DIW BERLIN

Annual Conference, International Association for Energy Economics

Will market forces or planned economies determine the future energy system?

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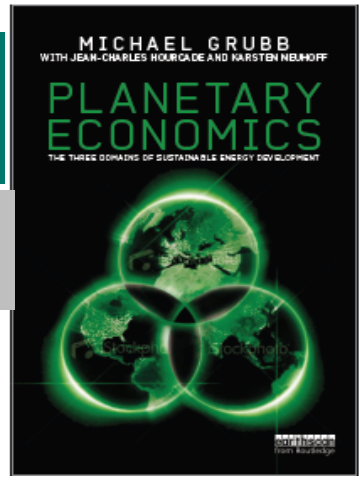
Technical University of Vienna ,4-6.9.2017

1

Actors use three disctinct modes of decisions making. Policy is effective, if it takes account of the decision mode.



Domain of policy:	Standards & Engagement	Markets & Prices	Strategic Investment
	"Satisficing" behaviour	"Optimising" behaviour	"Transforming" behaviour

Resource Use / Energy & Emissions

Economic Output / Consumption

Real-world individual and organisational decision-making

Best practice frontier

"Business-as-usual" innovation

Accelerated low-carbon innovation

Purely carbon-price-driven innovation

Innovation & evolution of complex systems

Source: Grubb, Hourcade & Neuhoff (2014): Planetary Economics, Energy, Climate Change and the three domains of sustainable development. *Routledge*.

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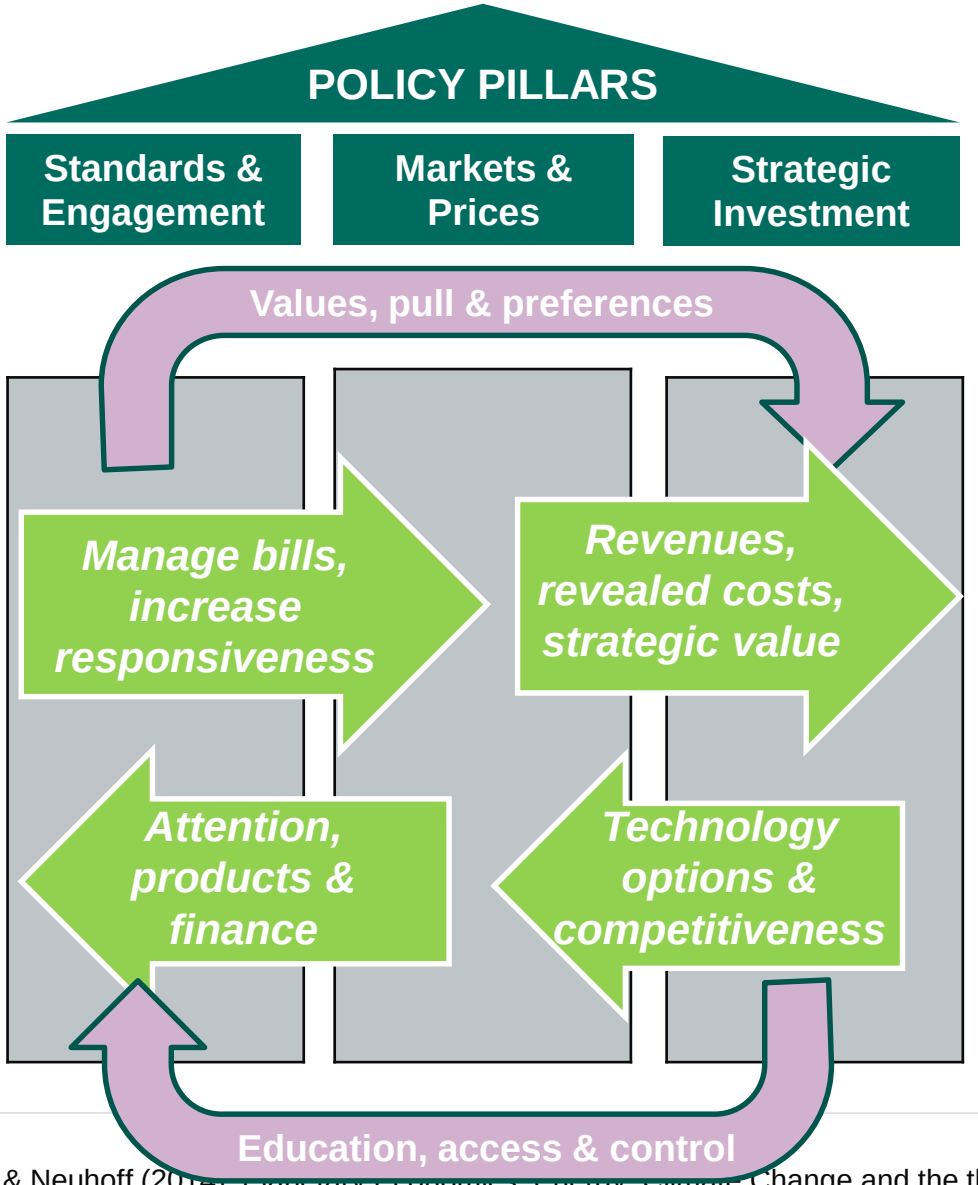
2 Changing course of the energy system requires a sustained package - the key is to integrate and synergise across all three policy domains



