

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:

California

California introduced a cap-and-trade scheme in 2013. The scheme covers facilities responsible for 85 per cent of California's greenhouse gas emissions. In 2014, the scheme linked to Québec's cap-and-trade scheme and its design explicitly allows for linking to similar schemes in other regions. The overall cap of the scheme was set in 2013 at about 2 per cent below 2012 projected emissions. The cap declines with two per cent per annum until 2015 and three per cent per annum thereafter. Cost containment provisions include trading and banking of allowances, a strategic reserve and offsets.

The scheme covers facilities that emit more than 25,000 tCO₂e per annum, currently about 450 in total. It also covers electricity imported into California. Specifically, electricity importers are liable for the emissions associated with electricity imported from any specified source of emissions that has total emissions of more than 25,000 tCO₂e per annum, as well as all electricity imported from unspecified

sources (for which a default emissions factor multiplied by a transmission loss correction factor is used). This treatment of electricity imports effectively constitutes a ‘border carbon adjustment’.

In the first phase of the California scheme (2013–20), all industrial facilities are entitled to free allowances. Most of these facilities are allocated allowances under an output-based allocation. The benchmark for each sector is set:

- on the basis of 90% of average emissions over production, or
- 100% of the best practice if no facility is as efficient as 90 % of average.

Most benchmarks were set following the first method. These benchmarks were either set using 2006-2008 emissions and production data, or other years’ data if data from those years were either not available or not considered representative of the sector’s emissions. Distribution of allowances is updated annually according to the production at each facility.

A separate scheme of allocation for electrical distribution and natural gas utilities exists. Notable, only industrial entities are provided free allowances for the purpose of leakage prevention. Electrical distribution utilities and natural gas suppliers are provided allowances for ratepayer prevention. Electrical distribution utilities receive free allowances primarily based on expected load and associated emissions, and natural gas suppliers are provided allocation base on 2011 emissions, with the condition that the value of allowances must be used to benefit ratepayers and achieve greenhouse gas emissions reductions.

California splits industrial sectors into highly exposed, moderately exposed or low exposure, or based on a combination of emission intensity and trade intensity metrics. The emissions intensity tiers are:

- High: >5,000 tCO₂e per million dollars of revenue;
- Medium: 1,000–4,999 tCO₂e per million dollars of revenue;
- Low: 100–999 tCO₂e per million dollars of revenue;
- Very low: <100 tCO₂e per million dollars of revenue.

The trade intensity tiers are:

- High: >19%;
- Medium: 10–19%;
- Low: <10%.

Trade intensity is measured as (imports + exports) / (shipments + imports).

Table 1 shows how these different tiers are to be combined to determine the overall assessed exposure to carbon leakage risk.

Table 1. The Californian scheme classifies sector exposure according to a combination of carbon intensity and trade exposure

	High trade exposure	Medium trade intensity	Low trade intensity
High carbon intensity	HIGH	HIGH	HIGH
Medium carbon intensity	HIGH	MEDIUM	MEDIUM
Low carbon intensity	MEDIUM	MEDIUM	LOW
Very low carbon intensity	LOW	LOW	LOW

Source: Californian Air Resources Board

The level of free allowance allocation received by different sectors will depend on the sector’s classification. The initial level of allocation through 2017 was set at 100% of the benchmark, with a reduction factor that matches the cap decline factor¹. This high level of allowance allocation was given for both leakage prevention and transitional assistance (i.e., to help entities and the greater economy adapt to a carbon price). Transition assistance is meant to decline over time, while leakage prevention is meant to remain as long as leakage is a concern for a sector. Those sectors at high risk of carbon leakage will receive free allowances at 100 per cent of the sector’s benchmark(s) through 2020; those moderately exposed receive 75 per cent of the benchmark starting in 2018; and those with low exposure will receive 50 per cent of the benchmark starting in 2018.

California is also considering the introduction of a border carbon adjustment for cement – a sector at high risk of leakage. Three options were raised:

1. Importers are subject to the full cap-and-trade requirements as covered entities. This would be administratively simple, but the current allowances budget does not account for emissions associated with production outside of California;
2. Importers are subject to a cost calculated based on emission obligation times cap-and-trade allowance price. This option may be easier to administer but does not provide market flexibility such as the use of offsets and does not guarantee consistent emissions reduction associated with imported cement; and

¹ Sectors with high emissions intensity, high trade exposure, and high levels of process emissions have about half the reduction (cap adjustment) factor because they have been deemed to be at very high risk of leakage and, because of the high levels of process emissions, have few options to reduce emissions. This includes the cement, lime and fertilizer manufacturing sectors.

3. Create an independent allowance pool for importers with equivalent program stringency. This would imply that both Californian facilities and importers are subject to consistent requirements if designed properly, but it would be challenging to set an appropriate allowance budget. However, there may be opportunities to set an updating allowance limit instead of a permanent cap.

□ **Exercise:**

1. Discuss why the Californian scheme has decided to apply the carbon price to electricity imported into California? Do you see any difficulties applying a similar approach where electricity is imported from another country?
2. What are your observations on the way in which California identifies sectors considered to be at risk of carbon leakage? What do you think are the advantages and disadvantages of this approach?
3. What issues do you think are raised by the possibility of introducing a BCA for the cement sector while maintaining free allowance allocation for other sectors of the economy?
4. Which cement sector BCA option do you prefer and why?