The Voice of OECD Business

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THOUGHT STARTER

Carbon Leakage and Competitiveness Impacts

Introduction

There is broad consensus on the need to mitigate global climate change. As part of the response, governments around the world are discussing and implementing policies to cut greenhouse gas (GHG) emissions in order to move towards a lower carbon economy. However, COP15 failed to meet the expectations for establishing an international agreement and the implementation of environmental policies still relies – in the short term at least – on unilateral and regional commitments.

The debate on the form and extent of public intervention required to address climate change invariably raises issues surrounding the competitive impact of environmental policies on industries. While some sectors are likely to grow, other sectors, such as existing domestic carbon intensive industries exposed to international competition, may incur sizeable competitiveness and output losses from unilateral and regional emission reduction action. One particular concern is that asymmetric environmental policies will reshape international comparative advantages, incentivising such industries to defer investment decisions, or worse, move away from countries where environmental measures are more stringent, to jurisdictions not subject to the same requirements. Should this be the case, global carbon emission reductions would be eroded, giving rise to the phenomenon of 'carbon leakage', i.e. an increase in carbon dioxide emissions (and economic activity) in one country as a result of an emissions reduction by another country.

Competitiveness impacts should not be downplayed

According to the OECD, fears of competiveness losses or "carbon leakage" are a major concern in many OECD countries, making it difficult in some cases to put in place the policy measures needed to meet ambitious climate goals. However, analysis by OECD and others

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suggests that these concerns *may be exaggerated*.[1] The OECD's opinion rests on the premise that if all developed countries were to take action on emissions reductions, the carbon leakage rate would then be below 2%.

BIAC has, on many occasions, expressed strong concerns about general statements that downplay the competitiveness impacts on certain sectors, in particular when quoted out of context. Heavy exposure to international competition and limits to passing through further cost increases are the main arguments. In increasingly globalised markets, the competitiveness of heavily internationally exposed industries would be challenged by their inability to pass through the higher production costs into their final prices, which would have serious implications for countries, regions and jobs. These industries are, in most cases, internationally competitive, but for the carbon price.

In addition to direct impacts for certain sectors, the indirect CO_2 impact on electricity prices is a decisive factor. In many OECD countries, industries have to pay marginal fossil fuel based power prices with additional renewable levies. In contrast, parallel industries in other locations may be able to benefit from long-term bilateral power contracts and regulated pricing. It is also important to consider broader issues, such as food security, energy supply and raw materials availability, as well as the need to maintain a manufacturing base. An outcome in which emissions are reduced by industry relocating elsewhere followed by their products being imported is not the intended aim, nor is it a positive result for the environment or a country's economy.

Business has on many occasions called for a more thorough assessment of such implications. Several industries have provided position papers and background studies on their competitiveness concerns, for example regarding the implementation of a full auctioning mechanism (see annex).

There is a need to look at the consequences of low carbon strategies in a broader perspective; otherwise we face the risk of implementing counterproductive low carbon strategies. When forming a Green Growth Strategy, it must be based on the fundamental understanding that carbon intensive production is contributing to growth as well as green technology solutions. Therefore a balanced approach is required.

In this context, it should be considered that many energy intensive products have a very long durability. Also, they are often recyclable. Furthermore, energy intensive products play an important part of many "green technologies", both as raw materials (e.g. in windmills), and in energy/carbon emission reducing technologies (e.g. insulation, energy efficiency in buildings through thermal mass, glass etc.).

Hence, many energy intensive products contribute to reducing carbon emissions and they are a fundamental part of the solution in the transition to a low carbon economy.

[1] Interim Report of the Green Growth Strategy: Implementing our commitment for a sustainable future – Meeting of the OECD Council at Ministerial Level, 27-28 May 2010, p.43.

If no international agreement is reached and environmental policy implementation stays asymmetrical, relocation of some industries outside the CO_2 regulated areas would undermine the overall achievement of carbon reduction and lead to major competitiveness impacts for certain sectors and regions. In this context, the effects of common but differentiated responsibilities on carbon leakage should also be carefully analysed. What is needed is a truly global level playing field, bearing in mind that capital is, after all, mobile. A truly inclusive international agreement should therefore remain the key objective of policy makers.

