
Tackling Leakage in a World of Unequal Carbon Prices

Executive Summary

Author:

Susanne Dröge

Contributing authors:

Harro van Asselt

Thomas Brewer

Michael Grubb

Roland Ismer

Yasuko Kameyama

Michael Mehling

Stephanie Monjon

Karsten Neuhoff

Philippe Quirion

Katja Schumacher

Lennart Mohr

Wojciech Suwala

Yukari Takamura

Tancrede Voiturez

Xin Wang

October 2009

Climate Strategies aims to assist government in solving the collective action problem of climate change. Sponsors include departments from European government and other stakeholders

 Climate
Strategies

Executive Summary

This report summarises the findings from the Climate Strategies project “Tackling Leakage in a World of Unequal Carbon Prices” led by Susanne Dröge, Senior Researcher at SWP – German Institute for International and Security Affairs. The project investigated the potential for carbon leakage as a result of unilateral climate policies for specific energy-intensive sectors in Europe and latterly the US and Japan. Remedial policy measures for addressing carbon leakage are proposed and analysed.

The debate about carbon leakage was at the heart of the policy process that resulted in the EU Emissions Trading Directive of 2008. In particular, the fear is that unilateral carbon costs for EU industry would lead to more imports from non-EU regions without carbon caps and the offshoring of European production. If this occurred, the EU carbon reductions would not fully contribute to global emission reductions, creating carbon leakage. The effectiveness of the EU climate strategy would be undermined. The EU ETS Directive foresees free allocation of emission rights for “sectors at risk of carbon leakage”. The project has paid special attention to this tool, but also to the adjustment of carbon costs at the border as part of a portfolio of tools which can level the carbon costs. The report offers a multi-disciplinary analysis of the instruments and touches on legal, practical and political issues that arise concerning trade and climate policy.

A number of uncertainties will influence the effectiveness of the action taken against carbon leakage, including the outcome of the COP 15 of the UNFCCC, global economic recovery and industries’ reactions to the final outcome of the benchmarking procedure for free allocation, conducted by the EU Commission until mid-2010. The changes in the international policy and business environment demand that any action on leakage is reviewed in due course in order not to build an obstacle to an international effort to fight global warming.

The investigations in this report are not limited to the EU, but also look at future carbon pricing in the US and Japan. Accordingly, the measures to address carbon leakage have been investigated with a view to a multilateral understanding of the scope of the challenges and the potential impact of addressing leakage for the international climate agenda.

The principal findings

- Carbon price differentials for international businesses, and thus leakage challenges, are likely to prevail for the mid- to long-term. This is because of the slow process of establishing national emissions trading schemes or carbon tax systems, and the difficulties of linking them.
- A unilateral EU ETS with full auctioning of emission rights after 2013 would create the potential for carbon leakage, which this report calculates using a model for the cement, aluminium, steel and electricity sectors. The simulations show that carbon leakage is likely for cement, steel, and aluminium due to cost and market structures, and the integration in international markets. Although these three sectors are high profile cases, they differ significantly in their exposure.
- The ability to pass through the costs of carbon incurred by an ETS differs along a set of sector characteristics, including direct and indirect costs, impacts on operational costs, capacity utilization or vertical integration. For these features we suggest a screening approach. Ignoring these characteristics when implementing remedies against carbon leakage will, at worst, neither deliver the carbon price signal for low carbon production in the ETS territory, nor tackle carbon leakage from energy-intensive sectors.

- While cement and clinker production, basic iron and steel, as well as aluminium, clearly qualify for a closer screening and individual cost compensation measures, other energy-intensive sectors might also need compensation once the carbon price rises. These include some basic chemicals, pulp and paper, refineries.
- Different measures to address leakage work best in different sectors, offering policymakers a portfolio of tools. A sector-based procedure would enable the phasing-out of tools that become redundant, following international developments within sectors and in conjunction with the UNFCCC climate agenda. For instance, if an international sectoral deal was reached for one of the energy-intensive industries, the leakage potential would decrease. The same applies if an emissions trading scheme covering these sectors was established in the major trade partner countries.

