Mitigation and trade in energy-intensive commodities

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Presentation to Low Carbon Societies Research Network 4th meeting,
Oxford, 18th September 2012

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Hard times

- Global emissions rising more sharply despite the continuing accumulation of scientific evidence
- US, Japan, Canada & Russia unwilling to proceed with Kyoto Protocol
- Shifting trade patterns also reduce role of EU emissions globally (approaching only 10% of global emissions)
- Recession and accumulated debt: little international finance
- An emerging world in which action is *differentiated*, but *not* purely (or even mainly) along 'North-South' lines

- A Question
- Some data
- Some options
- Some reflections

Question 1

Rank these sectors in terms of (a) global emissions and (b) known mitigation potential

- Aviation
- Maritime
- Chemicals
- Steel
- Cement

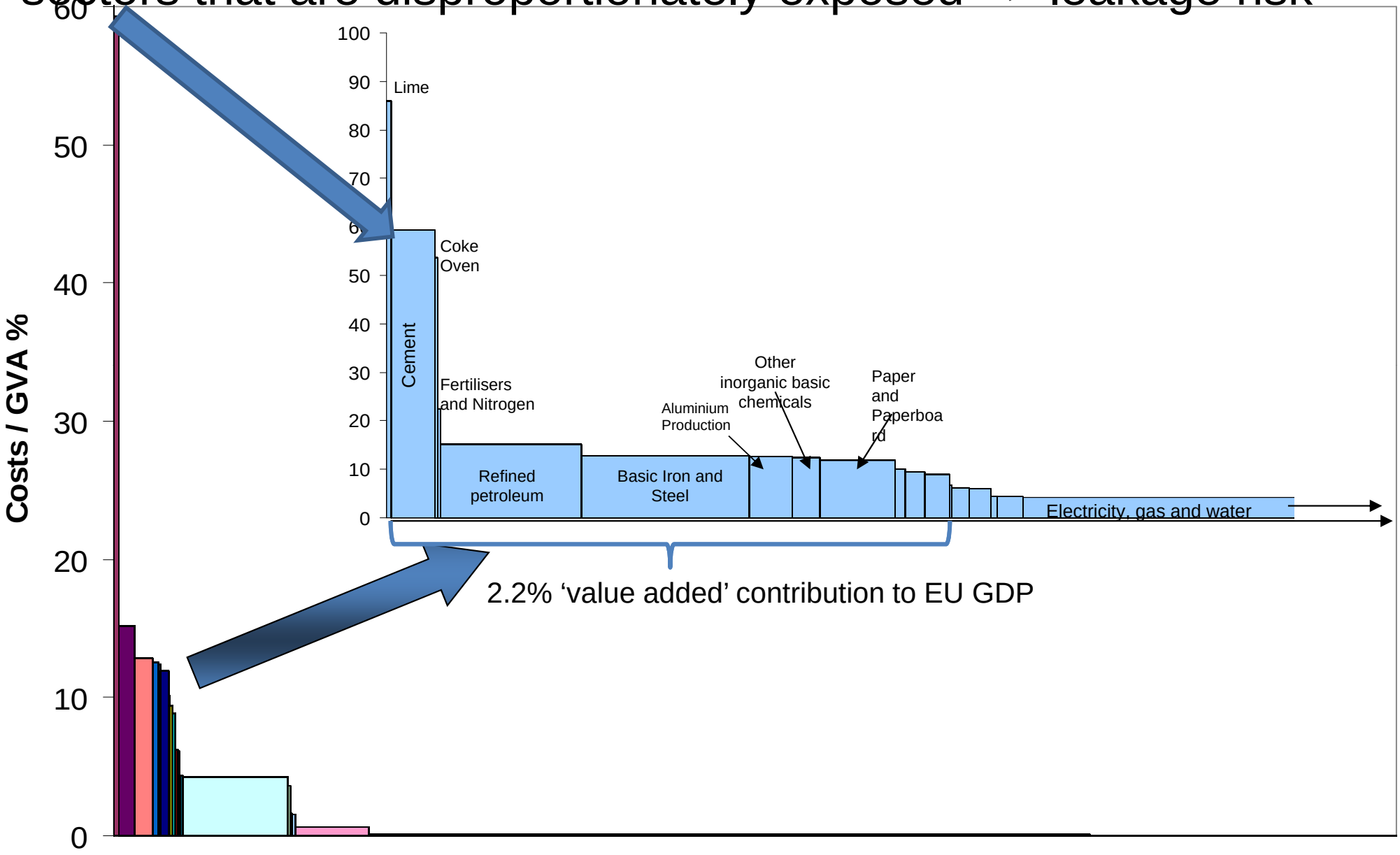
(a) emissions	(b) mitigation*
Steel	Steel
Cement	Cement**
Chemicals	Maritime
Aviation	Chemicals
Maritime	Aviation

* Authors guestimated ranking

** Some radical technologies offer potential for large emission reductions from cement (or even negative emissions) but are not yet commercially proven

