

PMR TECHNICAL WORKSHOP

Carbon Leakage: Theory, Evidence and Policy

Session 3: Break-out Group Exercise – Policy responses to carbon leakage

□ Objective:

Concerns about the risks of carbon leakage have led most jurisdictions that have implemented a carbon price to also design carbon leakage prevention measures. Policy makers have developed a range of approaches to addressing carbon leakage, consistent with their particular economic and social circumstances. Despite the variety of policy approaches there is scope to learn from the real world experience when considering the future implementation of similar measures.

The key questions for policy makers designing leakage prevention mechanisms are:

- What sectors should be targeted (supported) by the leakage prevention mechanisms; and
- What form should that leakage prevention mechanism take?

The purpose of this breakout group exercise is to explore these two key design questions in more detail through discussing one of four real world case studies.

□ Instructions:

Participants are asked to join one of four break out groups. Groups will have 50 minutes to discuss the case study below. Each group will nominate a scribe and a person to report back on their discussions. Groups will be facilitated by an expert or member of the PMR Secretariat.

□ Case study:

EU

Key design elements of the European Union's Emissions Trading System (EU ETS) have evolved throughout its three trading periods. Phase I of the EU ETS lasted from 2005 to 2007; Phase II from 2008 to 2012, and the current Phase III from 2013 to 2020. Design elements of Phase IV (2021 to 2030) are currently under discussion.

Phases I and II

Phases I and II shared many important design elements. All installations with a capacity of more than 25 MWh were covered and subject to annual monitoring and reporting of CO₂ emissions. Allocation was determined by member states and – often for reasons of simplicity and political economy - was largely provided for free to all sectors including the power sector, based on historical emissions ('grandfathering').

One of the notable features of these two phases was that, despite the provision of free allowances, power utilities, in particular, passed through a significant proportion of the carbon price increase into higher electricity prices, leading to concerns over ‘windfall profits’.

Phase III

Overall

Key design elements underwent major changes in Phase III, particularly free allocation provisions. The EU ETS harmonized allocation rules, rather than allowing Member States’ responsibility for allocating allowances. Sectors are allocated to one of three categories:

- The power sector, in response to the concern over windfall gains, no longer receive any free allowances
- Industrial sectors not considered to be at risk of carbon leakage receive some free allowances
- Industrial sectors considered to be at risk of carbon leakage receive a larger proportion of free allowances

Overall these changes led to a decline in the proportion of allowances provided for free compared with Phases I and II. In the first two Phase III years, 2013 and 2014, free allocation made up about 2 out of 4.2 billion allowances supplied, compared to about 10 billion out of 11.5 billion supplied over the five years in Phase II.

Identifying sectors at risk of carbon leakage

To determine whether a sector is at risk of carbon leakage, the EC used a combination of trade intensity and cost increase metrics. The quantitative criteria are satisfied if the sector:

- faces a cost increase of greater than 30 per cent; or
- has a trade intensity greater than 30 per cent; or
- faces a cost increase greater than 5 per cent and has a trade intensity greater than 10 per cent.

Cost increase is calculated as: $[(\text{assumed carbon price (€30)} \times \text{emissions}) + (\text{electricity consumption} \times \text{carbon intensity of electricity production (0.465tCO}_2\text{/MWh)} \times \text{carbon price (€30)})] / \text{GVA}$. Trade intensity is calculated as: $[(\text{imports} + \text{exports}) / (\text{imports} + \text{production})]$. For borderline sectors, the European Commission carries out a qualitative assessment.

Determining the amount of assistance

The amount of allowances received by each installation relied on benchmarking. This benchmark was set at the sectoral level based on the average greenhouse gas emission intensity of the 10 per cent best performing (in terms of emissions intensity) installations in the EU of that sector’s (main) product.

Installations in sectors considered to be at risk of carbon leakage received free allowances equal to the installation’s historical output level (either average output between 2005 and 2008 or average output between 2009 and 2010) multiplied by the benchmark, with a further cross-sectional adjustment factor. Installations in sectors **not** deemed to be at risk of carbon leakage received 80 per cent of this amount in 2013, falling linearly to 30 per cent by 2020.

Relationship between free allowances and future output changes

Once the level of free allowance was set, future changes in installation output had limited impact on the allowances received by each installation. However, if installations produce significantly less output than their historical output, then their allocation can be reduced. Specifically, installations producing:

- less than 10 per cent of their historical output in any one year receive no allocations in the subsequent year. This effectively acts as a closure threshold;
- between 10 and 25 per cent of their historical output receive allocations with a 25 per cent weighting in the next year;
- between 25 and 50 per cent of their historical output receive 50 per cent of their full allocation in the next year; and
- more than 50 per cent of their historical output receive their full allocation, including if output exceeds their historical output level.

Phase IV

Phase IV revisions are under discussion and include a more rapidly declining cap and a series of changes in carbon leakage rules to make them more predictable, robust and fair. Some of the proposals include:

- The benchmarking mechanism of Phase III is to be updated to reflect technological progress. Phase III benchmarks were set based on data from 2007-08, so Phase 4 data need to reflect improvements in carbon intensity since then. The first update will be for the benchmark values used as of 2021 and these values will be kept stable until 2025; the second update will concern the benchmark values applied as of 2026 and these values will in turn be kept stable until 2030.
- A more stringent definition of sectors at risk of carbon leakage is expected to lead to a fall in the number of sectors on the leakage list from around 150 to 50. The list would be established based on two criteria: emissions intensity and trade intensity and, in particular, by only looking at the joint impact of these criteria, rather than allowing sectors that only score highly on one criteria to receive free allowances. Specifically, sectors would be deemed to be at risk if their intensity of trade multiplied by the emissions intensity (kgCO₂/gross value added) exceeds 0.2. These sectors would be eligible to receive up to 100 per cent free allowances, i.e. production multiplied by the updated benchmarks. Sectors that exceed 0.18 may be included based on a qualitative assessment. Other sectors will receive free allowances equal to 30 per cent of the benchmark carbon intensity multiplied by output.

□ Exercise:

1. What were the main changes in the allocation mechanism between Phases I/II and Phase III? Consider filling in Table 1 to answer the question. What do you think are the advantages and disadvantages of the changes that were introduced in Phase III?

Table 1. Differences between allocation mechanisms in Phases I/II and III

Phase	I/II	III
Do power generators receive free allowances?		
Which non-power generators are receiving free allowances?		
What system of free allowance allocation is used (grandfathering, OBA, FSB etc)?		
How, is that system implemented?		

2. What do you think of criteria for assessing sectors exposed to carbon leakage risk in Phase III and those proposed for Phase IV? Why do you think the criteria are set to change?
3. What is the relationship between installation output and free allowance allocation under Phase III of the EU ETS? What do you think are the advantages and disadvantages of this relationship?