation. This process has the effect of moderating the temperature swing within the building and lowering the peak temperatures experienced during the summer by approximately 3°C<sup>7</sup>.

Traditional masonry built houses and larger buildings incorporating concrete elements provide a high a level of thermal mass and perform particularly well. For example, the energy consumption of a naturally ventilated high thermal mass office is typically about half that associated with a modern, good practice air conditioned office such as Building Type Three described in Econ 19<sup>8</sup>. This is particularly important given the recent findings of research undertaken by Arup and commissioned by DTI, which highlights the key role that thermal mass is set to play in minimising overheating and helping avoid air conditioning as climate change drives up temperatures. Predicted changes in the UK climate, indicate that average annual temperatures are likely to increase by 2°C to 3.5°C this century<sup>9</sup>. This will result in warmer summers and increase the demand for energy intensive air conditioning systems. To counter this, the exploitation of thermal mass in building design could make a useful contribution in preventing growth in this area. As the operation of buildings account for approximately 50% of the total UK consumption, even a small improvement in this sector will translate into significant savings in both energy and CO<sub>2</sub> emissions.

As the largest procurer of construction industry services, Government is in a privileged position for setting the benchmark for sustainable construction projects for schools, hospitals, other public buildings, as well as transport infrastructure projects. These too should not be short term solutions, but look to the longer term and be based on whole life performance not just initial or lowest cost. The same principles should be extended to local government.

Thermal mass is a 'built in' solution and as such requires little effort or education of the occupier. Carbon dioxide reductions that are delivered in this manner are long term and applicable to residential, commercial, tenants and owner occupiers.

The use of thermal mass is not limited to preventing overheating problems in the summer; a simple and effective technique for lowering the energy consumption of dwellings is to make use of passive solar gains during the heating season. This is known as passive solar design (PSD). If incorporated at the design stage, the space-heating requirement of individual houses can be reduced by around

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<sup>7</sup> Building Research Establishment. Information paper IP6/01. Modelling the performance of thermal mass. N Barnard, P Concannon, Denice Jaunzens. April 2001. 12 pp.

<sup>8</sup> Energy Consumption Guide 19. Energy Use in Offices. Best Practice Programme. 2003

<sup>9</sup> Climate Change Scenarios for the United Kingdom. The UKCIP02 Briefing Report. April 2002