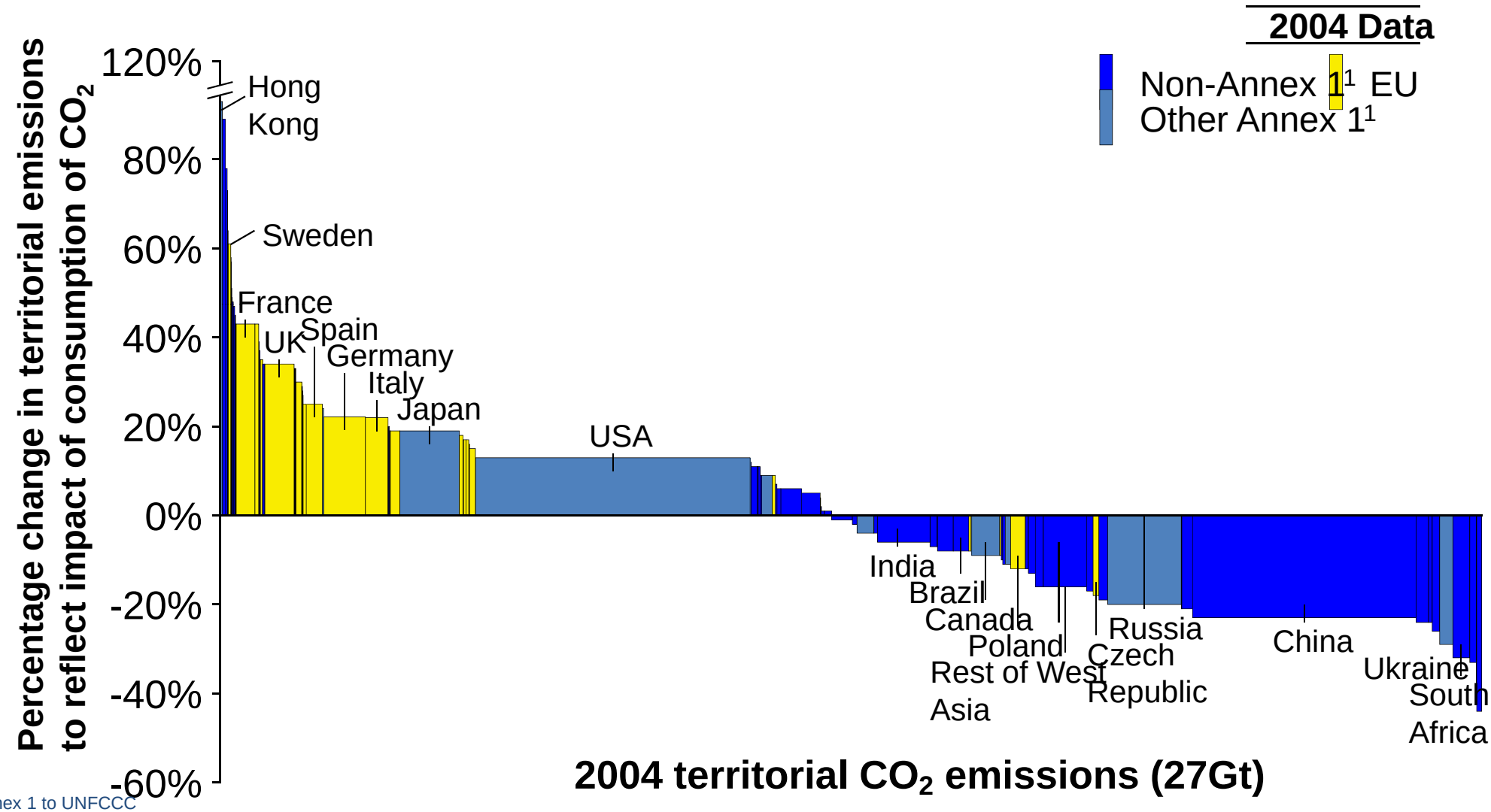
Steel and cement together emit about five times as much as international aviation

Carbon in industry is very concentrated in a few key sectors that are disproportionately exposed => leakage risk



Source: Grubb, Hourcade and Neuhoff : Planetary Economics and the Three Domains of Sustainable Development, Taylor and Francis, forthcoming 2013 (Chapter 6)

There is a large and growing wedge between production and consumption of emissions



1. Annex 1 to UNFCCC

Note 1: Includes CO_2 emissions from production, process, transport and household sources only (27Gt in 2004); excludes non-CO2 emissions, and emissions due to land-use-change

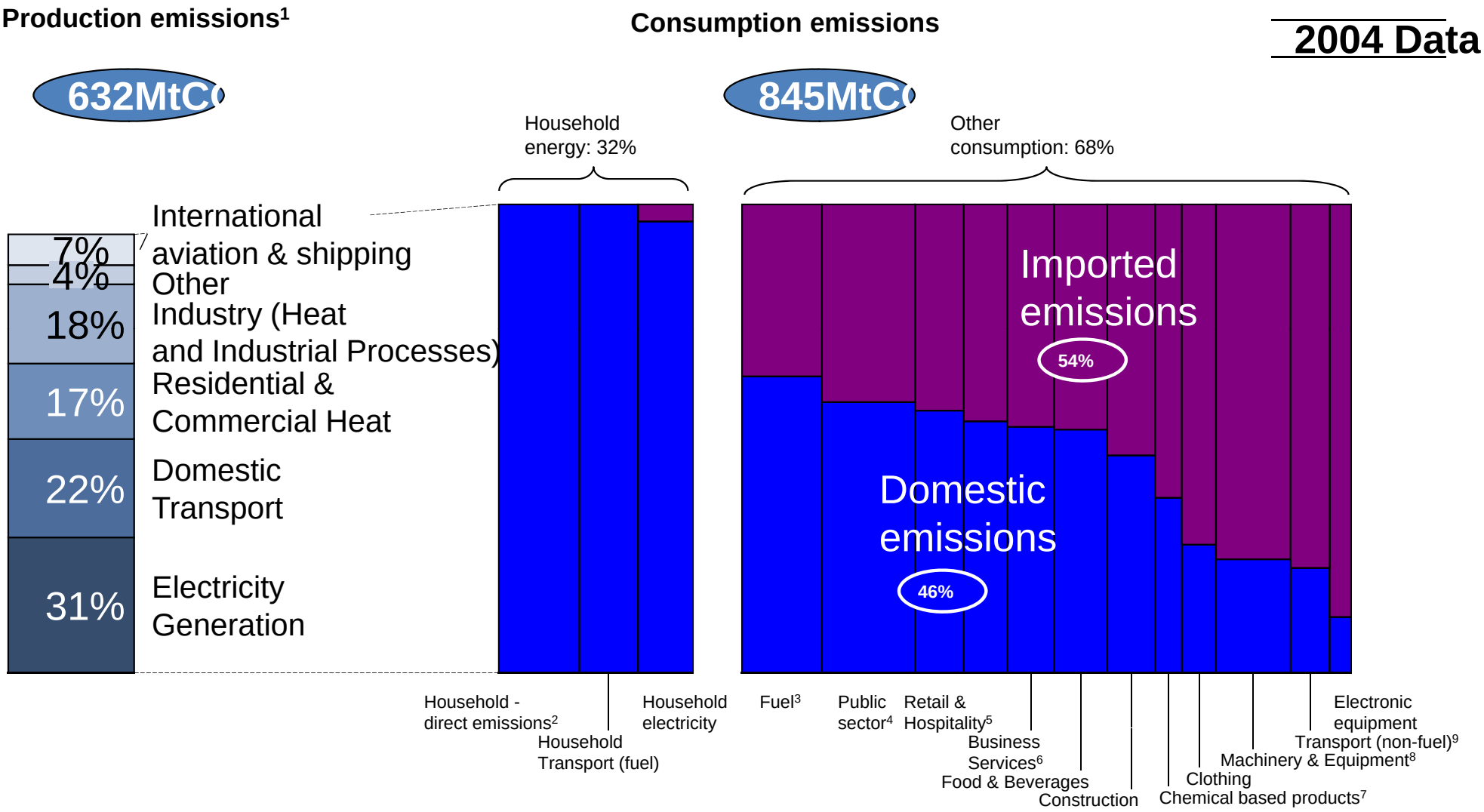
Note 2: Based on an MRIO (multi region input/output) model allocating emissions to regions of consumption