Source: Grubb, Hourcade & Neuhoff (2014). Planetary Economics, Energy, Climate Change and the three domains of sustainable development. *Routledge*.

3 Why do policy makers struggle with getting the carbon costs internalized

- Distributional effect
  - In most instances small and can be directly compensated

  -> in transport sector effects most prominent but gasoline taxes high

- Complexity of instruments and analysis
  - No differnt from other taxes, and better data available for analysis

  -> overall increase number of charges and provisions

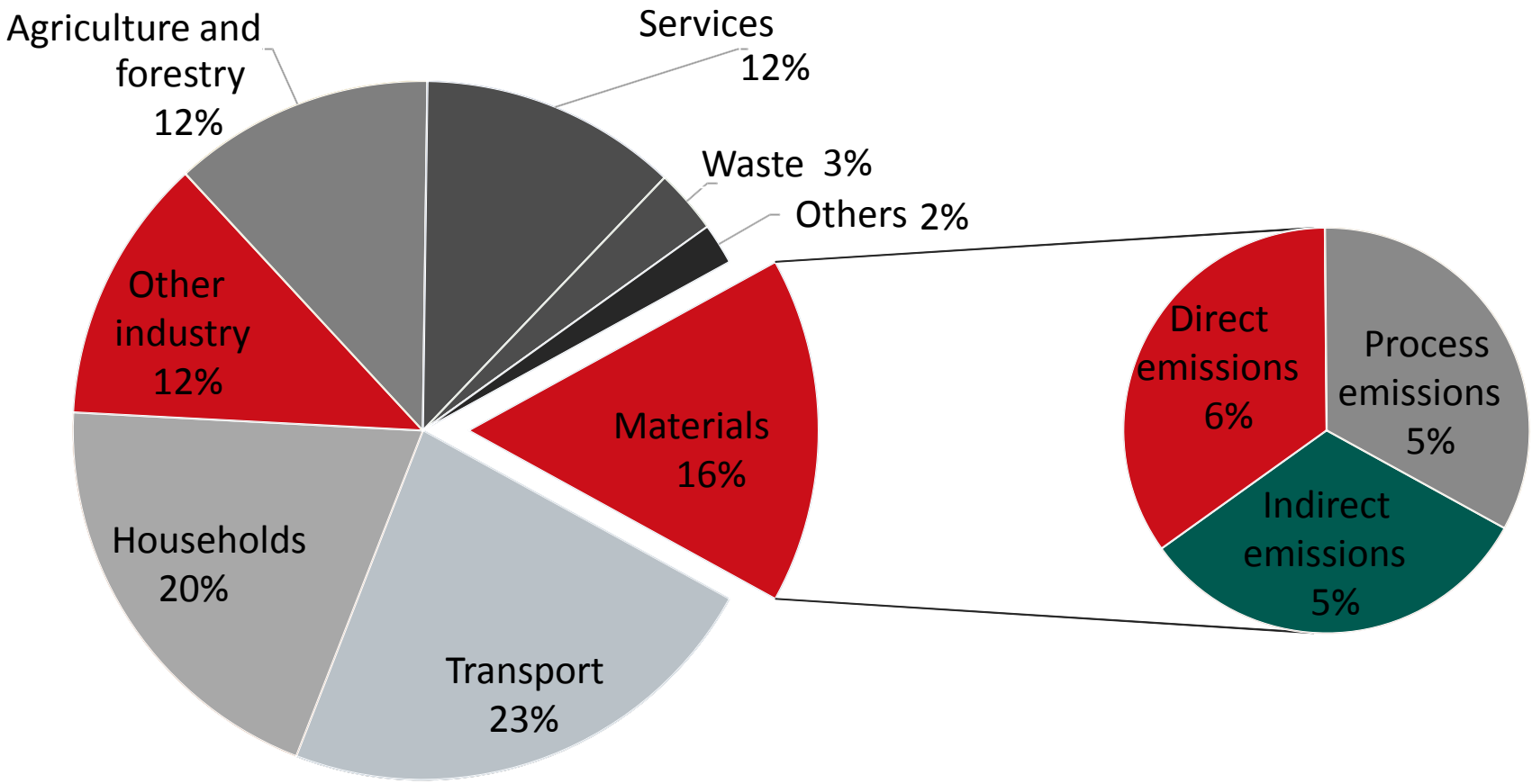
- Concernes voiced about competitiveness / carbon leakage
  - Motivated excemptions from energy taxes&charges, free EU ETS allowances
  - Motivated reductions in stringency / charge level of EU ETS, RE support ..