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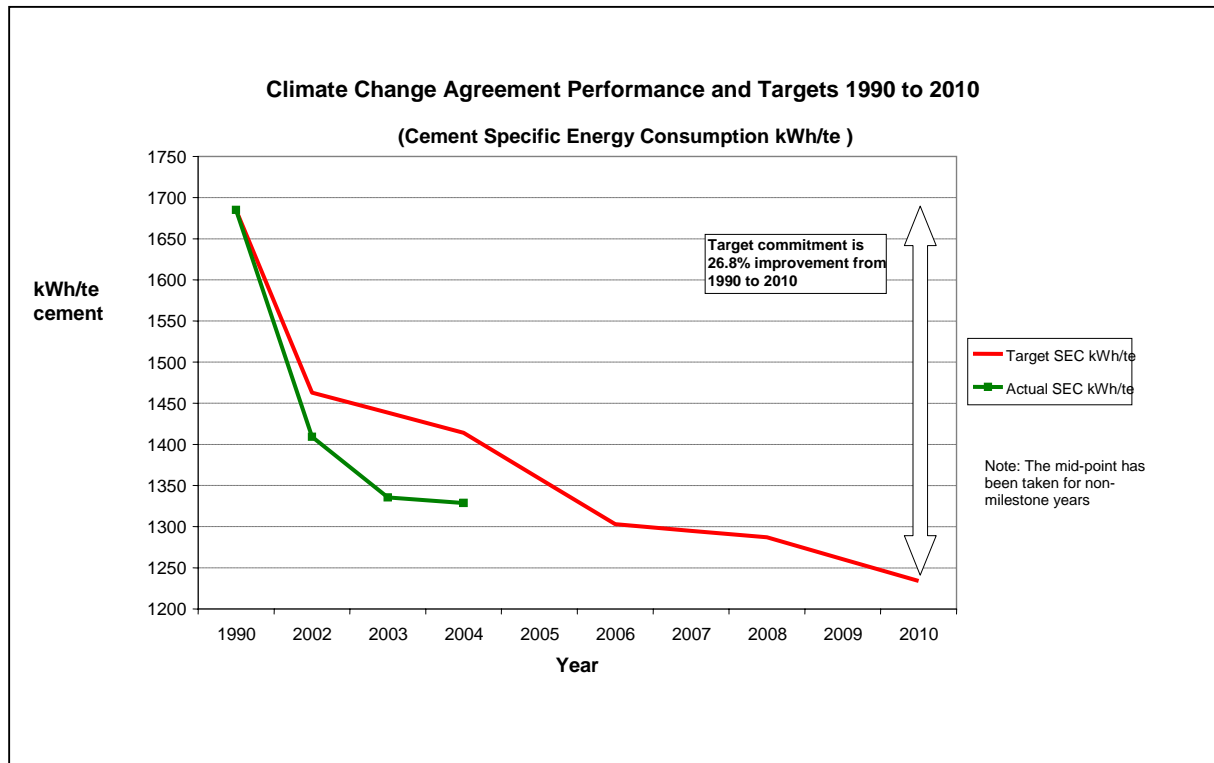
1000kWh/year through the adoption of simple PSD measures. Non-domestic buildings - offices, schools, factories etc - can also benefit significantly from PSD. The DTI has spent £20 million on R&D projects for this technology, but the findings and recommendations are not reflected in the ODPM administered Building Regulations; the revised edition of Part L1 takes no account of PSD, which would offer designers another technique for helping to meet the increasingly demanding requirements for energy efficient buildings. The use of PSD is particularly relevant given the recent speech by Elliot Morley at the Sustainable Communities summit, when he specifically talked about the importance of reducing energy consumption over the lifetime of a building, and asked what could be done to increase the pace towards carbon-neutral homes? Recognition of PSD in the government's new Code for Sustainable Homes would address both of these points and be an important step forward.

One of the requirements for PSD is a reasonable level of thermal mass in the building fabric to soak up solar gains. This also has other energy related benefits as a move towards greater thermal mass in new housing could help smooth out peak energy demands during cold snaps. This is because it helps ensure a stable internal temperature that is slow to respond to sudden changes in the weather. It also provides a more secure and comfortable environment for elderly people since the thermal mass will help maintain an acceptable internal temperature if for any reason the energy supply for heating is interrupted.

Energy policy, building regulations, waste and climate change policies and environmental taxation currently each reside in a different government department. In order that further steps towards a more sustainable future can be made it is imperative that public policy is overseen, co-ordinated and guided from one point, rather than been scattered through a variety of government departments, each with differing agendas and priorities.