The need for well-balanced research and close cooperation with industry

Assessing carbon leakage accurately is a difficult task. Investment decisions are based on multiple aspects and many factors influence the ability to pass on the costs of climate policies. Good quality, careful and well-balanced research is needed to create the necessary tools to monitor and report on both economic and environmental impacts to inform policy discussions. BIAC therefore urges the OECD to complement its macro-economic analysis with studies reflecting specific impacts on key sectors and regions, as many regions rely on specific sectors. Micro-economic impacts should not be overlooked. Regarding growth indicators, employment impacts should be considered, taking into account transitional and local considerations, lack of flexibility in the labour market, barriers to mobility, etc. Concerning indicators on carbon emissions, carbon footprints should be considered within a full lifecycle context and how they are connected to specific sectors through the value chain.

The advantages, disadvantages and basic assumptions of the economic models used for macro-economic simulations should be clearly stated, and the results should be communicated with the necessary qualifiers in an objective way. Data collection on climate footprint is a very complex issue, since it should apply a lifecycle perspective on different products, which is a strong requirement for business to handle. In addition, as the OECD has itself recently suggested, the emergence of fragmented production processes demonstrated through global value chain analysis makes it difficult for current indicators to capture more detailed patterns of specialization and competitiveness, which are a feature of the modern world economy. Also, modellers should be challenged to show how they have (or failed) to take account of the inability of sectors with market-driven global pricing platforms, such as the London Metal Exchange, to pass through regionally imposed costs. A general conclusion that business is exaggerating the effects of competitiveness losses should therefore be avoided. And even if the carbon leakage rate were “only” 2% or below, this would still have major impacts on countries’ overall competitiveness, so these impacts should not be referred to as “insignificant”.

BIAC recommends that government and industry approaches should be more closely aligned, and industry studies should form an integral part of the data OECD and others rely upon. Early engagement with industry to establish the nature and scope of what is required is essential in this context. Trade associations, in particular, are well placed to provide an effective source of data collection. It is important that there is full transparency between

government and industry/trade associations on data collection and methodology of analysis. In addition to further research on the impacts, an evaluation of how best to use transitional exemption measures, such as awarding allowances via benchmarking, would be helpful.

Unilateral trade measures are not the right way forward

An international agreement is the preferred option to address the problem of asymmetric environmental policies. Business is deeply concerned about the discussions on unilateral trade measures to combat global warming and maintain competitiveness, which are currently being considered in some OECD countries. Such measures are unlikely to resolve competitiveness challenges and carbon leakage, and will almost certainly undermine climate co-operation. The difficulties in implementing such measures, as well as their unintended effects, are often underestimated.

In the absence of a global price of carbon, a system of border adjustments would require detailed assessments of emissions associated with foreign production of imports and any regulatory costs associated with those emissions, which would require extensive administrative capacity. Moreover, they would be counterproductive to sectors with value chains, endangering the downstream chain. Furthermore, border adjustments applied to imports that cover allowance costs for energy used in production, but not incorporated in the final product, as well as border adjustments on exports may not be considered WTO compliant. Whatever the motivation for such unilateral trade measures, there is a considerable risk in creating a spiral of trade protectionism, whereby every WTO member could "adjust'' the regulatory differences through border levies or special taxes on imports.

Competition will be distorted and, even if in the short run some domestic companies benefit from the extra protection provided by trade measures, this initial advantage will, over time, turn into a competitive disadvantage, due to the disincentive for companies that are temporarily protected to invest in innovation, seek new business opportunities and be more efficient. Moreover, unilateral trade measures can trigger trade protectionism, could damage the integrity of international environmental treaties and make it more difficult to achieve a much needed global climate change agreement.

Conclusion

The way "green growth" is perceived is a major challenge in forming the right policies that will bring about a low carbon economy. The growth potential in a green strategy lies just as much in sectors that are linked to the so-called "green" sectors, i.e. both suppliers and users connected to specific sectors through the value chain. This also includes energy intensive industries. Policies should enable *all* industries to embark on sustainable production paths.

There is broad agreement within the OECD business community that climate change is a global challenge requiring concerted action by all sectors of society. Business remains committed to exploring further opportunities for emission reductions to reduce the risk of

climate change. For business, it is vital that policy makers develop an effective global response that is based on a sound understanding of the economic implications of climate change and climate change policies. This response must encourage the contribution of the private sector in achieving low carbon economies by fostering innovation in renewable energy technologies and improved energy efficiency, and by allowing business to allocate scarce resources more effectively.

