

EU ETS, phase 1: Was it worth it?

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CSIS-IFRI session on Carbon Trading

Washington, 17 November 2009

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EU Emissions Trading System

- Covers currently ~40% of EU GHG emissions
- Single largest market for GHG emissions
 - True multi-national scheme (25/27 Member States)
 - Link to Norway, Iceland, Liechtenstein
- A "Linking Directive" governs relationships between EU ETS & Kyoto Protocol
 - EU ETS stimulates overall carbon market
- Phase I: 2005-07; phase II: 2008-12
- Dec '08: Agreement on Review beyond 2012

Jan 1: Start of phase I

Jan 1: Start of phase II

Jan 1: Start of phase III

EU energy & climate policy objectives

2005

2007

2008

2012

2013

2020



Feb 15: Entry into force of Kyoto Protocol

Jan 1: Start of 1st CP of KP

Dec: end of 1st CP

Some conclusions from phase I

- **The pilot phase was useful.**
 - Trading infrastructure and experience
- **Carbon now has a real price.**
 - Phase 2 tightens overall cap (-6% wrt 2005)
 - Agreed amendments add to scarcity
- **Limited impact so far on competitiveness.**
 - But: may change in the longer term
- **Major driver of the global carbon market.**
 - Links to other schemes and project-based mechanisms
- **Emissions abatement has been achieved.**

A focus on abatement

- Abatement in phase I of particular interest, because emissions were significantly lower than cap
- But: significant CO₂ price for almost two years until 'slack condition' became recognized
- In this period, did companies reduce emissions in response to the carbon price?
 - ↳ To the extent they did, surplus was larger than it would have otherwise been

Some background issues

- **Emissions will never exactly equal the cap**
 - Especially with intra-period banking/borrowing
- **A constraining cap will always result in long and short positions among installations**
- **Reasons for being “long/short”:**
 - “The” reason that motivates trading: differences in the marginal cost of abatement
 - Uncertainty (of economic activity, weather or any other factor affecting emissions)
 - Deliberate over- or under-allocation