Source: Carbon Trust, *Global Carbon Flows, 2011* (Data: CICERO / SEI / CMU GTAP7 MRIO Model (2004))

Outside of households, half of UK 'footprint' imported

Territorial emissions have been reduced but UK carbon footprint still risen

2004 Data



Note 1: CO_2 only – excluding non CO_2 emissions and land use change

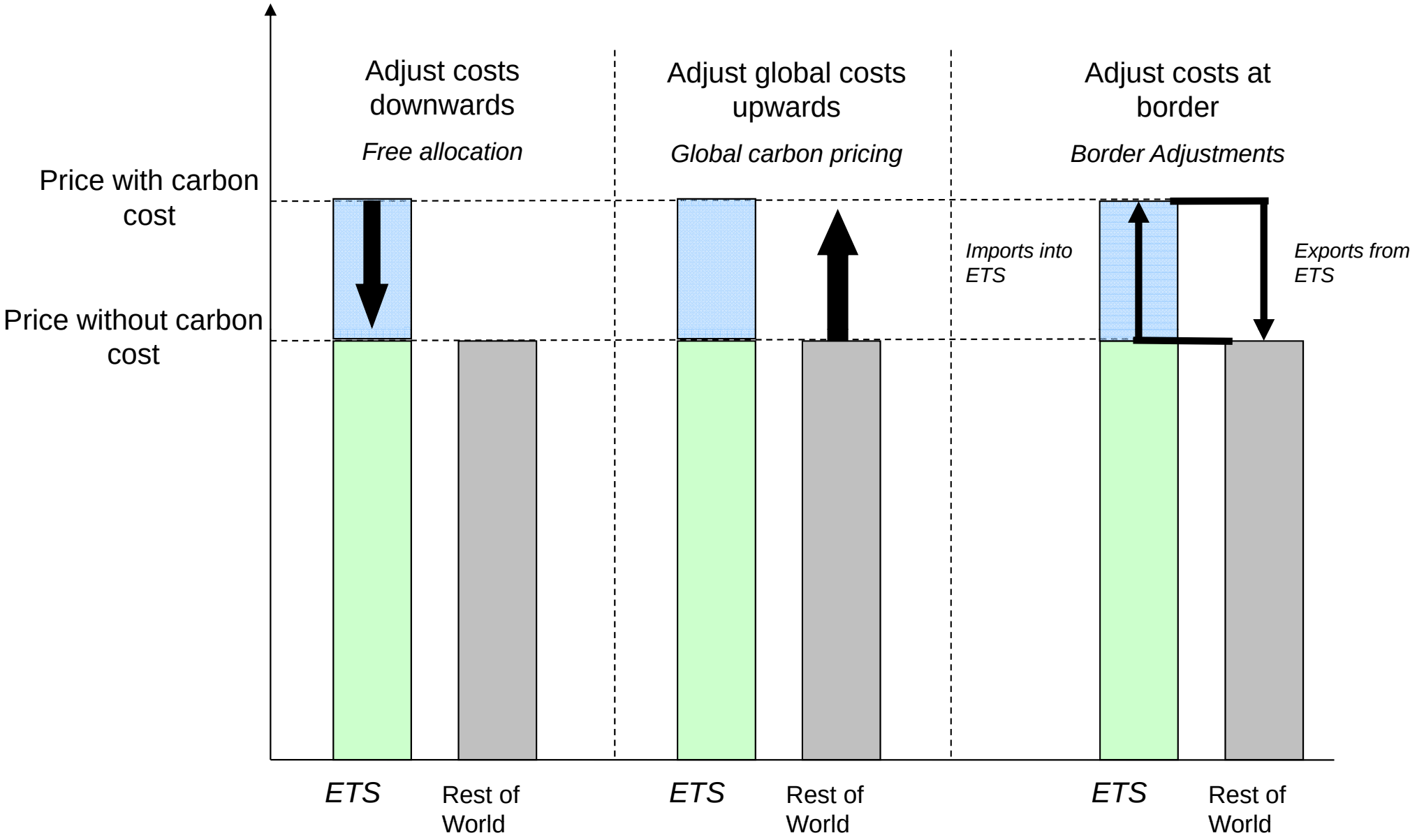
1. Based on split of emissions from Committee on Climate Change (CCC) 2. All direct combustion of fuel in households for heating, cooking, etc 3. Includes all non-domestic Air, Rail, Sea & Road transport operation 4. Includes Defence, Health & Public Administration 5. Includes Retail, Hotels, Restaurants 6. Includes Financial Services, Communication Services and other business services 7. Includes household chemicals, cosmetics, pharmaceuticals 8. Includes domestic appliances and industrial machinery 9. Includes automotive, aviation, rail, road and marine

Source: CT Analysis; CICERO / SEI / CMU GTAP7 MRIO Model (2004); CCC

Options

Fundamental options for addressing carbon leakage

- Level down, adjust at border, or wait to level up everywhere?



Question 2

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How many countries represented in this room use border measures?

- Excise duties (eg. petroleum): no country levies excise duties on domestic production but not on importers
- VAT (around 135 countries charge “value-added” on imports and rebate on export: agreed rules to adjust VAT at the border to take account of VAT paid at source)

We have two profoundly different Border Adjustment discussions

Trying to deter 'inadequate' action by other countries is very different from focused objective to tackle carbon leakage

- Threatening trade measures against countries not taking 'comparable' action
  - Extra-territorial judgement on 'adequate' action
  - Explicitly discriminatory

- Tackling carbon leakage through border levelling
  - In principle, cost-levelling between domestic and international where a specific problem can be demonstrated
  - Generally non-discriminatory

