



# Carbon-intensive industries and international competition: impacts and options

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# Outline

## Part 1: Fact base

Which sectors?

What impacts?

How much?

How fast?

Part 2: Structuring analysis

Part 3: Instruments for tackling carbon leakage

SWP



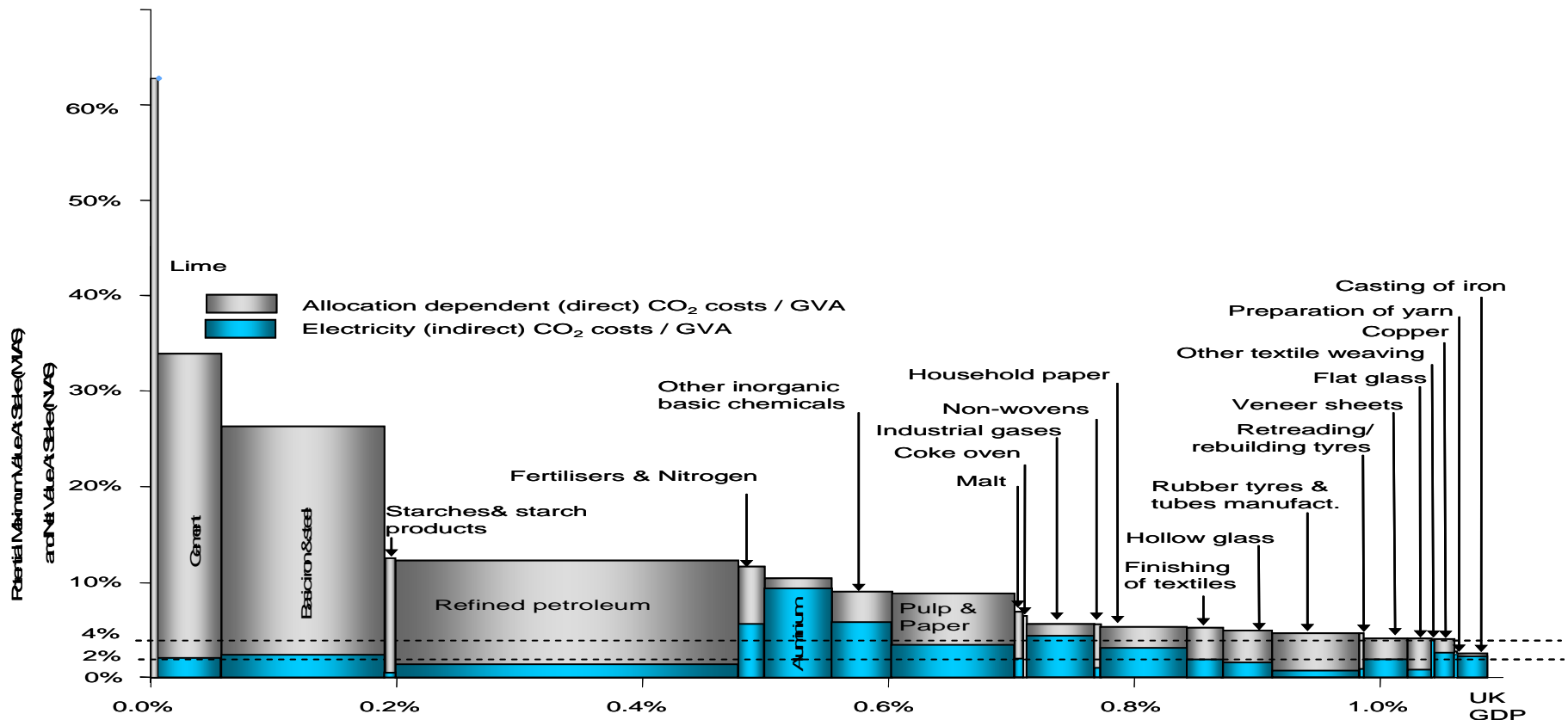
University of  
Cambridge

Faculty of economics

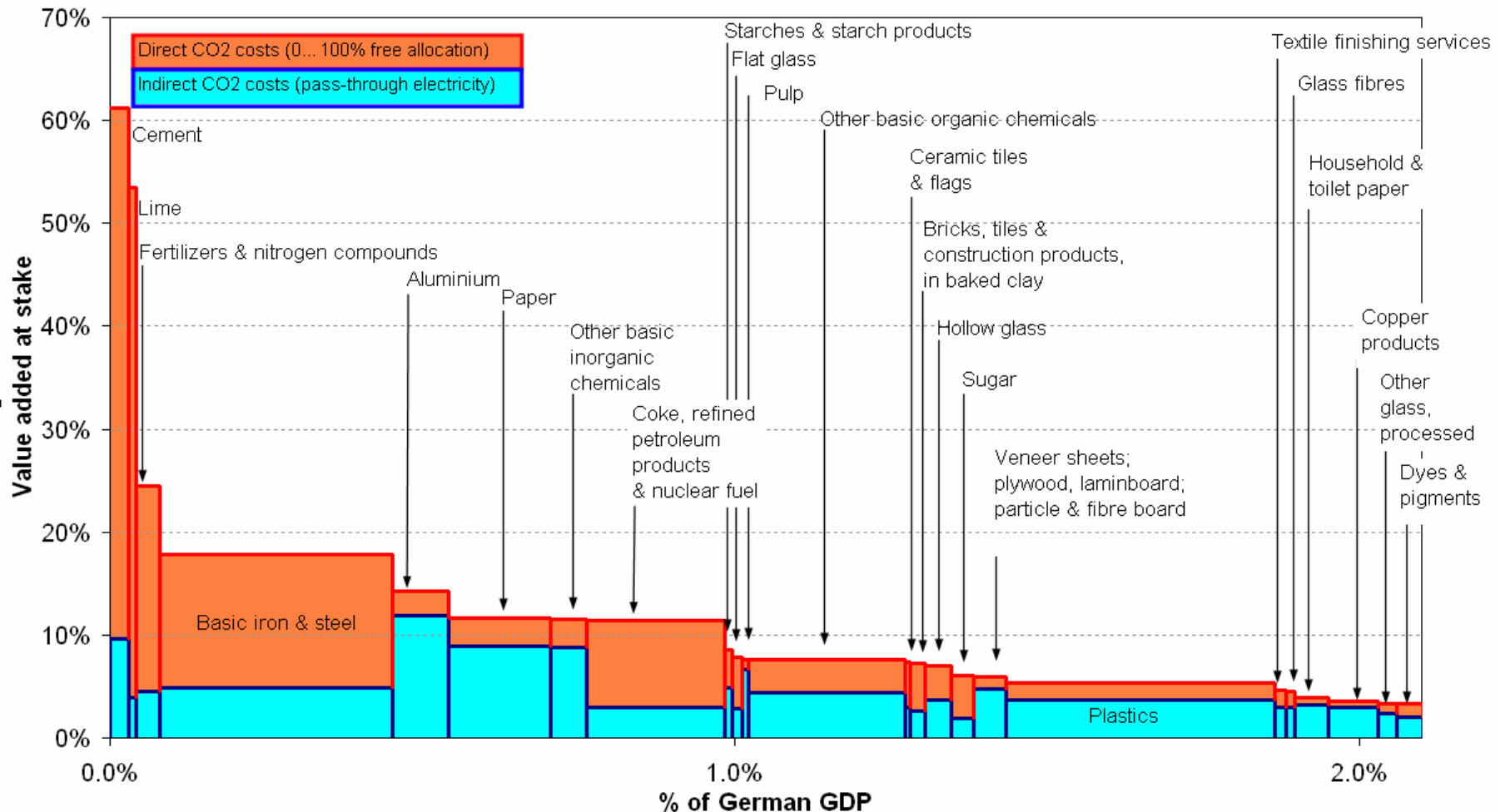


# Potential for significant impacts is restricted to specific subsector activities that comprise a small fraction of value-added but significant emissions

CO<sub>2</sub> costs/GVA for UK manufacturing "top 20"



