

Tackling Leakage in a World of Unequal Carbon Prices

A Climate Strategies Project

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The Project

- **Duration:** February 2008 - March 2009

- **Team:** people and institutions

- *Karsten Neuhoff*; Cambridge University, UK
- *Stephanie Monjon, Philippe Quirion*; CIRED, Paris
- *Tom Brewer*; Georgetown University, Washington
- *Tancrede Voituriez, Xin Wang, Matthieu Wemaere*; IDDRI, Paris
- *Harro van Asselt*; IVM, Amsterdam
- *Wojciech Suwala*; Mineral and Energy Economy Research Institute, Cracow
- *Yasuko Kameyama*; National Institute for Environmental Studies (NIES); Japan
- *Katja Schumacher, Lennart Mohr*; Öko-Institut, Berlin
- *Yukari Takamura*; Ryukoku University, Faculty of Law, Kyoto
- *Michael Mehling*; University of Greifswald
- *Roland Ismer*; University of Munich

- **Associated:**

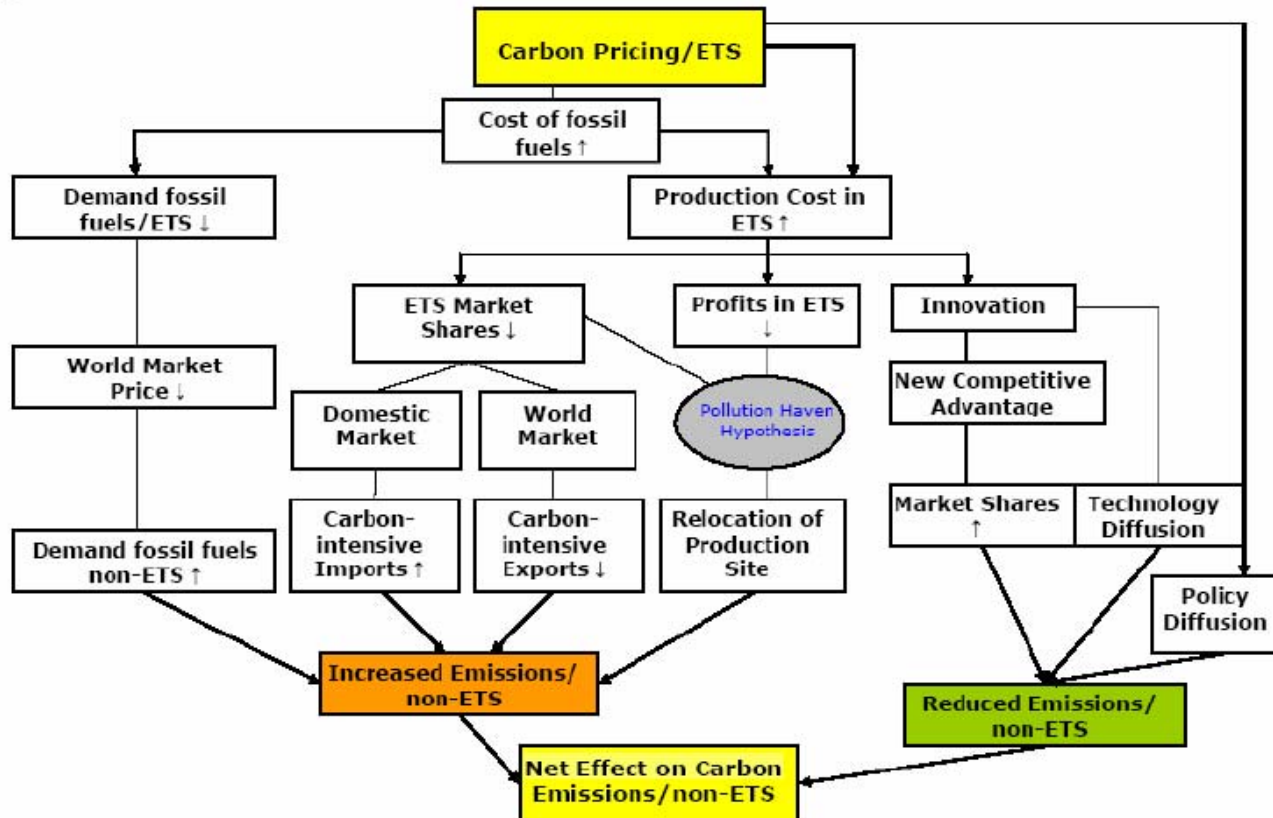
Ecole Polytechnique, Paris; Instituto de Investigación Tecnológica, Madrid