Characteristics of border leveling

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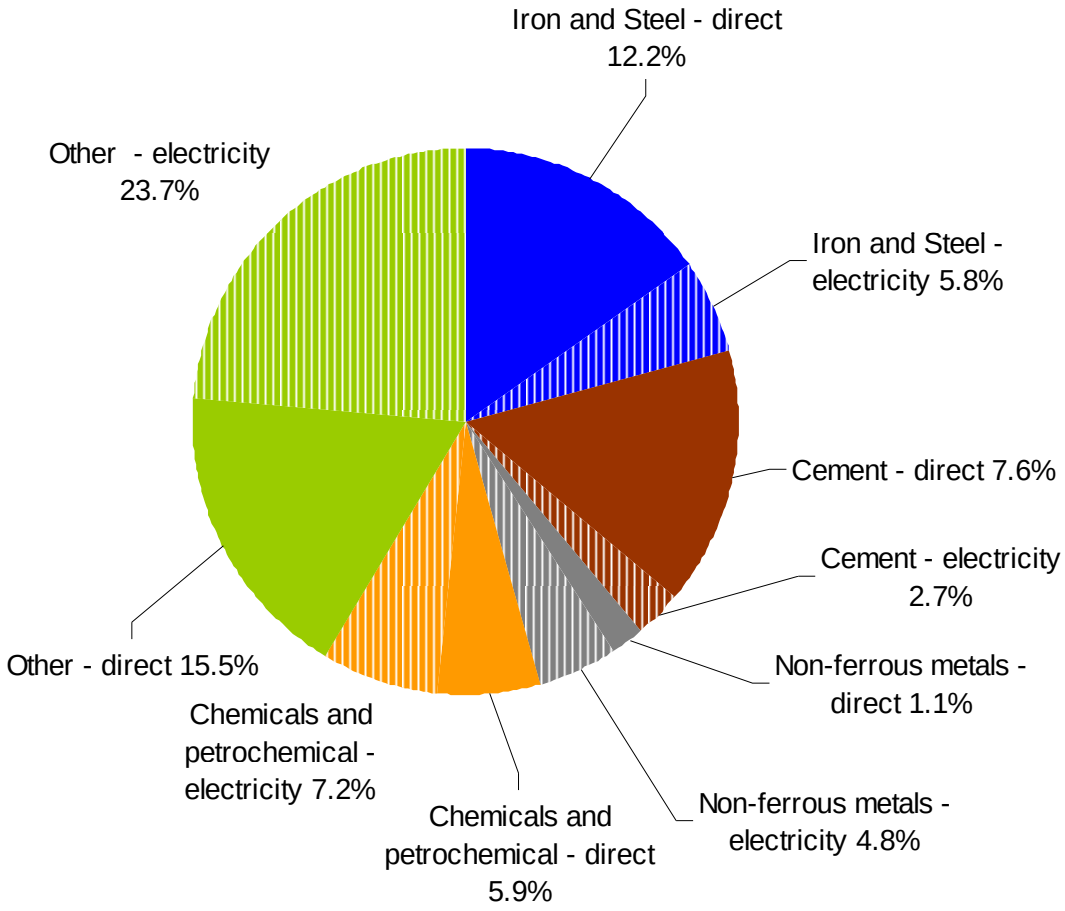
Charging embodied carbon on sector-by-sector basis as appropriate

Global emissions from different industrial processes



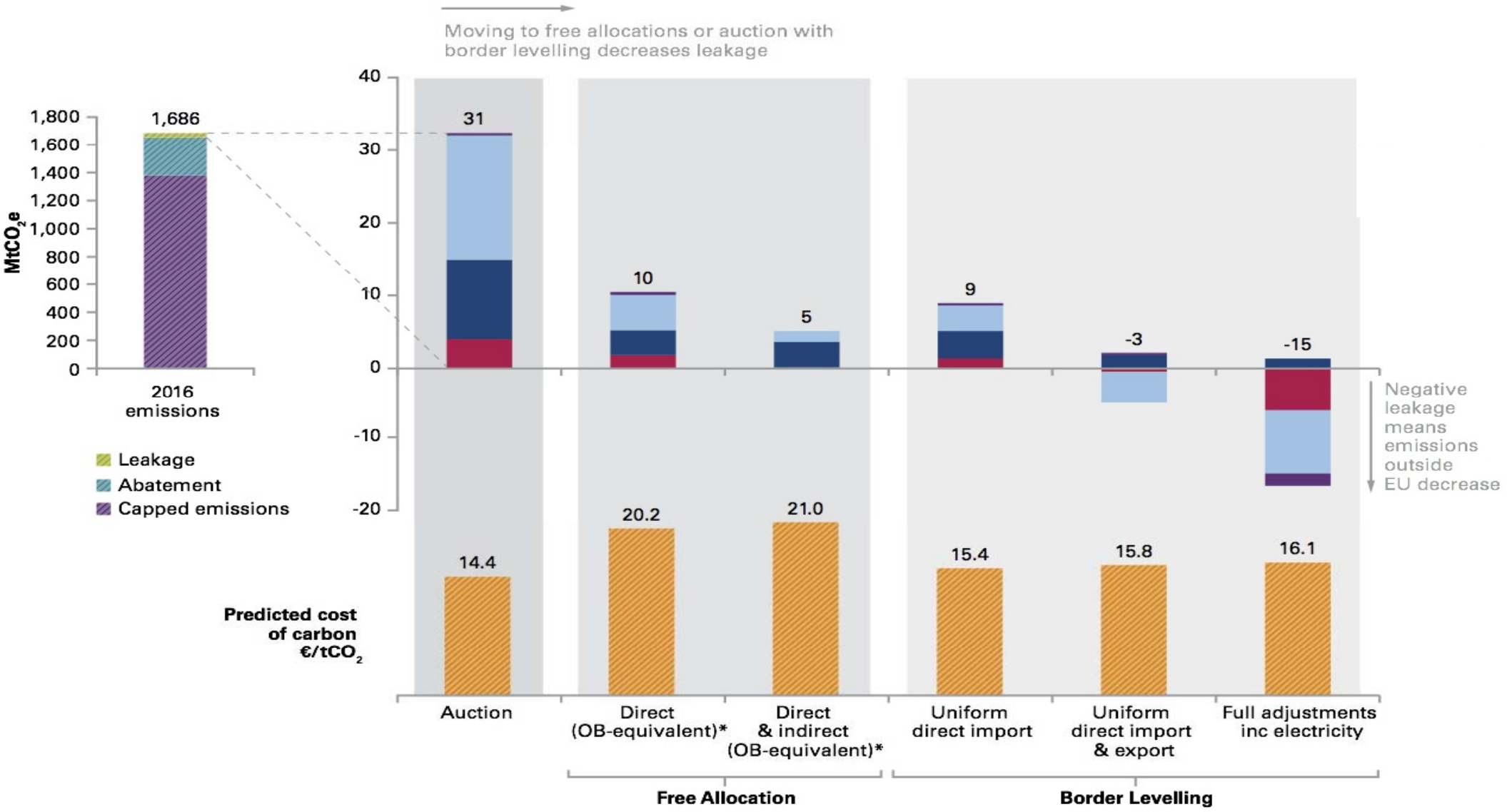
Key criteria

- Scale of emissions
- Scale of leakage concern:
  - Relative impact of carbon costs
  - Scale of existing trade barriers
- Availability of alternatives
  - Effectiveness and losses associated with free allocation
  - State of international sectoral agreement
- Feasibility of border leveling
  - Diversity of products
  - Diversity of production processes

- *Cement is the most obvious sector initially*

Technically speaking, border leveling clearly more effective

Free allocation cuts leakage but increases carbon price
- Border levelling cuts leakage without significant efficiency loss, and greater scope



Source: Carbon Trust / Climate Strategies, *Tackling Carbon Leakage (2010): sector-specific approaches in a world of unequal carbon prices*

A positive agenda?