Addressing climate change brings business opportunities, not only in the area of energy technologies, but also to energy intensive industries with efficient production processes. However, there is a risk that addressing climate change unilaterally will incur significant costs for internationally exposed, carbon-intensive industries and damage their competitiveness. The cost-effectiveness of policy action should therefore be an over-arching consideration. The best way forward to address the competitiveness concerns of specific sectors is through global coordinated action to address climate change, which creates a level playing field for business while giving a long-term signal for the necessary investment to address climate change to come forward. BIAC calls on the OECD to support multilateral co-operation to address climate change positively and to speak out strongly against unilateral trade measures to combat climate change.

Further research will be necessary to assess competitiveness impacts for certain sectors in the case of unilateral action. It is also important to evaluate how best to use transitional exemption measures, such as awarding allowances via benchmarking. Such analyses should be carried out in close cooperation with the industries under consideration, and a mechanism should be put in place for a regular review of data and emerging needs. Results should be communicated with the necessary qualifiers, bearing in mind the complexity of this analysis. We look to the OECD to highlight the indispensible supportive role of open trade, provide the necessary economic analysis for policy makers to base their decisions on sound analysis, and refine its analysis on competitiveness impacts, taking into account regional and sectoral implications. Business stands ready to work closely with the OECD on further analysis in this area.

ANNEX

Different sectors of industry have widespread concerns over the competitiveness and carbon leakage impacts that arise from unilateral environmental policy. The following sector-specific examples illustrate some of the reasons for these concerns.

Steel

Steel's main contribution to building a lower carbon future will be in the use of new steels. Steel production is energy intensive and the threat of carbon leakage is high because the industry is fiercely competitive with over 40% internationally traded, and over 60% produced in non-OECD countries.

Any significant difference in the price of carbon used in the basic oxygen steelmaking route or in the price of electricity used in the electric arc furnace steelmaking route based on recycled scrap will create significant problems with carbon leakage as production facilities are switched to non-OECD countries. Border taxes risk accelerating the transfer of key steel using industries such as power generation, automotive and machinery to non-OECD countries.

Steel companies around the world, acting under the auspices of the World Steel Association, have a common programme for climate change action. This includes the measurement and reporting of CO2 emissions by steel plants around the world to identify the potential for improvement and international collaboration on research and development on breakthrough technologies. We are at the limit for the potential for CO2 emission reductions based on present technology in the industry.

Cement

Auctioning is not a good option for the cement sector. A Boston Consulting Group (BCG) study commissioned by CEMBUREAU estimated that without free allowances allocation, clinker and cement production will be offshored.[2] The risk of offshoring is largely dependent on the carbon price per tonne. With price/t above 35 Euros, the cement industry will face complete offshoring. With CO_2 price set at 25 Euro/t, the risk of off-shoring will largely vary by country with Italy, Greece, Poland and UK at risk for 100% and Spain for almost 100%, while Germany for 75% and France for 65% of its cement industry.

Four scenarios have been envisaged by BCG with a baseline CO_2 price per tonne of 25 Euros. In the case of full auctioning, over 80% of the clinker industry is at risk. "*This will*

[2] The Boston Consulting Group (2008), 'Assessment of the impact of the 2013-2020 ETS proposal on the European cement industry'.

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)". In the case of free allowances, no reallocation is considered, and production will be able to cover the current demand plus the extra-demand expected by 2020.