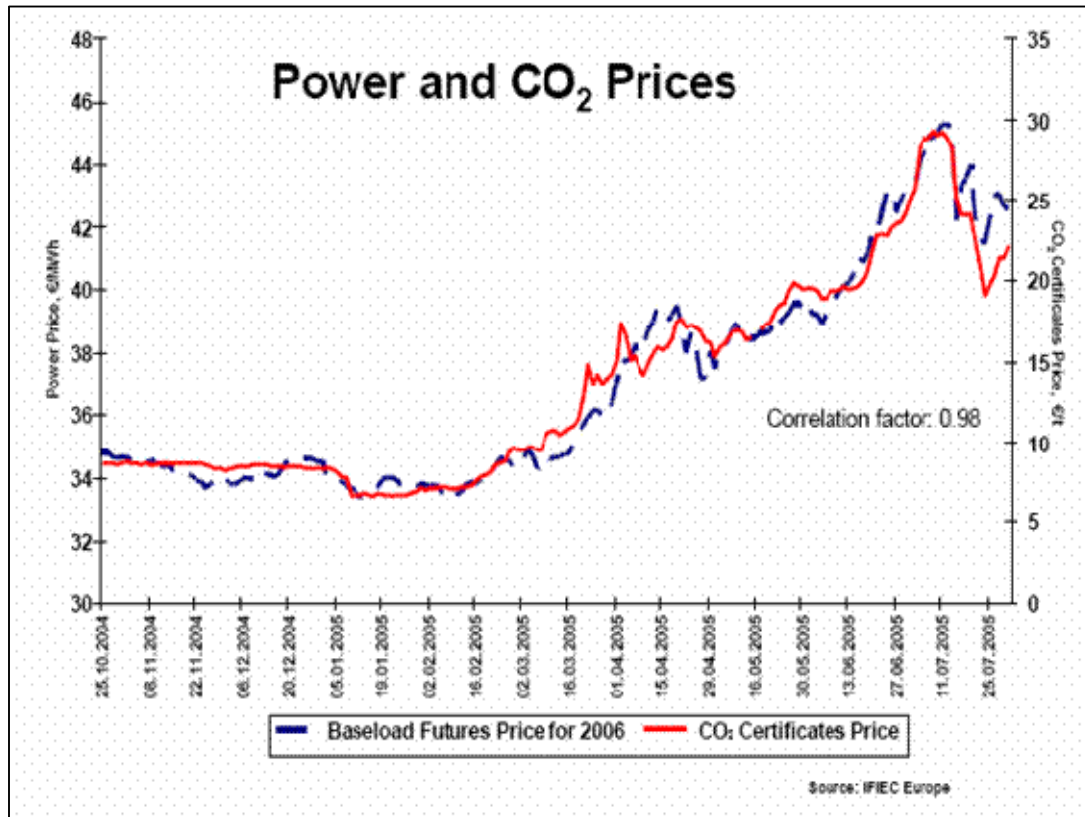


## Annex I





## Annex II





### Annex III

**An initiative supported by the International Federation of Industrial Energy Consumers (IFIIEC), Ford Europe and Solvay.**

**Yes to Emissions Trading but No to Windfall Profits!  
Call for action towards solutions**

**THE PROBLEM: EMISSIONS TRADING SHOULD NOT BE A PRETEXT FOR A HIKE IN ELECTRICITY PRICES**

In the absence of real competition in the European power market, power companies may be tempted to charge the extra cost of acquiring allowances within the European Emissions Trading Scheme (EU-ETS) regardless of the production source of the electricity. Emissions trading will in fact lead to a higher cost for power from fossil fuelled plants but will not impact power generation from renewable, hydropower, nuclear and biomass.

The problem is that, as power prices are set on the basis of marginal cost, which is normally determined by fossil fuelled production, the market price will include the cost of CO<sub>2</sub> allowances. As power prices will be the same for all sources even if generated from non-CO<sub>2</sub> or a CO<sub>2</sub> neutral source, windfall profits will be generated.

*Deregulation has not brought true market opening. EU-ETS may therefore serve as a pretext to further increases of electricity prices leading to unjustifiable windfall profits for power producers at the expense of Power Intensive Industries.*

If this is to happen, power intensive industries – whether or not covered by the Emissions Trading Directive (ETD) - will see their competitiveness seriously impaired. Those industries are subjected to harsh international competition as the prices of their products are generally set in a global market place.

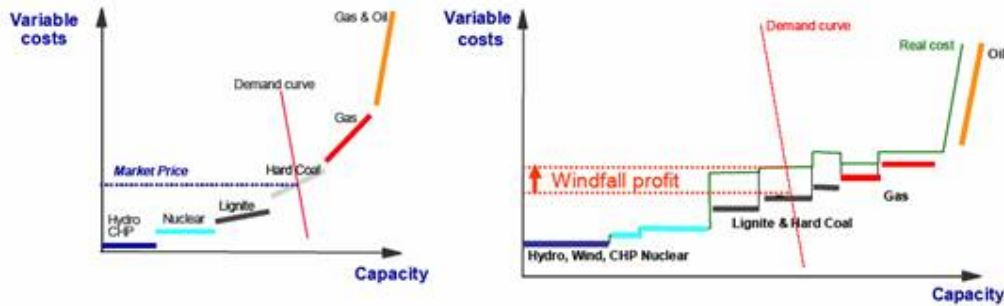


Emissions trading, which is a tool to reduce CO<sub>2</sub> emissions, should not become the pretext for such price hike in the electricity market.