Hypothesis

- The world will not (could not and should not) all move at the same time and depth in implementing climate policies; yet

- We will never solve the climate problem if those regions that move first are expected to discriminate against their own producers (benefiting foreign competitors who don't take action)
  - Politically untenable
  - Addressing an ever shrinking part of the problem
  - Ultimately, morally indefensible

International finance - challenge

- Most sources of international public finance have to pass through the sieve of domestic politics
  - The hand of the Treasuries, subject to high-level political commitments
    - But under pressure from national debt
  - The court of public opinion
    - Under pressure from recession and fear of the emerging economies as economic competitors
- Negotiations on governance of climate finance have proceeded way ahead of the actual sources of finance
- The responsibility for carbon produced in one country but consumed in another is *morally ambiguous: it is logically akin to international bunker fuels*
- It would make sense to charge for these emissions and put revenues either to Green Fund or return to country of origin (eg. fund low carbon development plans) (CBDR)

Source: Michael Grubb (2011): International climate finance from border carbon cost levelling,*Climate Policy*, 11:3, 1050-1057

Table 1. Indicative carbon revenues from cement and steel

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- First-order revenues from production and border levelling on imports

	Europe		OECD	
	Production	Imports	Production	Imports
Cement Volume (Mt)	250	35	560	70
Carbon emissions benchmarked @ 0.7 tCO2/tonne cement	175	24.5	392	49
Revenue if paid at €30/tCO2	5250	735	11760	1470
Steel Volume (Mt)	120	70	250	130
Carbon emissions benchmarked @ 1.8 tCO2/tonne steel	216	126	450	234
Revenue if paid at €30/tCO2	6480	3780	13500	7020

Source: Michael Grubb (2011): International climate finance from border carbon cost levelling,*Climate Policy*, 11:3, 1050-1057

Consumption accountability and border levelling

- the need for a mature debate

- The problem is ultimately one of consumption, so it makes sense to hold consumers accountable for the emissions of their consumption choices
  - Otherwise, controlling a shrinking part of the problem
  - & why should consumers discriminate against their own producers in favour of imports?

- Leakage fears are messing up cap-and-trade schemes around the world
  - & as caps tighten, even free allocation is insufficient to forestall debate – any countries looking at serious pricing policy will have to confront border-related measures

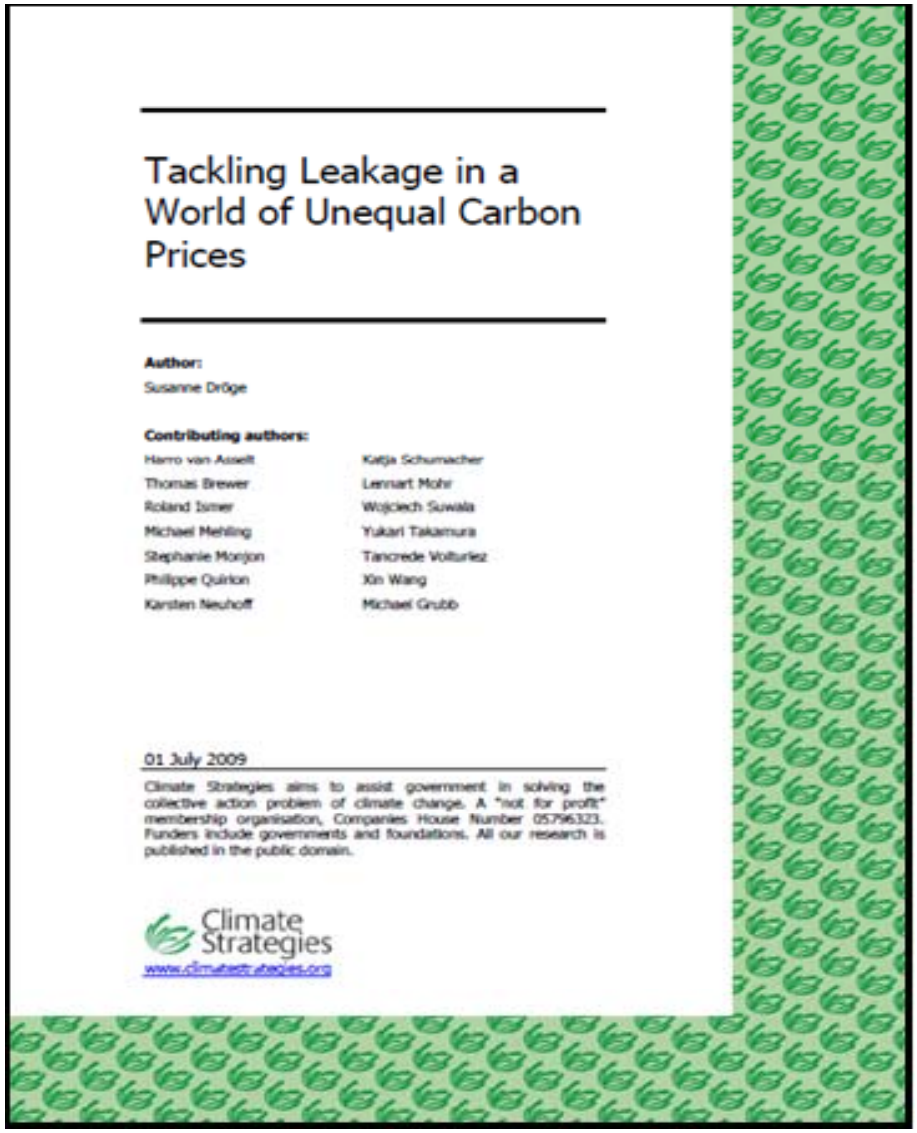
- If regions that are willing to take stronger action are expected to suffer unnecessary economic losses *that are not even associated with saving emissions,* there is no way to solve climate change

- *Money:* Potential revenues are significant and could be put to good use, only possible if negotiated through a positive multilateral agreement