- **Output:** working papers, workshops, report

The Issue

- **Carbon leakage** – rising global emissions due to unilateral climate policy?
- **Analyses:** CGE (Kyoto Protocol) or sectoral (competitiveness)
- **Leakage channels:**

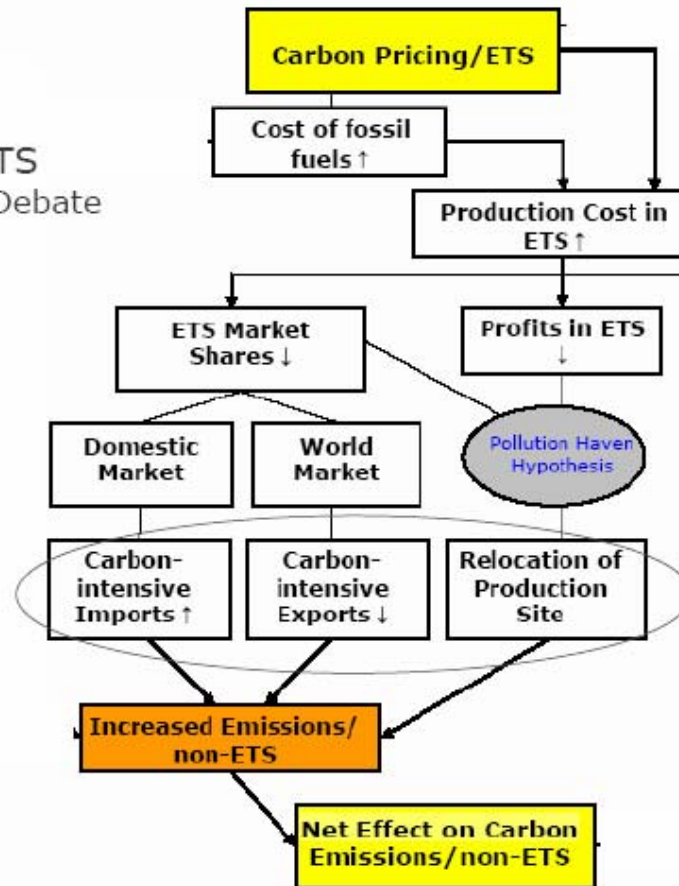
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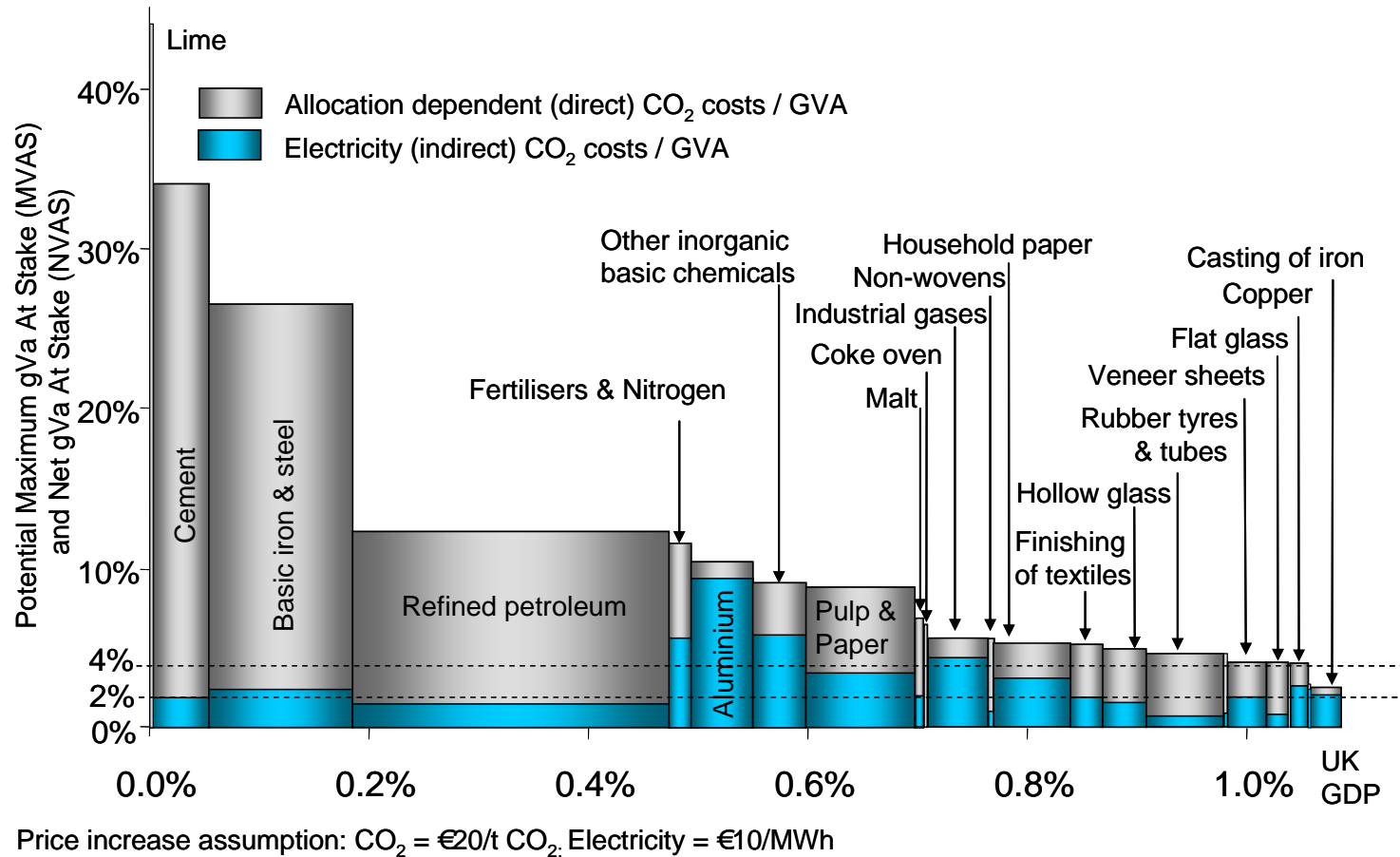
The EU ETS Leakage Debate