# Sister analysis of German industry confirms main themes ..



# Even for the most impacted sectors, *profit margins* can easily be protected by free allocation

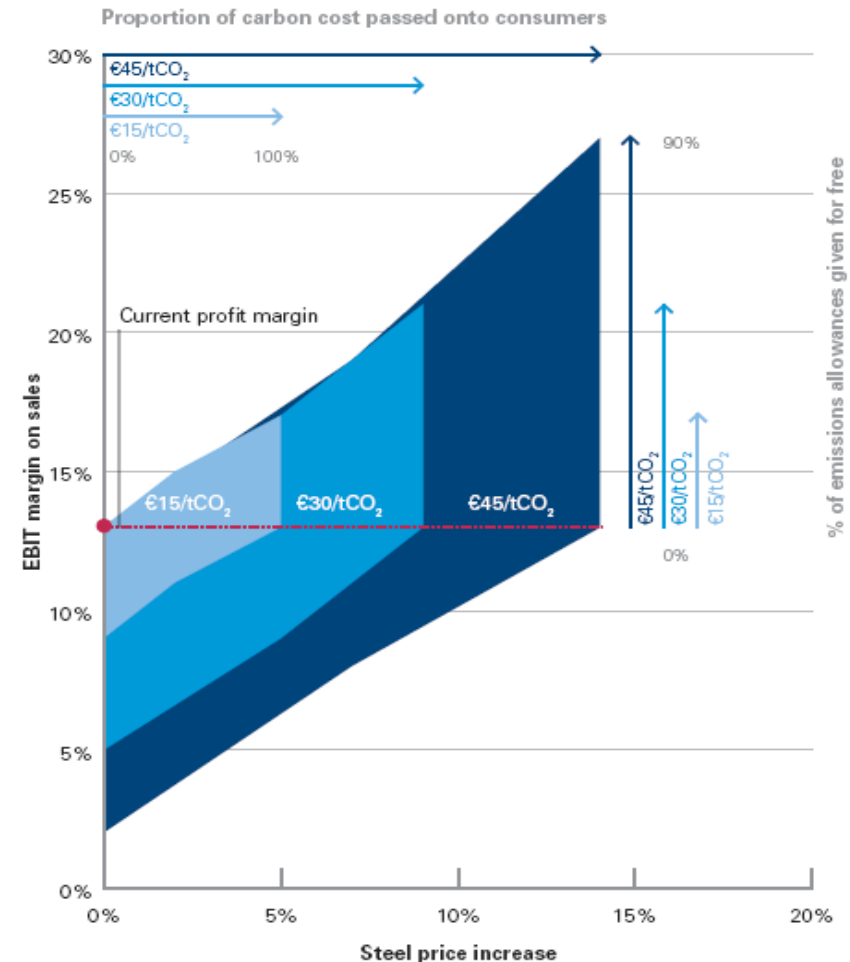
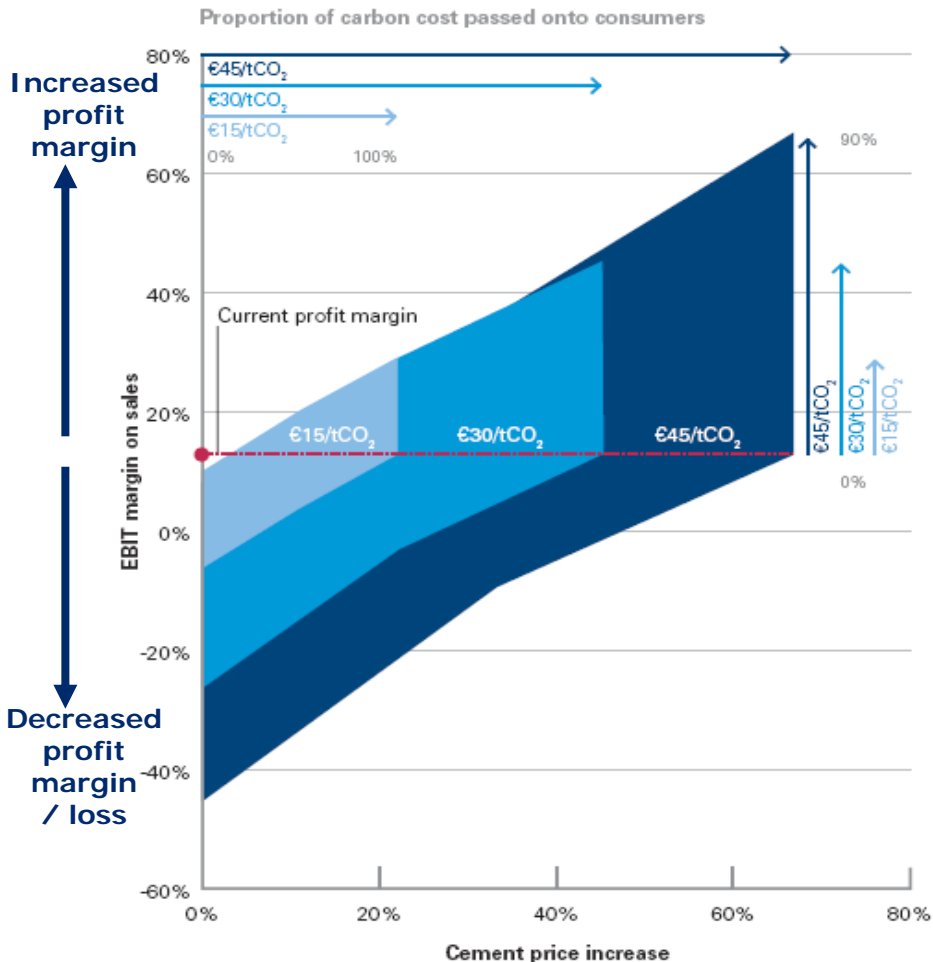
## EU cement and steel profit margins for different C prices, allocations and pass-through