This scenario is now broadly recognised by European institutions as well as by various stakeholders. If this scenario were to proceed, the indirect impact of the EU-ETS would be much more important and damaging to the competitiveness of power intensive industries than the direct impact! Solutions must be found before January 2005.

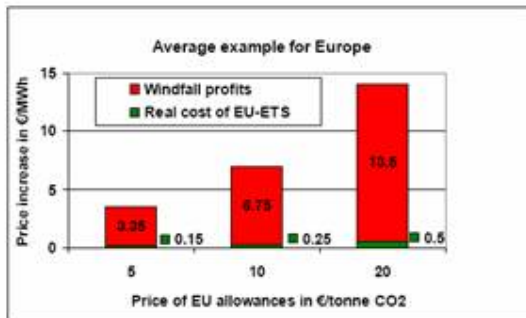
**PRICE FORMATION – AN ILLUSTRATION**

The following two figures illustrate how windfall profits may be generated. The power price is set hourly by the short-term variable cost of production of the marginal supplier; fuel costs are the most significant part of variable costs. The opportunity cost calculation implies that the price of all allowances (including those that are free of charge) will be added to the marginal electricity cost.



**PRICE FORMATION – AN EXAMPLE**

With 0.7 tonne CO<sub>2</sub> per MWh for fossil fuel-based electricity and a price of € 10 per tonne of CO<sub>2</sub>, the impact of the EU-ETS on marginal cost is around € 7. However, assuming that a large part (90%) of the allowances are allocated for free, and are based on the actual percentage of fossil fuels in power production, the real cost of emissions trading should be around € 0.25 per MWh on average in Europe.



*This graph gives the real costs of EU-ETS versus the windfall profits for different EU allowances prices.*

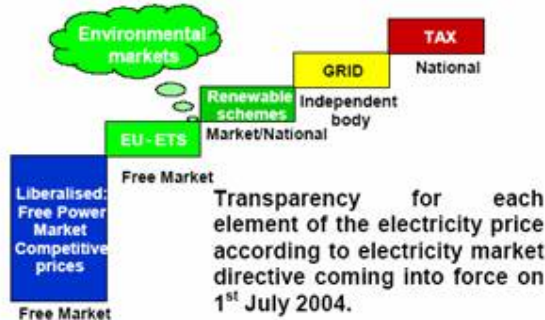
In the absence of a solution, the impact on the Power Intensive Industries as a result of windfall profits in the power industry would amount to € 2.5 billion per year based on an EU allowance price of 10 €/tonne CO<sub>2</sub>.



**TOWARDS SOLUTIONS**

The Alliance has presented the **concept** of a solution which would require **neither** amending the Emissions Trading Directive **nor** regulating the electricity market. On the contrary, the concept is fully in line the Electricity Market Directive (Directive 2003/54/EC).

**Concept of a transparent power pricing**



*The Alliance has proposed a concept for a transparent and cost reflective CO<sub>2</sub> pricing by separating the electricity market from the CO<sub>2</sub> market exactly as it is the case today for renewable energy.*

**CALL FOR ACTION TOWARDS SOLUTIONS**

The Competitiveness Council has recognised the problem and has called for an extended impact assessment with a specific focus on the effect of the EU-ETS on the competitiveness of European Industry having regard inter alia to possible effects on electricity prices.

The European Commission will monitor electricity prices at appropriate regional, national and European levels to ensure that prices are reflective of economic fundamentals, without manipulative price-setting by the supply-side.

Power Intensive Industries are convinced that all European stakeholders share a common interest in ensuring the reduction of CO<sub>2</sub> emissions whilst maintaining an industrial base in Europe. They have brought up the issue with EURELECTRIC which has confirmed its intention to share their views and expertise with the Alliance in order to work towards solutions.

The Alliance of Power Intensive Industries expects that a consensus between all stakeholders can be reached and urges the European Commission and national authorities to take the necessary steps towards solutions.

*The Alliance in numbers*

The alloys, cement, ceramics, chlor-alkali, glass, iron & steel, lime, non-ferrous metals and paper industries represent a total turnover of about 295 billion Euro, and provide employment to 1.4 million people in Europe.

In the absence of a solution, the impact on the above Power Intensive Industries as a result of windfall profits in the electricity industry would amount to € 2.5 billion per year.