Potential Effects from Unilateral Carbon Pricing

EU ETS
Leakage Debate



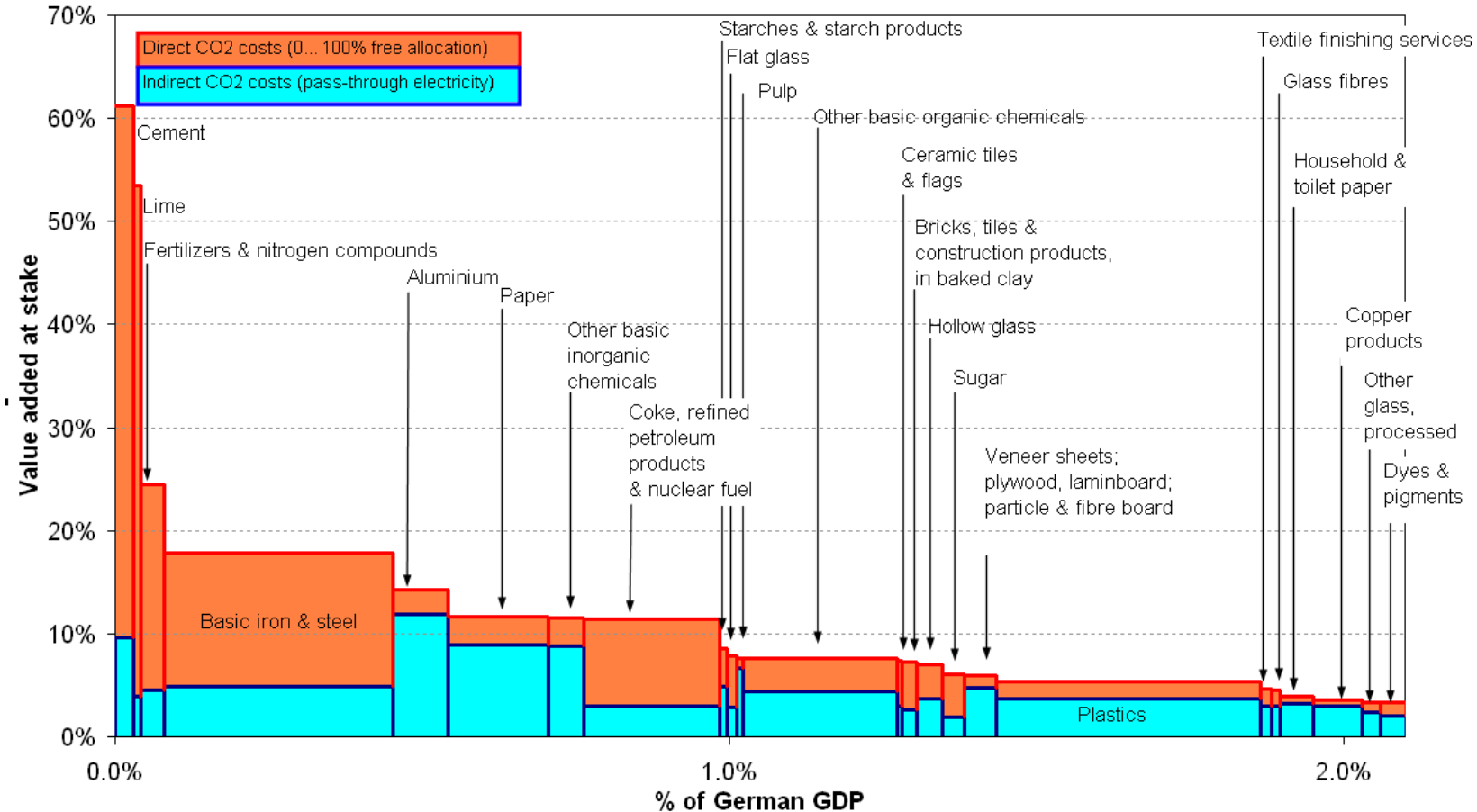
Cost screen: Sectors potentially exposed to unilateral CO₂ pricing (€20 t/CO₂) - UK



Source: Hourcade Demailly, Neuhoff and Sato:

Differentiation and dynamics of EU ETS industrial competitiveness impacts. 2007. Data: 2004

Cost screen: Sectors potentially exposed to unilateral CO2 pricing (€20 t/CO2) - Germany



Source: Graichen et al. 2008, Data Base: 2005

Carbon Leakage from Energy-Intensive Industries

- Carbon pricing competitiveness effects determined by **profits** and **market shares** of producers
- **Translate** into **production and investment** decisions under carbon pricing

Leakage driven by:

- (A) **Substitution** of production through imports/exports
- (B) **Relocation** potential of carbon-intensive producers
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- (C) **International markets**, mainly energy markets, depending on substitution elasticities → feedback loops

Main Issues

- **1** What is the **potential carbon leakage** from a sectoral point of view?
- **2** What are the **cost impacts** from carbon pricing in energy-intensive industries?
- **3** Which **regional dimensions** exist (within EU, worldwide)?
- **4** How can **different tools** against carbon leakage perform?
- **5** (How) Should **border adjustments** be introduced as a remedy?
- **6** What carbon pricing approaches are taken by **major EU trade partners** (and how do they handle leakage)?