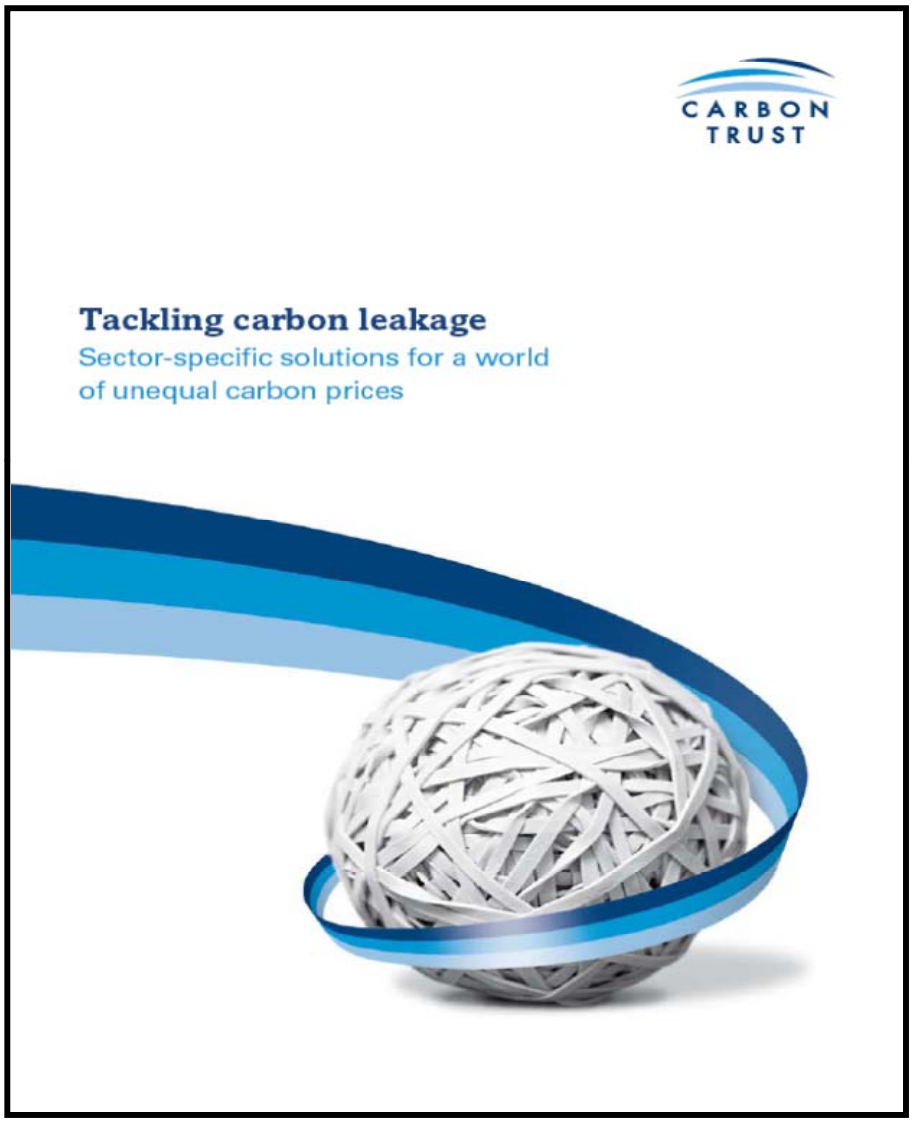
A concluding UNFCCC reflection

- *These economic issues are not North-South*
  - Trade does not know the 'Annex I – vs non-Annex I' distinction: it follows the markets
  - The key sectors are global (and look at ownership!)
  - WTO principles are non-discriminatory
  - The 'winners and losers' may equally be
    - "North-North": consider EU-US steel trade
    - "South-South": eg. even Annex I mitigation, evolution from 'Saudi' oil to 'Brazilian' biofuels, or 'SA coal' to 'Chinese solar'
- Such *resource* shifts are intrinsic to tackling climate change and nothing to do with trade policy
- **The practical & political challenges will be faced by any region trying to act on carbon**

Tackling carbon leakage



Available at: www.climatestrategies.org



Also available at: www.carbontrust.co.uk

Six key myths regarding the issue of carbon leakage...

1. Carbon leakage is a major economic and environmental problem...
2. ... Oh: so if aggregate numbers are small it is not a big problem
3. Free allocation is an effective solution
4. Free allocation is free
5. We can and should protect our economies with border adjustments
6. Border adjustments are discriminatory and threaten world trade and political relations

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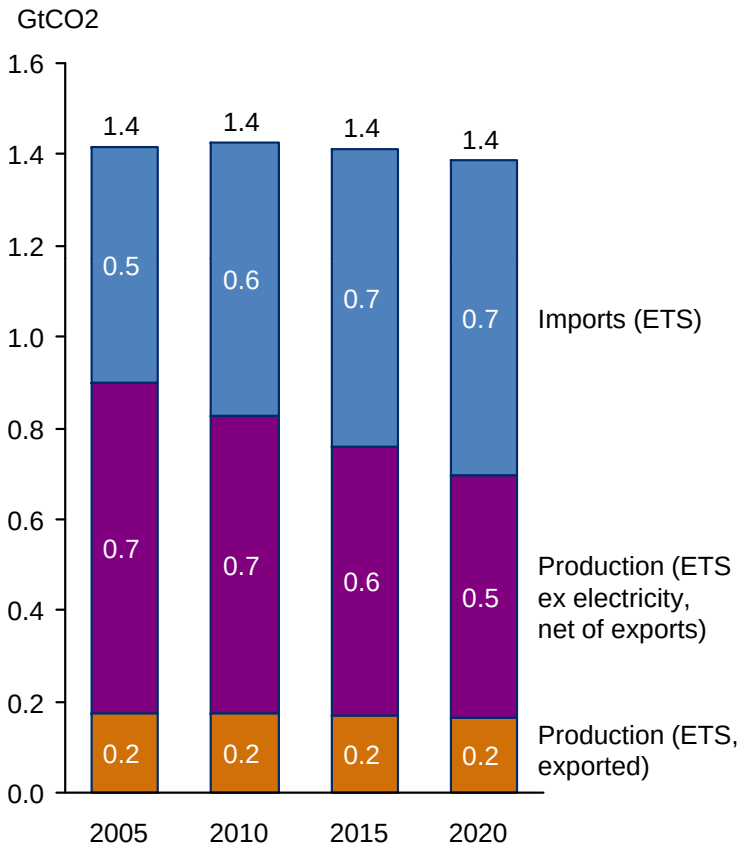
After Copenhagen, sustaining action in a world of unequal carbon prices – and raising revenue for 'greening growth' at home and abroad - is of fundamental importance and so these myths need to be dispelled