  -> Topic of particular relevance for basic material production

4 Focus is on Basic materials = 16% of EU greenhouse gas emissions

Share of EU greenhouse gas emissions

[power sector emissions are attributed to each sector as indirect emissions reflecting electricity use]



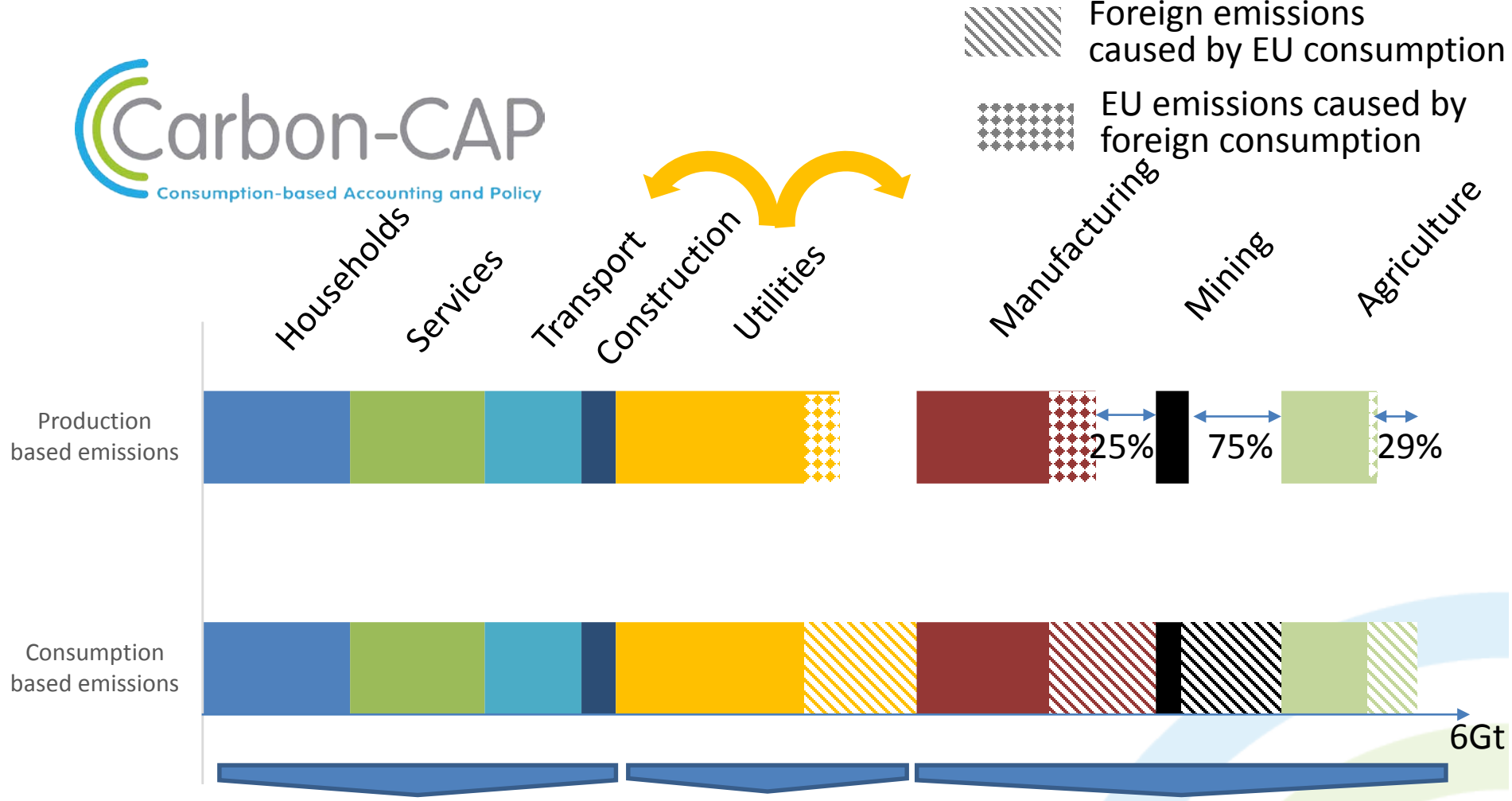
Source: Based on Statistics of EEA for 2010, Attribution of indirect emissions as in UNFCCC 2010d

5 Carbon price not „active“ for most mitigation opportunities

Mitigation option	Role that carbon pricing can play:	ETS with free allocation
Fuel shifting and production efficiency	Savings with more efficient production	**Carbon price effective with benchmarks (level too low …)**
Carbon focused process innovation	Extra Innovation funding	**Carbon price muted:** • International Trade • Dynamic allocation: global steel demand 55% of capacity • Persistent allocation at high benchmark level
	Covering incremental costs	
Material efficiency and substitution	Savings with efficient / lower-carbon material use	

Munnings et al. (2016). “Experience with Pricing Carbon Consumption”, RFF Discussion Paper.

Carbon-CAP
Consumption-based Accounting and Policy



- Success of measures tailored to consumption decisions (efficiency standards, financial support, advice).
- Higher feasibility and fiscal preference for energy taxes over production based policies (e.g. oil cartel).

- EU ETS for fuel shift
- RE policy

- Largely production based policies like EU ETS, so far with limited impact on consumption choices.
- Consumption based policy emerging (labeling, Eco-Design), but not price based

How can we resolve?