a) EU cement industry

b) EU steel industry

### i) Profit margin

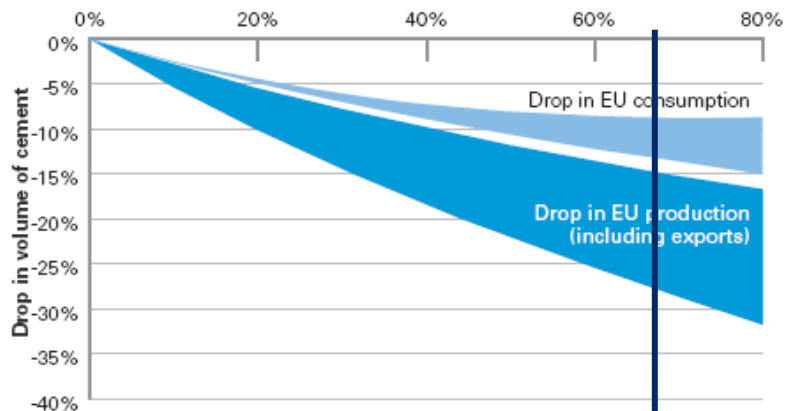
Profit margins can be maintained or grown by government allocation decisions and by industry decisions about passing costs onto consumers.



... but profit-maximising response will still raise prices, resulting in trade impacts of a 'few percentage points' for the most impacted sectors

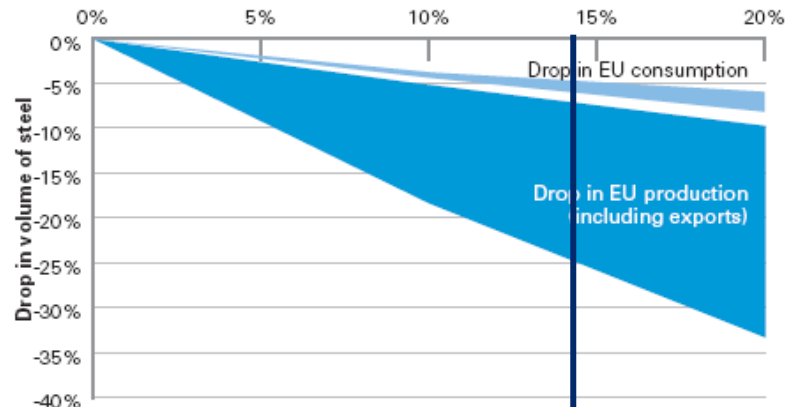
ii) Consumption and production

Passing costs onto consumers will lead to a reduction in demand and a bigger reduction in EU production volumes.