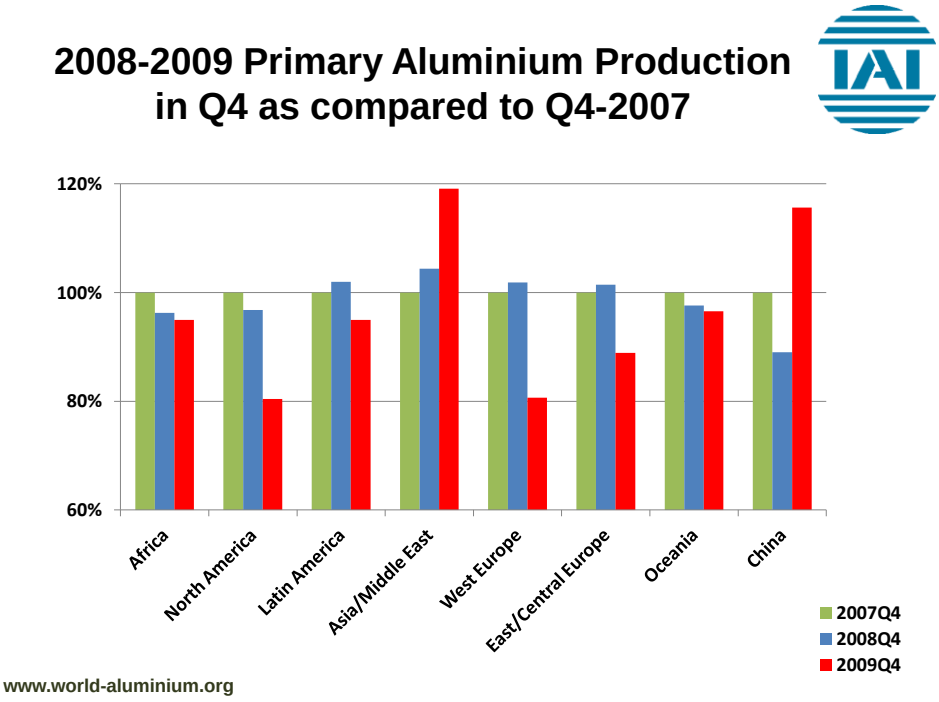
Aluminium

Aluminium is an energy-intensive globally-traded commodity/metal, quoted on the London Metals Exchange (LME). The cost of energy has been – and remains – a major determining factor in the investment decisions relating to the global location of aluminium smelter production facilities, reflecting the large capital-intensive and long-life nature of the individual smelters.

Energy costs were at the heart of the closure of the Japanese aluminium smelting industry in the late 1970s/1980s and the complementary growth in Australia driven by the availability of competitive electricity prices based on low cost coal resources. Energy costs will continue to impact the investment decisions by the aluminium industry – and any climate change policy interventions that change the relative price of electricity in different countries/regions will also contribute to, or drive, "production leakage".

Even in the case of exemption of direct GHG emissions from aluminium production under the EU European Trading Scheme (ETS), competitiveness problems arise due to the increase in electricity prices resulting from the EU ETS. Electricity costs account for around 35% of sector's total production costs. The additional cost caused by the imposition of the EU ETS represents a comparative disadvantage for Europe in attracting and/or retaining aluminium production activities. Looking at the regional share of aluminium production, the EU accounts for under 10% of global production, while the latest data for the industry shows China's share of global production at around 35% in 2009 – and on track to reach 40% this year.

In the CE DELFT's view, there seems to be no room for further cost-pass through opportunity in the aluminium industry and further cost increases will be translated into import penetration and loss of market share; operational margins are likely to decrease. As a consequence, both profitability and competitiveness are at risk and increases in carbon leakage are part of a very likely scenario. CO2 costs passed through in electricity prices or incurred in self-generation have been a significant contributing factor to recent closures within the EU-25, with incremental European demand being supplied from other regions not facing a carbon price. For example, some companies, operating in Europe, recently have established new facilities in places such as the Middle East Gulf *(see slide below on primary aluminium production).*



Non-ferrous Metals

Like aluminium, the other non-ferrous metals sectors, like copper, zinc, precious metals and nickel, have a global price setting mechanism and no pass through abilities of locally incurred costs. They will only enter the ETS post-2012. The highly electro-intensive EU copper and zinc sectors are the most energy efficient in the world and are already impacted by the ETS pass through in electricity prices as stated above for aluminium. Similar to aluminium, closures in the zinc sector have already occurred.

The impact of direct EU ETS costs is expected to be severe as well. Installations that use coal or oil in areas with no gas grid – or where gas is not the best fuel to use – will have to buy a substantial amount of allowances. Particularly in remote areas and for complex metals recycling, this will impose substantial costs, leading to structural carbon leakage.

In addition, the current plans could include an extra reduction factor on grandfathered process emissions. These process emissions (e.g. due to organic or carbon feed, or due to fuel oil or coke used (as reducing agent) to melt and reduce scrap or other recycling materials) are unavoidable in these processes, and this also applies with metals recycling. Moreover, in the metals industry, these process emissions have a recognised very low reduction potential, and so consequently, any reduction factor would be an additional carbon tax on the industry.