Myth	Reality
Carbon leakage is a major economic & environmental problem	At the present level of ambition, even with purely unilateral action and no free allocation or border protection, leakage would be only a few percent of EU emissions
… so if aggregate numbers are small it is not a big problem	Politically impossible (and unreasonable) to ignore loss of important and powerful industries without even saving any emissions
Free allocation is an effective solution	Free allocation can help tackle *investment* leakages in *some* sectors, but is far from a panacea
Free allocation is free	Free allocation increases costs to the rest of business *and to a much greater extent than most models predict, due to a basic modelling omission*
The best solution is to protect our economies with border adjustments	Border adjustments in many sectors are technically difficult, legally debateable and politically explosive – but an evolutionary approach to leveling costs in appropriate sectors is viable
Border adjustments threaten world trade etc	… border leveling in the right sectors is non-discriminating, the only effective approach, could raise funds for international purposes, and a reasonable and necessary part of evolving global responses

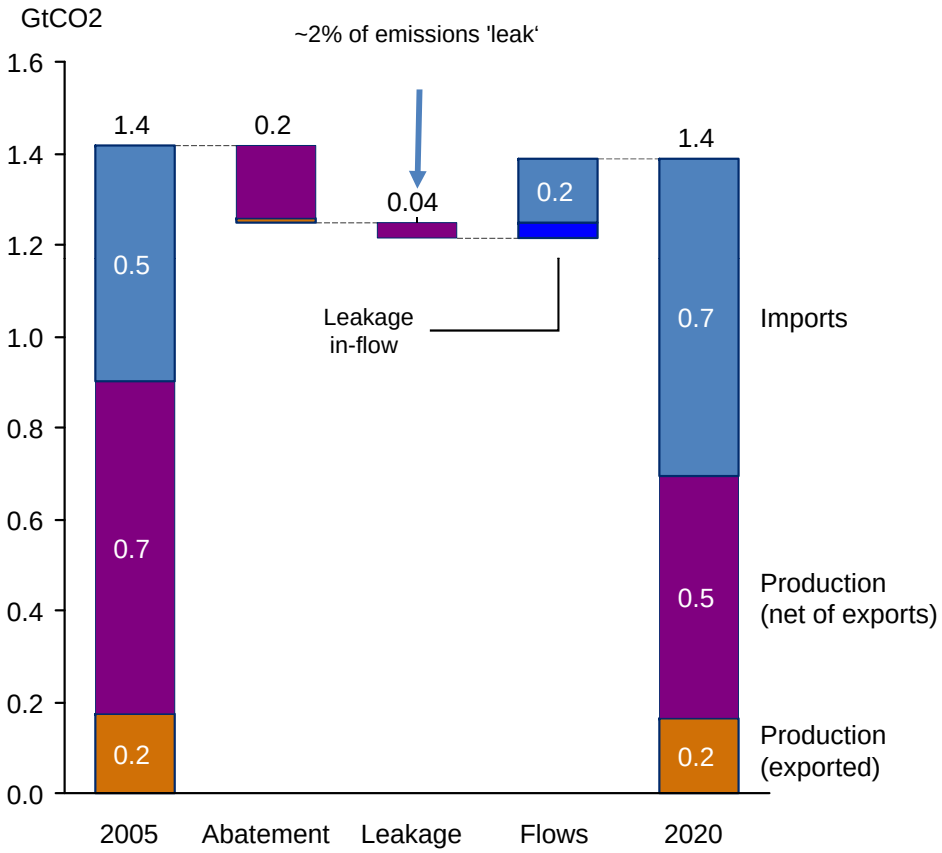
Projected production & consumption of EU ETS traded sectors

(excluding electricity)

Evolution of EU ETS Production & Consumption



Drivers of change between 2005 and 2020 emissions

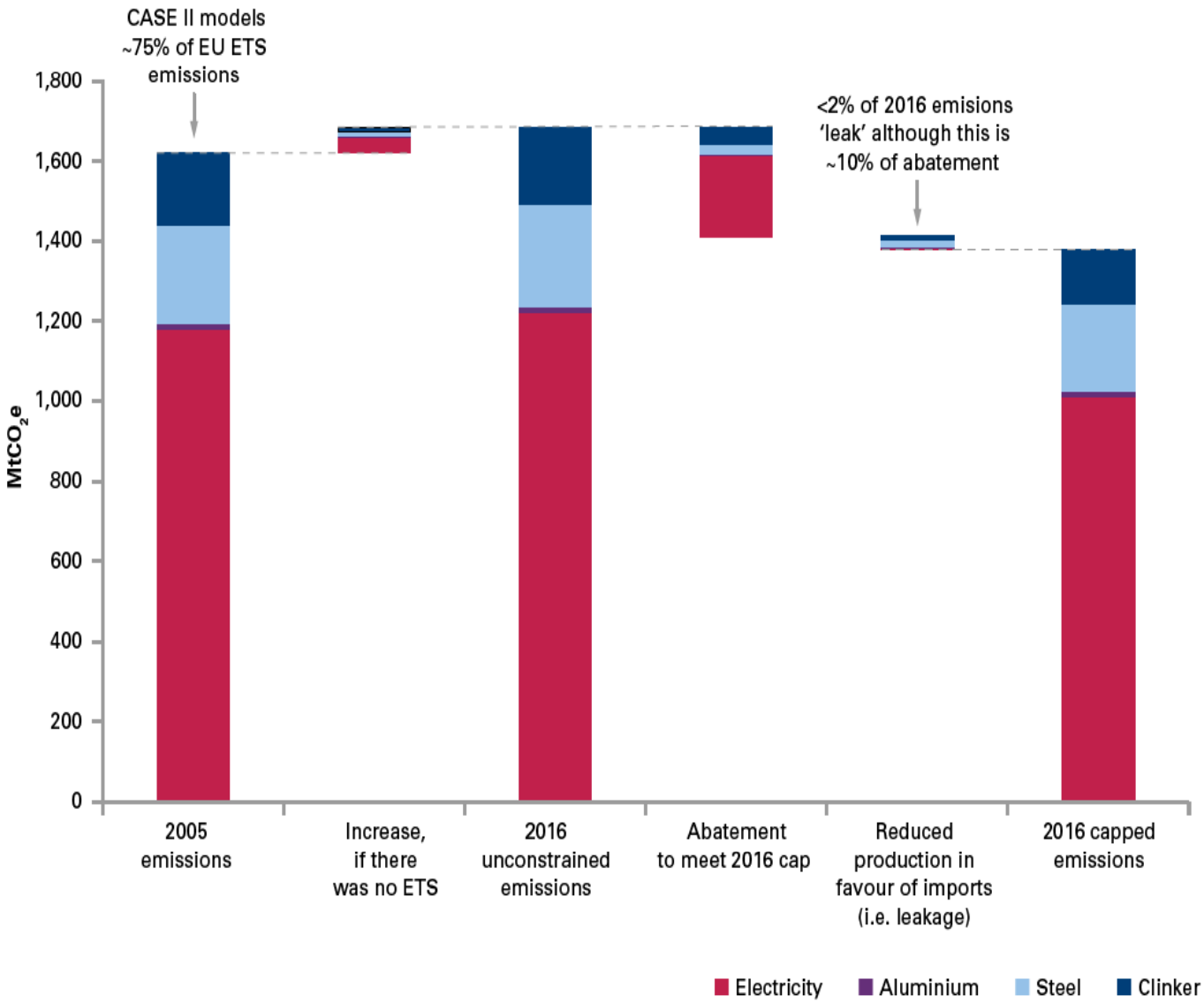


Note 1: Declining production emissions based on expected contribution from non-electricity sectors to declining ETS cap (CASE II Model)