**Cement**

100% @  
€45/tCO<sub>2</sub>

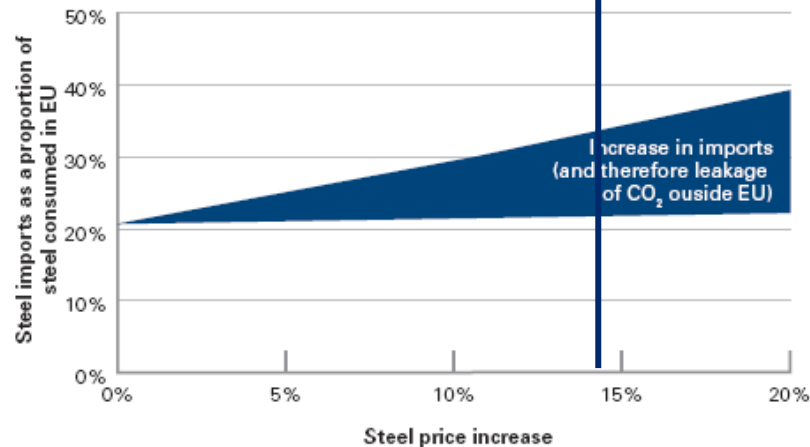
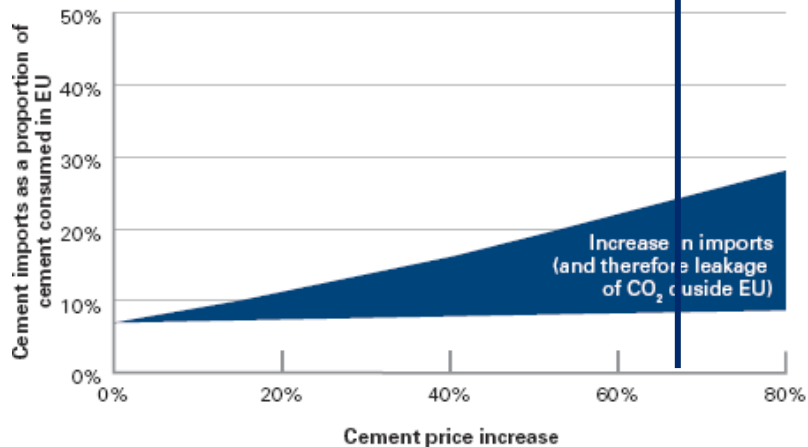


**Steel**

100% @  
€45/tCO<sub>2</sub>

iii) Imports

Passing costs onto consumers will lead to increased imports, with a partially offsetting increase in CO<sub>2</sub> emissions abroad.



Note: Trade sensitivities estimated from range of historical variability

Source: Data from CIRED, as presented in Carbon Trust (2008)

# Outline

Part 1: Fact base on scope and scale of the problem

Which sectors?

What impacts?

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How fast?

*[Climate Strategies Update report, July 2008]*

## **Part 2: Structuring analysis**

Part 3: Instruments for tackling carbon leakage

# Identifying sectors 'significantly at risk' will be a difficult and contentious task ultimately driven by political judgements on definitions and boundaries

- How big is 'significant'?
- Do criteria apply only at EU aggregate level and conditions, or:
  - Different countries?
    - Eg. electricity in some eastern European countries
  - Different dependencies?
    - Eg. electricity-intensive operations dependent upon carbon-intensive power sources?
  - Different facilities?
    - Eg. some coastal cement or possibly refineries?
- At what carbon prices?
  - At EU aggregate level at €20/tCO<sub>2</sub>, list confined to top 2-4 activities, but might expand rapidly at much higher carbon prices if no mitigating factors