Project Outputs - www.climatestrategies.org

1. **The Role of Auctions for Emissions Trading**, (06 Oct 2008) Authors: K. Neuhoff, F. Matthes
2. **Estimation of Carbon Costs in the Chemical Sector** (03 Dec 2008) Authors: Marscheider-Weidemann, F. & Neuhoff, K.
3. **International cooperation to limit the use of border adjustment: workshop summary**; South Center, Geneva September 10, 2008 (06 November 2008), Authors: Karsten Neuhoff, Roland Ismer
4. **Addressing Leakage & Competitiveness in US Climate Policy: Issues Concerning Border Adjustment Measures** - Working Paper, Draft Version (14 Februar 2009) Authors: Harro van Asselt, Thomas Brewer, Michael Mehling
5. **Trade Flows and Cost Structure Analysis for Exposed Industries in the EU-27** – Working Paper – Draft Version (23 January 2009) Authors: Lennart Mohr, Verena Graichen, Katja Schumacher
6. **Can Unilateral Trade Measures Significantly Reduce Leakage and Competitiveness Pressures on EU-ETS-Constrained Industries? The Case of China Export Taxes and VAT Rebates.** Working Paper, Draft Version (21 Jan 2009) Authors: Xin Wang, Tancrede Voituriez

Forthcoming

1. **Analysis on Carbon Leakage and the Polish Power Sector** – Working Paper (forthcoming) Authors: Wojciech Suwala, Mariusz Kudelko
2. **Addressing Leakage in the EU ETS. Results from the CASE II Model** – Working Paper (forthcoming) Authors: Stéphanie Monjon, Philippe Quirion
3. **Border Adjustment in Japanese Climate Policy** – Working Paper (forthcoming) Authors: Yukari Takamura, Yasuko Kameyama
4. **Border Adjustments and Implications for Climate Negotiations Post 2012** Working Paper (forthcoming) Authors: Susanne Droege; Anne Koch

Work Package	Team Members	Affiliation
I: Illustrating Leakage		
Illustrating leakage and framing the EU ETS debate	Susanne Dröge, Manuel Graf Roland Ismer Stéphanie Monjon	SWP - German Institute for International and Security Affairs, Berlin LMU - University of Munich CIRE - Centre for Research on the Environment and Development, Paris
II: Measures to address leakage		
1 Sectoral analysis for EU and other regions*		
1.1 The Polish power sector	Wojciech Suwala, Mariusz Kudelko	MEERI - Mineral and Energy Economy Research Institute of the Polish Academy of Sciences, Cracow
1.2 A multi-sectoral analysis for aluminium, cement, electricity, steel	Philippe Quirion, Stéphanie Monjon	CIRE
1.3 CO2 price impact on industrial cost structures	Katja Schumacher, Lennart Mohr	Oeko - Oeko-Institut, Berlin
2 Border tax adjustment for EU-China trade	Tancrede Voituriez Xin Wang	IDDR –Institut du developpement durable et des relations internationales, Paris
3 Legal and institutional analysis of border tax adjustment	Roland Ismer Karsten Neuhoff Matthieu Wemaere	LMU Cambridge University , Electricity Policy Research Group IDDR
III: Political analysis of using border adjustments to address leakage		
1 US-EU Relations	Harro van Asselt Thomas Brewer Michael Mehling	IVM Institute for Environmental Studies, Amsterdam Georgetown University , Washington University of Greifswald
2 Japan	Yukari Takamura Yasuko Kameyama	Ryukoku University Kyoto National Institute for Environmental Studies , Japan
3 Implications for the Post 2012 global climate regime	Susanne Dröge Anne Koch	SWP
* associated research groups:	Pedro Linares Jean-Pierre Ponsard	Instituto de Investigación Tecnológica , Madrid Ecole Polytechnique , Paris