Note 2: Growth in imported emissions based on continuation of historic growth in gross imports, and varying degrees of decarbonisation in the exporting countries. In the displayed scenario, it is assumed that the emissions intensity of exports from Brazil, Russia, India and China (BRIC nations) decline in line with 50% of the targets noted in the Copenhagen Accord (2009), that exports from the EU and other Annex I nations decline in line with the EU's target to reduce emissions by 20% from 1990-2020, and that exports from the rest of the world achieve decarbonisation of the order of half that achieved in the BRIC countries

Source: Carbon Trust Analysis based on data from: Addressing leakage in the EU ETS: Results from the Case II Model (Climate Strategies, 2009); CICERO / ICMU / SEI GTAP 7 MRIO/ EEBT Model (2004); Cutting Carbon in Europe: The 2020 plan and the future of the EU ETS, Carbon Trust (CTC734, 2008)

Myth 1: “EU faces large scale carbon leakage from the EU ETS”



But:

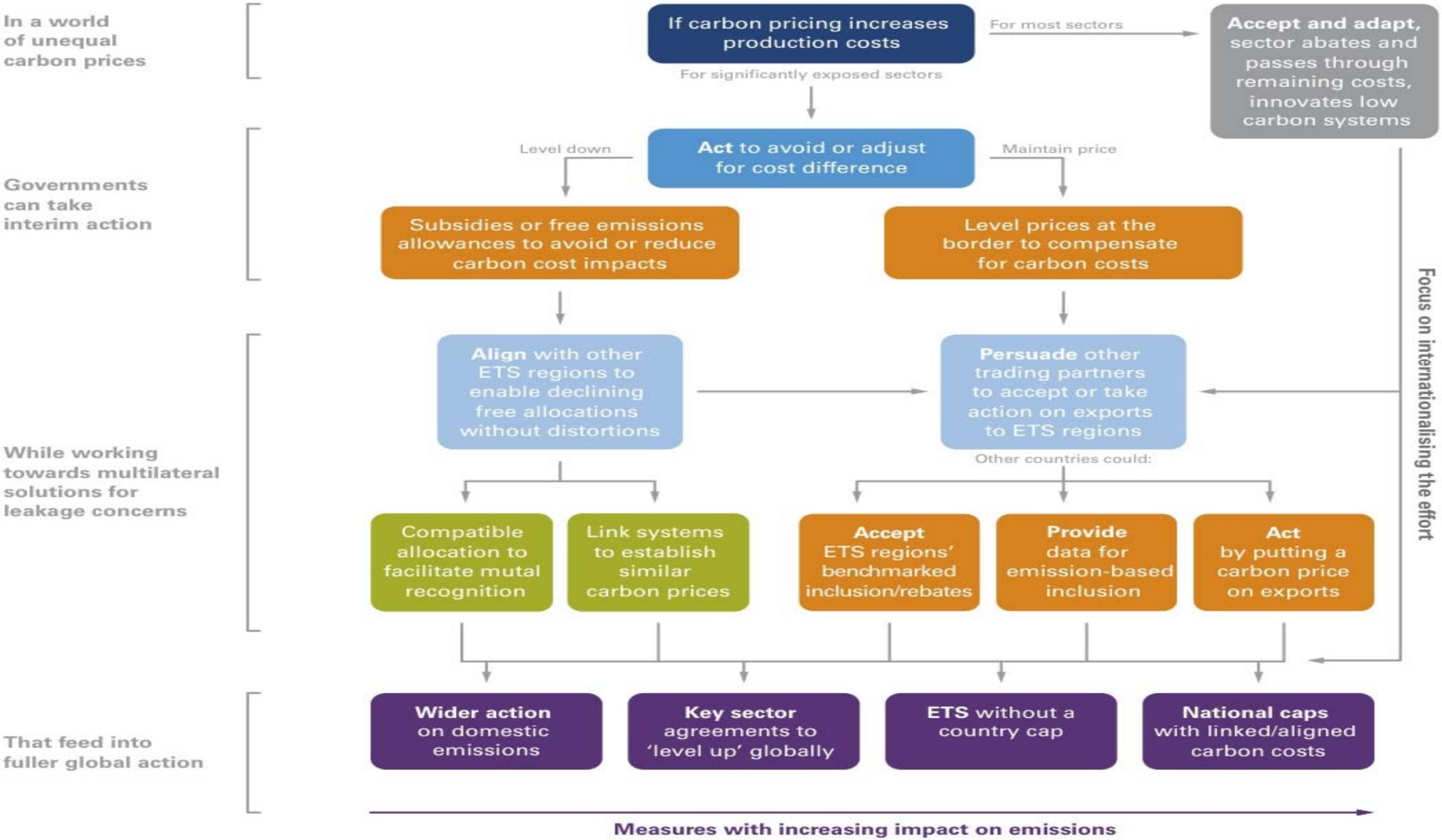
- without countermeasures may be significant for key sectors (eg. 40% of steel “emission savings” are due to offshoring)
- leakage rises with the degree of effort (eg. EU move to 30%)
- effects may vary a lot between different regions, facilities
- “all politics is local”
- growing international carbon flows undermine impact of domestic measures anyway

Source: Carbon Trust / Climate Strategies

Myth 2. “... So if *aggregate leakage* is modest it is not a big problem”

Carbon flows lesson impact, and economic loss with no environmental benefit is never politically acceptable

A few key sectors may need sector-specific journeys towards global action



Thank you for your attention!

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Climate Strategies is grateful for funding from the government of Australia, Agence de l'environnement et de la maîtrise de l'énergie (ADEME) in France, Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) in Germany, Ministry of Foreign Affairs (MFA) in Norway, Swedish Energy Agency (SEA) Sweden, Department for Environment, Food and Rural Affairs (DEFRA), the Office of Climate Change (OCC), Department of Energy and Climate Change (DECC), Department for International Development (DFID) in the UK, The Carbon Trust, Nordic COP15 Group, Corus Steel, Center for International Public Policy Studies (CIPPS) in Japan, European Climate Foundation (ECF) in The Netherlands, and the German Marshall Fund of the United States.