# Options for tackling leakage

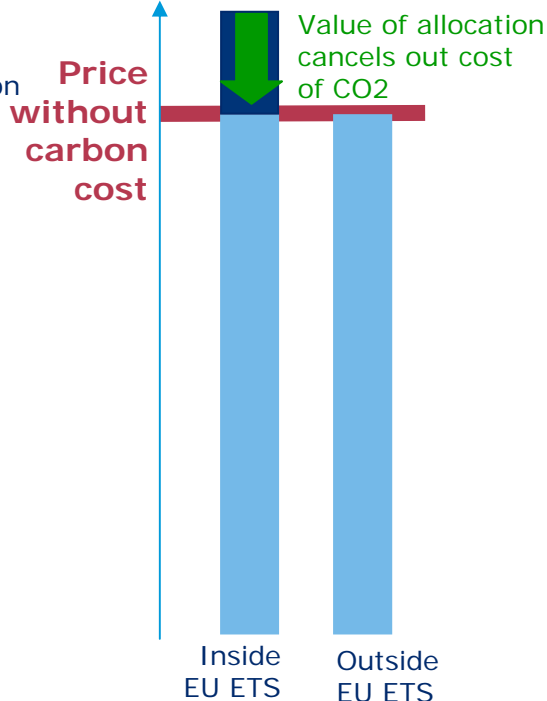
..... fall into three main classes

## No mechanism (fixed free allocation)



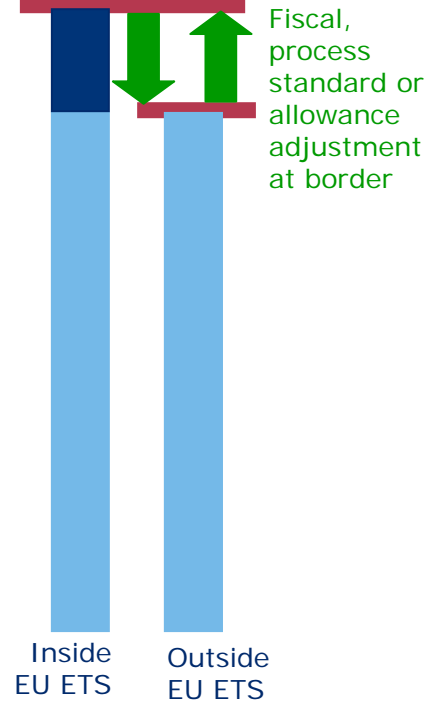
Uncertain trade-off between profits and leakage

## Levelise at non-carbon costs Conditional allocation/ revenue recycling



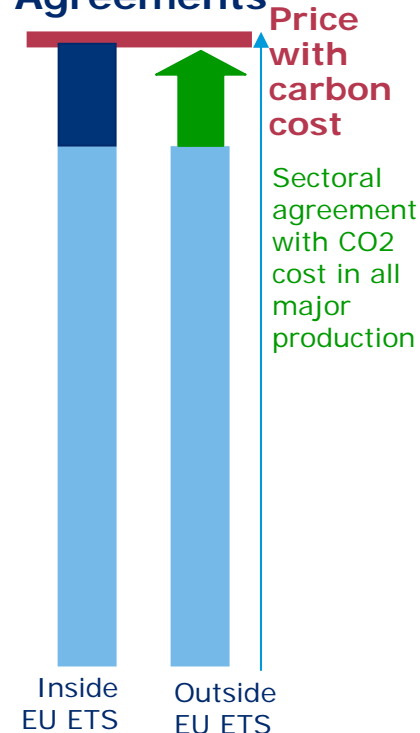
Little substitution to low carbon products/services  
Distorts investment  
May constrain innovation  
Risk of lock-in

## Support consistent differential Border adjustments



Potential problems with WTO/trade relations  
Requires at least informal international cooperation

## Globalise carbon costs Full-cost sectoral Agreements



Requires strong policies of developing countries  
Risk of CO2 price set by lowest common denominator

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Part 1: Fact base on scope and scale of the problem

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**Part 3: Instruments for tackling carbon leakage**

## (i) Levelling down ('third best'):

free allocation or revenue recycling can prevent leakage only if *conditional on the activity that the system itself is trying to deter*

### Investment relocation

#### i) Free new entrant reserve for new C-intensive investment

*Issues:*

- Duration of guarantee required. To 2020? Beyond?
- Weakens incentives for radical innovation in any process that might not qualify for the same level of free allocation
- Benchmarking on capacity installed overcomes most perverse incentives

#### ii) Targeted investment subsidies

- May allow more specific targeting, particularly at Member State level whilst preserving harmonised treatment for allocation
- Easier for power-related component?
- Subject to State Aid clearance – both an asset and a constraint
- Could consider as 'stop-gap' option

*Neither may solve production leakage from the facility without other fix (eg. investment subsidy conditional on full output, take or pay??), OR =>*

### Production/carbon leakage [X]

#### i) Free allocation in proportion to production levels (ex-post)

*Issues:*

- Complex, major rewrite of principles
- Has to be conditional on the *primary carbon intensive part* of the supply chain (eg. clinker not cement)
- Takes carbon price out of all downstream activities
- Removes incentives for radical innovation that avoids the carbon-intensive production step

#### ii) Targeted production subsidy

- Extremely difficult to defend in context of State Aids or WTO

*Other forms of indexing for allocation or revenue could be considered but then less effective at tackling carbon leakage*

(iii) Levelling up to include carbon cost ('first best'): International ('sectoral') agreements can only effectively stop leakage if they equalise C prices with *all* competing producers