Moreover, this reduction factor will negatively impact metals recycling (processing and treatment of scrap or other metal containing materials) by putting a cap on the growth of recycling, while specific support for recycling activity should be expected to encourage

metals recycling within the EU. Without free allocation of allowances, strategic European scrap and other secondary raw materials will be increasingly lost to non-EU27 countries, which are already eagerly purchasing the EU raw materials, often treated in less environmentally and socially protective ways.

European Petroleum Refining

In a report dated October 2007, NERA Economic Consulting underlined that the EU Emissions Trading Scheme (EU ETS) would impose a direct cost of carbon dioxide (CO2) emissions on industrial plants (installations) subject to the scheme, including installations in the petroleum refining sector. In this context, various industry representatives and Member State governments have raised concerns that the EU ETS could affect the competitive position of EU producers, because it imposes costs on them that are not faced by non-European producers.

Cost differences are a concern not only because they would have financial implications for affected industries, but also because a loss of market share to foreign competition could result in "emissions leakage," the displacement of emissions from the EU to other countries. This review, undertaken by a NERA team on behalf of the European Petroleum Industry Association, provides background and an initial characterisation of the competitive position of the European petroleum refining industry in light of the EU ETS. The report sets out important conceptual issues, identifies the economic factors relevant to an assessment of industrial competitiveness, compiles relevant, available information for the refining sector, and identifies areas that merit further investigation.

See: http://www.nera.com/67_5328.htm

Fertilisers

The EU conducted a study on the carbon leakage exposure of many manufacturing sectors as part of its introduction of a new ETS commencing from 2013 (ETS III). The EU's nitrogen fertiliser industry was found to be the most exposed manufacturing sector to carbon leakage. Cost pressures from the proposals for ETS III will be greatest among European manufacturers of nitrogen fertilisers which have ammonia plants that are the most efficient in the world.

Fertilisers contribute substantially to greenhouse gas reductions, with a reduction effect secondary only to insulation. If fertilisers were not available, the yield from agriculture would drop by between 30 and 85 percent in different regions of the world. The absence of mineral fertilisers would require an extra 1,100 million hectares of land to be farmed, which at 1.5 tons of CO_2 per hectare, translates to 1,600 million tons of CO_2 (or equivalent greenhouse gas) currently being saved by fertiliser use. Fertilisers provide an important balance between

food production, coping with an expanding population, and preserving natural land while tackling climate change.

From ETS III, the industry would face significantly increased carbon costs on ammonia and nitric acid production, both of which are essential intermediates in the fertiliser manufacturing process. A study commissioned by Fertilizer Europe found that if the European nitrogen fertiliser industry is subject to full auctioning of emission allowances in line with the Commission's stated intentions, then the likely additional cost to the European ammonia industry would be about €0.9 to 1.4 billion; and for the nitric acid industry, around €1.5 to 2.5 billion.[3]

The European fertiliser industry continues to make its case for suitable benchmarks safeguarding against carbon leakage. Going into autumn 2010, the industry is likely to engage in discussions addressing appropriate benchmarks, the issues arising from competitors benefitting from state-fixed gas prices in Eastern Europe and North Africa, and the simple impact of unilaterally imposed carbon costs on the profitability of the industry.

ETS III proposals call for free emission rights based on benchmarks calculated from the average performance of the best 10% of European ammonia and nitric acid plants. In reality, this means that only 5% of the industry will be afforded "free emission rights". Global market supply and demand dictates fertiliser prices, so many European manufacturers in the OECD are unlikely to be able to pass on the significant additional environmental costs and will lose out to competitors, typically in non-OECD regions including North Africa, Russia, and parts of Asia. Due to competitiveness losses, many plants would have to close, resulting in capacity expansion in countries where less severe environmental regulations apply.

As an additional point, European agriculture would become highly dependent on the pricing policies of Eastern European and Central Asian countries. Capacity to contribute to increased agricultural demand, and even Europe's own food security, could be endangered. Recent evidence shows that carbon leakage is already occurring. In the absence of a binding global agreement on GHG reduction and carbon emissions, the fertiliser industry is concerned that the current EU ETS III proposals will have an impact contradictory to the intended effect. This will put the industry at a severe trading disadvantage to less efficient global competitors and will increase overall GHG emissions.

[3] Pellervo Economic Research Institute: 'The Effects of the Emissions Trading Directive for the Period Starting in 2013 on the European Nitrogen Fertilizer Industry'.