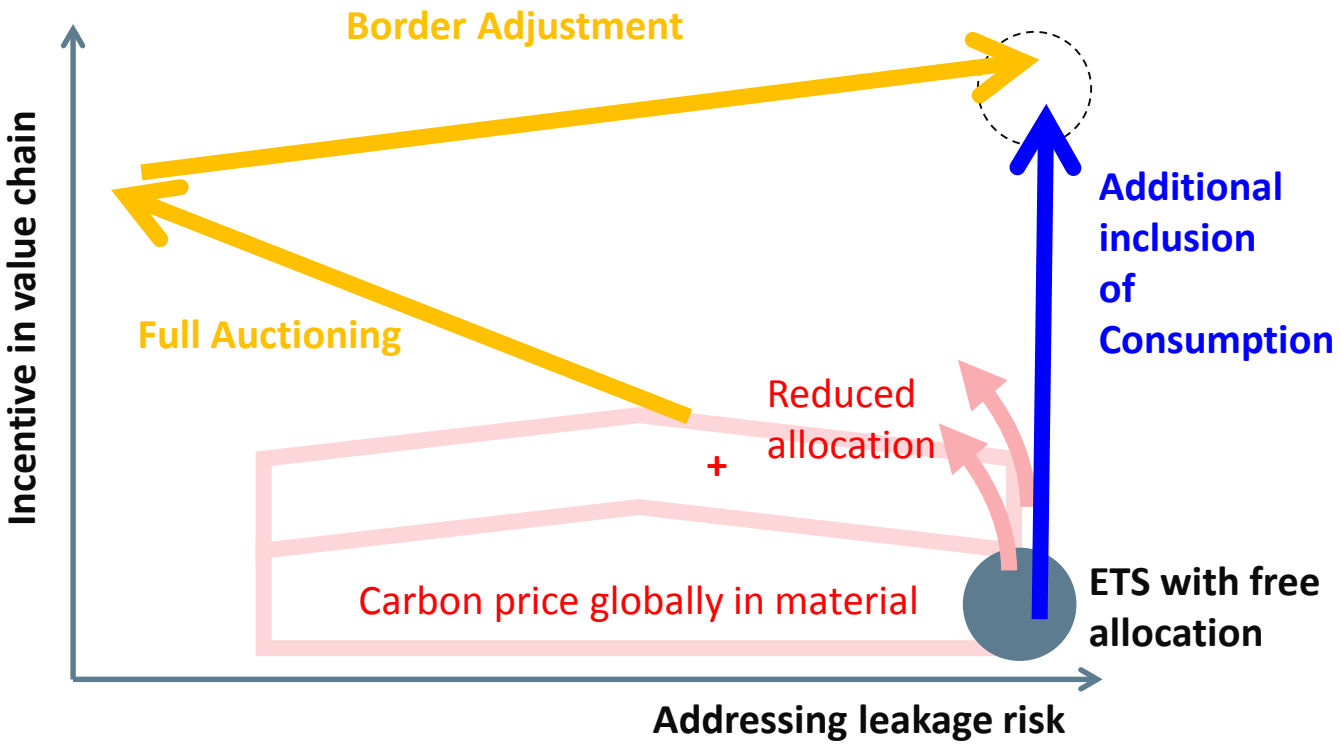
7 Three options to extend carbon pricing to value chain

Incentives for

Climate friendly production with incremental cost

Efficient material use and substitution

Production efficiency and fuel shifting



Three options for leakage protection in post Paris world of differentiated carbon prices:

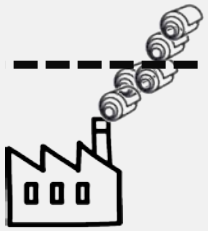
0. Iterative increase of carbon price in traded materials with reduction of free allocation
1. Full auctioning for incentives backed by Border Adjustment for leakage protection
2. Free allocation for leakage protection & Inclusion of Consumption for incentives

http://climatestrategies.org/projects/inclusion-of-consumption-in-emissions-trading/

Option 1: Border related approaches - politically or economically difficult

Coverage of material producers

Surrender allowance to cover CO2 emissions →

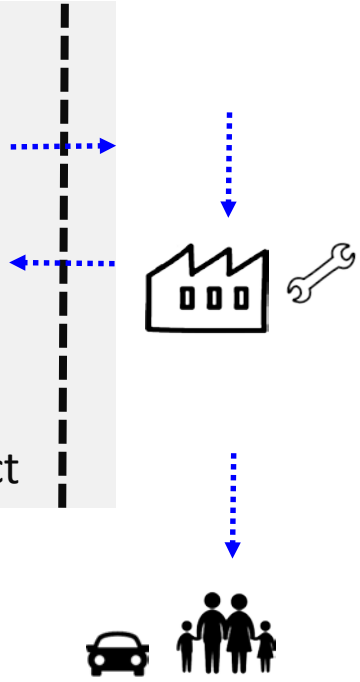


Carbon leakage protection

Charge on import

Reimburse export

- benchmark * weight * EU ETS price
- also material in product



- Incentive for climate friendly material production
- Consumers contribute to carbon cost: Essential for viability of technologies with incremental cost