Agenda I – II

<i>9.00 h Arrival</i>	<i>Day 1</i>
<i>9.15 – 9.45</i>	Introduction to the Workshop, Key Project Results - Susanne Dröge (SWP)
<i>9.45 – 11.15</i> <i>Session I</i>	<p>The EU ETS Directive: Sectors at Risk and Benchmarking</p> <p>Chair: Michael Grubb</p> <ul style="list-style-type: none"> - Identification of sectors at risk - Ingmar Jürgens (DG Enterprise, European Commission) - Setting benchmarks for free allowance allocation – Felix Matthes (Oeko Institute) - <i>Comment: Stefan P. Schleicher</i> (WIFO, University of Graz)
<i>11.15 – 11.30</i>	<i>Coffee Break</i>
<i>11.30 – 13.00</i> <i>Session II</i>	<p>Energy-Intensive Sectors and Carbon Leakage</p> <p>Chair: Stefan P. Schleicher</p> <ul style="list-style-type: none"> - Carbon pricing effects on cost structures and trade flows of energy intensive industries - Lennart Mohr (Oeko Institute) - Addressing leakage from the EU ETS: results from the CASE II model - Philippe Quirion (CIRED) - <i>Comment: Jean-Pierre Ponsard</i> (Ecole Polytechnique)
<i>13.00 – 14.00</i>	<i>Lunch Break</i>

Agenda III - IV

<p>14.00 – 15.00 <i>Session III</i></p>	<p>The Eastern European Perspective on Carbon Leakage Chair: Karsten Neuhoff</p> <ul style="list-style-type: none"> - The Polish Power Sector - Wojciech Suwala (MEERI, Cracow) - Polish Industry and Carbon Leakage - Małgorzata Burchard–Dziubińska (University of Lodz)
<p>15.15 – 15.30</p>	<p><i>Coffee Break</i></p>
<p>15.30 – 17.00 <i>Session IV</i></p>	<p>The Trade Dimensions Chair: Tom Brewer</p> <ul style="list-style-type: none"> - Introduction: Trade Policy Tools and their Implications for Trade and Climate Susanne Dröge (SWP) - Export and Import Adjustments: Legal Issues – Roland Ismer (University of Erlangen-Nürnberg) - Export and Import Adjustments: Implementation Challenges Philippe Quirion (CIRED)
<p>17.00 – 17.30</p>	<p>Wrap-Up Day 1</p>
<p>19.30</p>	<p>Dinner: <i>Restaurant “Hackescher Hof”</i>, S-Bahn Hackescher Hof</p>

Agenda V - VII

<p>9.00 – 10.15 <i>Session V</i></p>	<p>Export Taxes on Energy-Intensive Goods Chair: Bernice Lee - China-EU Trade and the Role of Export Taxes - Tancrede Voituriez, Xin Wang (IDDRI) - <i>Comment:</i> Rengang Huang, Mission of China to the WTO - Carbon-Added Regulatory Structures – Michael Grubb (Climate Strategies)</p>
<p>10.15 – 10.30</p>	<p><i>Coffee Break</i></p>
<p>10.30 – 11.45- <i>Session VI</i></p>	<p>Import Adjustments Chair: Susanne Dröge - US Climate Policy – Emissions Trading and Border Adjustment for Imports - Thomas Brewer (Georgetown University), Harro v. Asselt (IVM) - Inclusion of Importers into the EU ETS – Karsten Neuhoff (University of Cambridge) - Japanese Industry Perspectives – Steffen Schlömer (SWP) - <i>Comment:</i> Political Dimension of Different ETS Trade Adjustments Jake Werksman (World Resources Institute)</p>
<p>11.45 – 13.00 <i>Session VII</i></p>	<p>Carbon Pricing and the International Climate Agenda Chair: Jake Werksman - Finding Multilateral Approaches to Limit Border Adjustments Karsten Neuhoff (University of Cambridge) - Linking of ETS and Leakage Concerns – Andreas Tuerk (Joanneum, Graz)</p>
<p>13.00 – 13.15</p>	<p>Final Discussion</p>