## Investment relocation      Production leakage

➤ All potential countries for hosting new investment agree that new facilities will pay carbon costs through their lifetime

*Not credible for most governments to make, implement and enforce long-term binding commitment of this nature*

*- Even if they wanted to (which most developing countries don't)*

➤ All producing countries agree to charge equivalent carbon price on production activities that generate a given product:

- For internal consumption (to not discriminate against EU goods within that country)
- For export (for equivalence abroad)

*Requires robust monitoring, tracking and verification in addition to political willingness globally – all are lacking*

**'First best' – but neither institutional nor political conditions exist**

# Border adjustments (a 'Stern' warning) understanding the options ...

Category	Mechanism	Issues
Import cost adjustment (imports into capped region)	<p>Importers to buy EU Allowances:</p> <ul style="list-style-type: none"> <li>➤ Process specific, or</li> <li>➤ Product benchmarked</li> </ul> <p>Product / Process standards (see Ismer presentation)</p>	<p>Most directly linked to EU ETS objectives and therefore clearest defence under WTO exception clauses</p> <p>Mechanisms could be combined (eg. Holcim proposal)</p> <p>Exports much harder to address</p>
Export cost adjustment (exports from capped region)	Analogous to re-imburement of VAT on exports	<p>Addresses exports – but intent of VAT system is to prevent double-taxation .</p> <p>Difficult with volatile prices</p> <p>Only credible for direct (auction) costs, not opportunity costs</p>
Import taxes (imposed by capped region(s))	Tariff on imported products	Most direct conflict with thrust of trade liberalisation (though eg. VAT precedent)
Export taxes (imposed by uncapped regions)	Charges on exports (eg. Egyptian cement exports), Chinese realignment of export taxes)	<p>No conflict with WTO</p> <p>Difficulty of coordination and enforcement</p>

**Introductory overview:** See T. Brewer, *Climate Policy*, Vols.3:4 and 4:1

# Border adjustments

## .. reducing the risks

- Focus on *specific sector characteristics*, not generalised protection of a 'carbon pricing' zone
- Separate the four categories of action
- Recognise the debate in other regions – notably the US
- Pursue in a multilateral setting, *not* as unilateral protection of EU (or US, or other) industry:
  - as a legitimate element in protecting integrity of multilateral agreement
  - link to sectoral negotiations as a way of incentivising cost internalisation between major producers
- Engage the trade community from the outset and don't dump the core political problems on the WTO

# Conclusions (1)

- We have tenable, mid-term solutions to *parts of* the problem
  - investment relocation (NER benchmarked on capacity, or investment subsidies) and profit impacts (free allocation), but these are far from perfect and
- They do *not* prevent production / carbon leakage in key sectors;
- Solutions to production / carbon leakage based on levelising cost of carbon globally are untenable for Phase III:

Economic principle	Mechanisms	Contribution to solving climate problem	Other features
Levelise at non-carbon cost	Conditional ex-post allocation or production subsidy	<b>&lt;3<sup>rd</sup> best:</b> shields most carbon-intensive component of production & all downstream choices	Complex; deters radical innovation; Serious risk of lock-in
Internalise carbon cost in all competing countries	Quasi-global cost-internalising agreements	<b>1<sup>st</sup> best:</b> though sector-specific nature may create tensions between sectors	Politically and institutionally impossible to create <i>tabula rasa</i>

# Conclusions (2):

- Sector-specific border adjustment options exist and at least some dimensions can be WTO-compatible
- The challenge will be gaining political acceptance of their application in specific sectors
- The options should be analysed as a multilateral instrument to support post-2012 agreement
- Additional time and research engaging impacted industries and Parties within and outside the EU is required
  
- The interim scale of leakage is not a “show stopper”:
  - Investment relocation or deferral moderate whilst options developed
  - Production leakage not relevant until 2013
  - Focused on a few sectors
  - Otherwise trivial except in extreme price scenarios, even if no solution developed
- Sequential processes are possible
- We have time to get this right and we should take it



*Drawing upon research convened by Climate Strategies:*

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*Differentiation and dynamics of competitiveness impacts, led by:*

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CIRED, Paris



Additional contributions from Felix Matthes, Oeko-Institute, Berlin and Joachim Eichhammer, Fraunhofer ISI Karlsruhe

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*Options for tackling carbon leakage, led by:*

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*Final report expected December 2008*