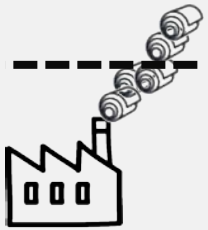
Incentives for efficient material use and substitution: Saves European consumers the consumption charge

For WTO compatibility (Art 3 GATT), use best available technology benchmark in combination with full auctioning to avoid discrimination

Ismer, R. and Neuhoff, K., 2007. Border Tax Adjustments: A feasible way to support stringent emission trading, European Journal of Law and Economics 24, p. 137–164.

Option 2: Inclusion of Consumption of basic materials in carbon pricing

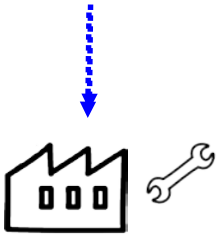
Coverage of material producers



Surrender allowance to cover CO2 emissions

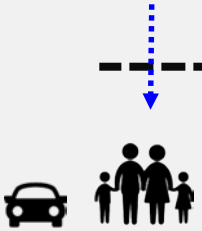
Free allowances allocation (benchmark * tons material)

Incentive for climate friendly material production and carbon leakage protection



Consumers contribute to carbon cost: Basis for viability of technologies with incremental cost

Consumption charge for **final consumers**



Charge on material in product sold in country (benchmark * tonnes material * ETS price)

Incentives for efficient material use and substitution: Saves European consumers the consumption charge

Ismer, R., & Haussner, M. (2015). "Inclusion of Consumption into the EU ETS: The Legal Basis under European Union Law". *Review of European, Comparative & International Environmental Law*.

Finding from technical reports on Inclusion of Consumption (IoC)

What to learn from international experience?

- Engaging consumers can unlock unexpected potentials (Japan)
- Inclusion of power consumption established in Korea and China

What is the legal basis?

- IoC can be part of EU ETS Directive and deliver environmental objectives
- IoC is consumption based and thus on good side of WTO law

What administrative approach can limit public and private costs?

- Small fraud risk because no pay-out and value only fraction of product price
- Simplified procedures possible , e.g. aggregate quarterly reporting

What can we learn from quantifying the impact across product categories?

- Focus on basic materials: steel, clinker, aluminum (plastics, pulp&paper)
- De-minimis rules possible

http://climatestrategies.org/projects/inclusion-of-consumption-in-emissions-trading/

Conclusions

Policy packages essential for low-carbon transformation

- Can effectively address satisficing, optimizing and strategizing behavior.
- Carbon pricing particularly important in industry and power.

Carbon pricing approach in industry has been focused upstream

- Trade of materials creates leakage concerns, free allocation -> muted price.
- Carbon leakage concerns have undermined effective carbon pricing.

We need a new strategy for making ETS effective for industry

- Converging carbon prices + phase out free allocation: **Slow +Uncertain**
- Shift from auction to border adjustment: **Difficult politics/economics**
- Inclusion of consumption in ETS: **Suitable for basic materials**

Conclusion: Inclusion of Consumption of Carbon Intensive Materials in ETS

IoC restores carbon price signal to be effective for all mitigation opportunities

-> More mitigation opportunities can be realized at lower cost.

Effective carbon price provides clarity for strategic choices of companies

-> Makes ETS more effective in supporting innovation and investment.

IoC builds on international experience and avoids lock-in with national systems

-> Pool data for better benchmarks and thus stronger incentives.

-> Once carbon prices converge, free allocation with IoC can be easily abandoned.

Producers of materials covered by IoC receive free allocation at full benchmark

-> Long-term clarity on carbon leakage protection good for investments.

-> Addresses political concerns about leakage allowing for stringent carbon prices.

Source: Grubb, Hourcade & Neuhoff (2014): Planetary Economics, Energy, Climate Change and the three domains of sustainable development. *Routledge*.