Assessment of policy options

- To level carbon costs downwards, policymakers can use free allocation of certificates, or output-based rebates, which are a refund to producers. There is a fundamental trade-off when using this tool because policy-makers have only limited control over the reaction of industry to carbon price differentials between countries. In order to narrow down the scope of carbon leakage, these compensatory free allowances have to be linked to the existence, availability or production of the installation. Designed in this way, the allocation of free permits reduces leakage but the carbon price will be distorted. A lower carbon price reduces the incentive to become more efficient or to invest in low-carbon technology, especially in those sectors that receive the free allocation.
- As free allowances could create an actionable subsidy to producers, there is the potential for conflict if major economies strategically apply this tool in a race to support their industries in international markets.
- Border adjustment can be used to level costs upwards for imports to an ETS or downwards for exports from an ETS. As they are paid only if goods cross the border, they are the most targeted tool for compensating trade-exposed producers in specific sectors. In particular, for clinker production - a homogenous and carbon-intensive product - an import cost adjustment would level the carbon costs upwards and would eliminate the incentive to substitute domestic clinker by imports to the ETS.
- Export taxes by trade partner countries can be compared to a carbon pricing system by importers. For China, the past export taxes on steel and aluminium created a similar per tonne CO₂ price as the EU ETS does. For clinker or cement, as this report illustrates for China, such an effect would only be achieved if the export tax would reach unreasonably high levels. The major climate policy attention when assessing the export tax effects would need to be focussing on the actual commitment of a trade partner to tackle the emissions from heavy industries over a mid- to long term.
- Any unilateral imposition of border measures, such as an inclusion of importers into an ETS, needs to be designed in a WTO-compatible way, in particular by not discriminating amongst trade partners. While this is manageable in some instances, for example by declaring all importers as users of best available technology, the priority should be a multilateral understanding on the limitation of any ETS border adjustment. If policymakers aim for unilateral action, or if there is coordinated action by major industrial countries, trade partners with diverging interests could challenge the legitimacy of such measures.
- There is a fundamental case for an international agreement on emissions reductions by countries or by sectors and global carbon pricing. Measures addressing leakage should be made compatible with these long-term ambitions. This has implications for policymakers as it is not

possible to fully accommodate private actors' demands for a reliable mid- to long-term regulatory framework that addresses carbon leakage, while at the same time taking into account a constantly changing international business and policy environment which determines the degree of carbon leakage and the terms of competition.

Sector case study: Cement

As part of Climate Strategies' project on tackling leakage, Gregory Cook has written a working paper addressing issues regarding 'Climate Change and the Cement Industry', assessing sector emissions and policy responses to carbon prices.

Cement production is a very energy-intensive process and there are few short-term options for emissions savings. Only a small percentage of total production is traded, largely due to high transportation costs. Given these characteristics, a number of studies have explored leakage potential in the cement sector. A range of estimates have been produced, based on different modelling assumptions, which suggest that in the absence of policy measures to address carbon cost differentials, carbon leakage-to-reduction ratios of between 40-73% may be possible.

Fixed free allocation may be ineffective in reducing leakage where carbon prices are high. Due to the sector composition, short-run profits can be maximised by reducing output and selling surplus allowances. Output-based free allocation would address this issue but would be more complex to introduce.

Border adjustments are viewed as a more suitable instrument for the cement sector because of the relative global homogeneity of best available technologies used in production. Similarly, available data indicates that there is a marked lack of variation in the energy and carbon intensity of production between major cement producing regions. As such, differences in competitiveness attributable to differences in carbon costs may be easier to identify than in other sectors and border adjustments can be made relatively accurately.

This is the conclusion reached in the paper, suggesting that border adjustments may represent the most suitable short-to medium-term unilateral response to tackling leakage concerns in the cement sector from both an environmental and economic effectiveness viewpoint.



Climate Strategies aims to assist governments in solving the collective action problem of climate change. It connects leading applied research on international climate change issues to the policy process and to public debate, raising the quality and coherence of advice provided on policy formation.

We convene international groups of experts to provide rigorous, fact-based and independent assessment on international climate change policy. To effectively communicate insights into climate change policy, Climate Strategies works with decision-makers in government and business, particularly, but not restricted to, the countries of the European Union and EU institutions.

Contact Details

UK - Managing Director: Jon Price (jon.price@climatestrategies.org)

US - Research Director: Thomas L. Brewer

Secretariat: Climate Strategies c/o University of Cambridge

13-14 Trumpington Street Cambridge, CB2 1QA, UK

+44 (0) 1223 748812

www.climatestrategies.org