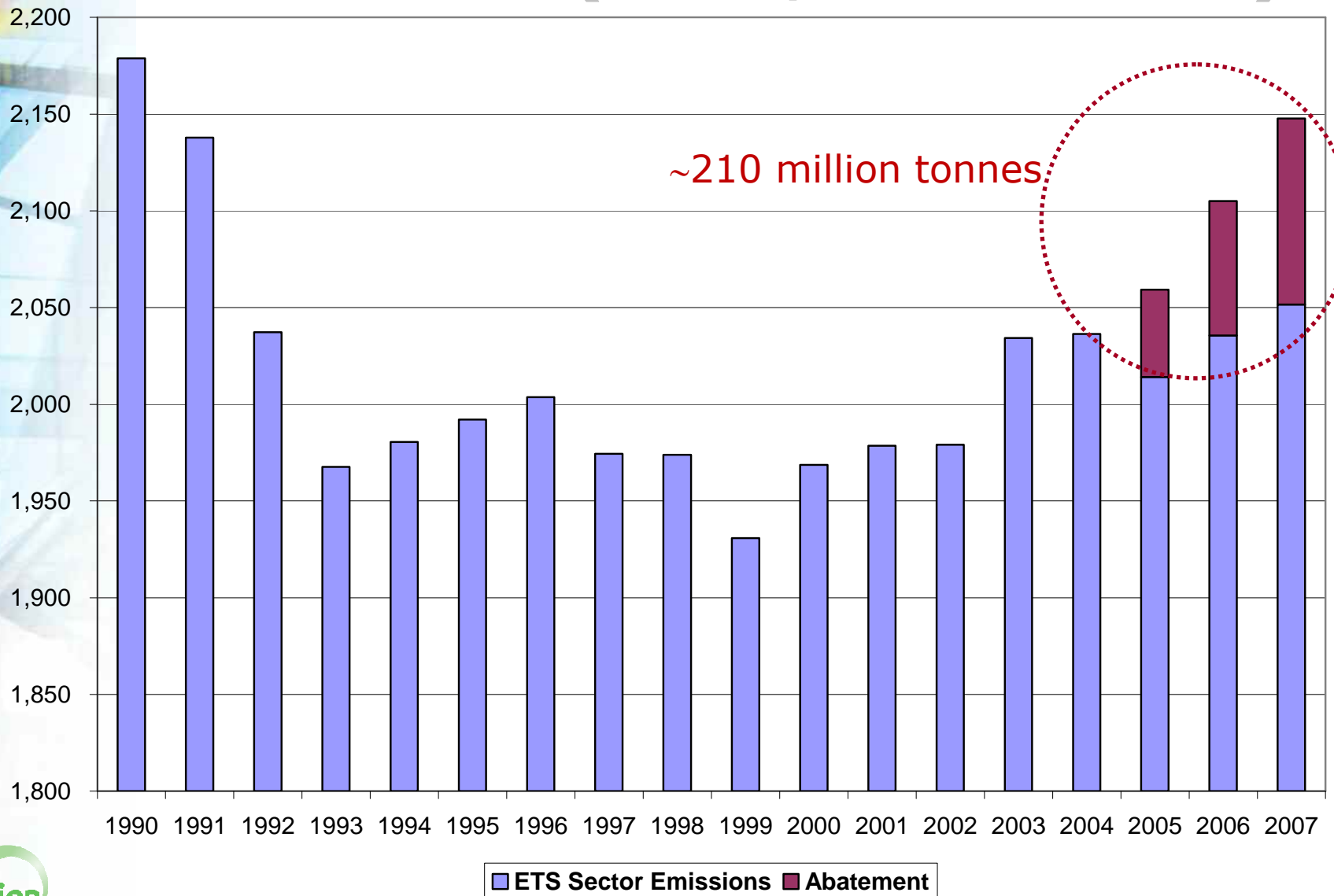
Approach

- **How do 2005-07 emissions compare to historical emissions, not allowance totals?**
- **Level of economic activity: a major determinant of CO₂ emissions**
 - Relationship between emissions and economic activity assumed to continue as without carbon price
- **Two data sources for historical data: UNFCCC CRF data, data for baselines in 1st period allocation**
 - Varying dates, but all centered on 2001-03
 - Potential bias (data collection process)
 - Also, some problems of comparability

Annual rates of change in GDP, CO₂ emissions and intensity

Period	GDP	CO ₂ Emissions		CO ₂ Intensity	
		Economy-wide	ETS Sectors	Economy-wide	ETS Sectors
1995-2000	+ 3.00%	+ 0.06%	- 0.24%	- 2.94%	- 3.24%
2000-2004	+ 1.83%	+ 1.00%	+ 0.85%	- 0.83%	- 0.98%
2004-2006	+ 2.69%	- 0.30%	- 0.02%	- 2.99%	- 2.71%
2004-2007	+ 2.78%	NA	+ 0.25%	NA	- 2.53%

EU ETS sector emissions, 1990-2007. (EU25, million tons)



The basic case for abatement

- A significant positive price is being incurred
 - Rising GDP and real output
 - Taking into account also growth in ETS sectors
 - Weather and relative prices of fossil fuels worked to increase emissions over 2005-07
 - Emissions are lower than historical levels (even after allowing for plausible bias)
- ➔ Probably ~120-300 Mt over 2005-2007

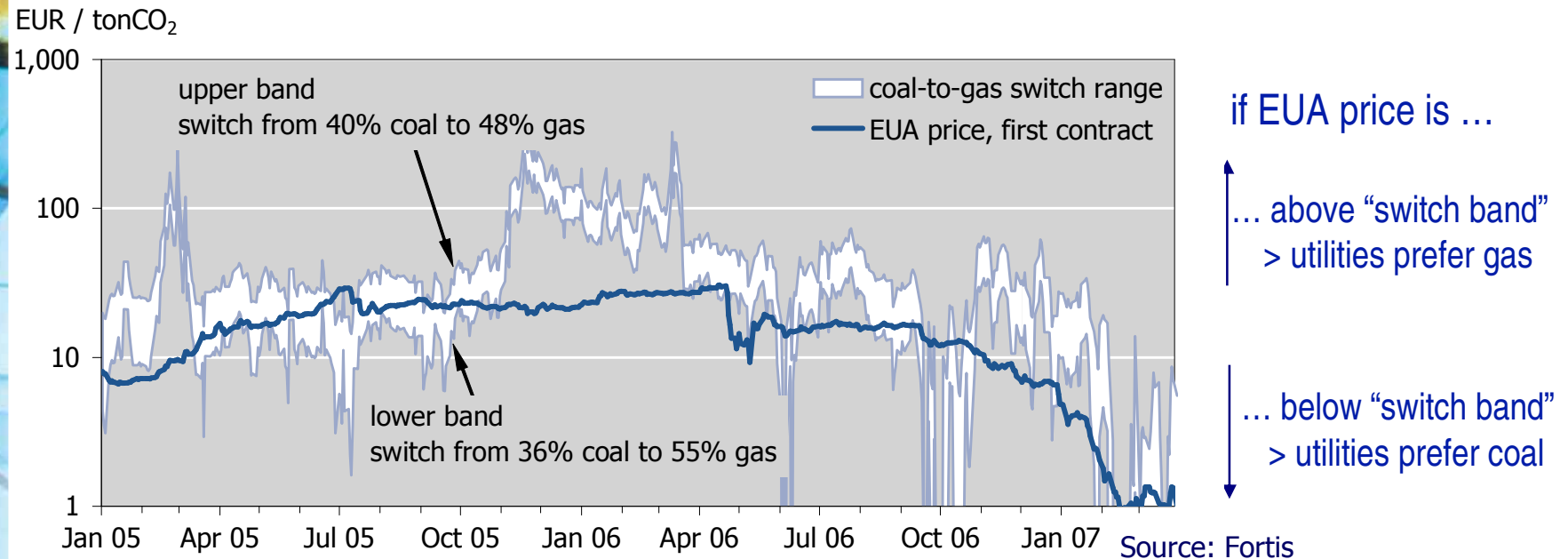
Where?

- **In particular, abatement happened**
 - **mostly in EU 15**
 - **both in electricity sector and industrial sectors**
 - **mostly (but not only) through fuel switching**



Some emerging evidence

Fuel switching in the EU power sector



- **without CO₂ valuation (EUA at €0/tCO₂) – no fuel switching; all utilities would have constantly preferred coal over gas**
- **CO₂ valuation gave a clear incentive for utilities to switch from coal to gas from March 2005 until October 2005**
- **abatement between 54 and 99 Mt in 2005 and 2006 in the power sector alone**

Source: Delarue, Ellerman & D'haeseleer, 2008

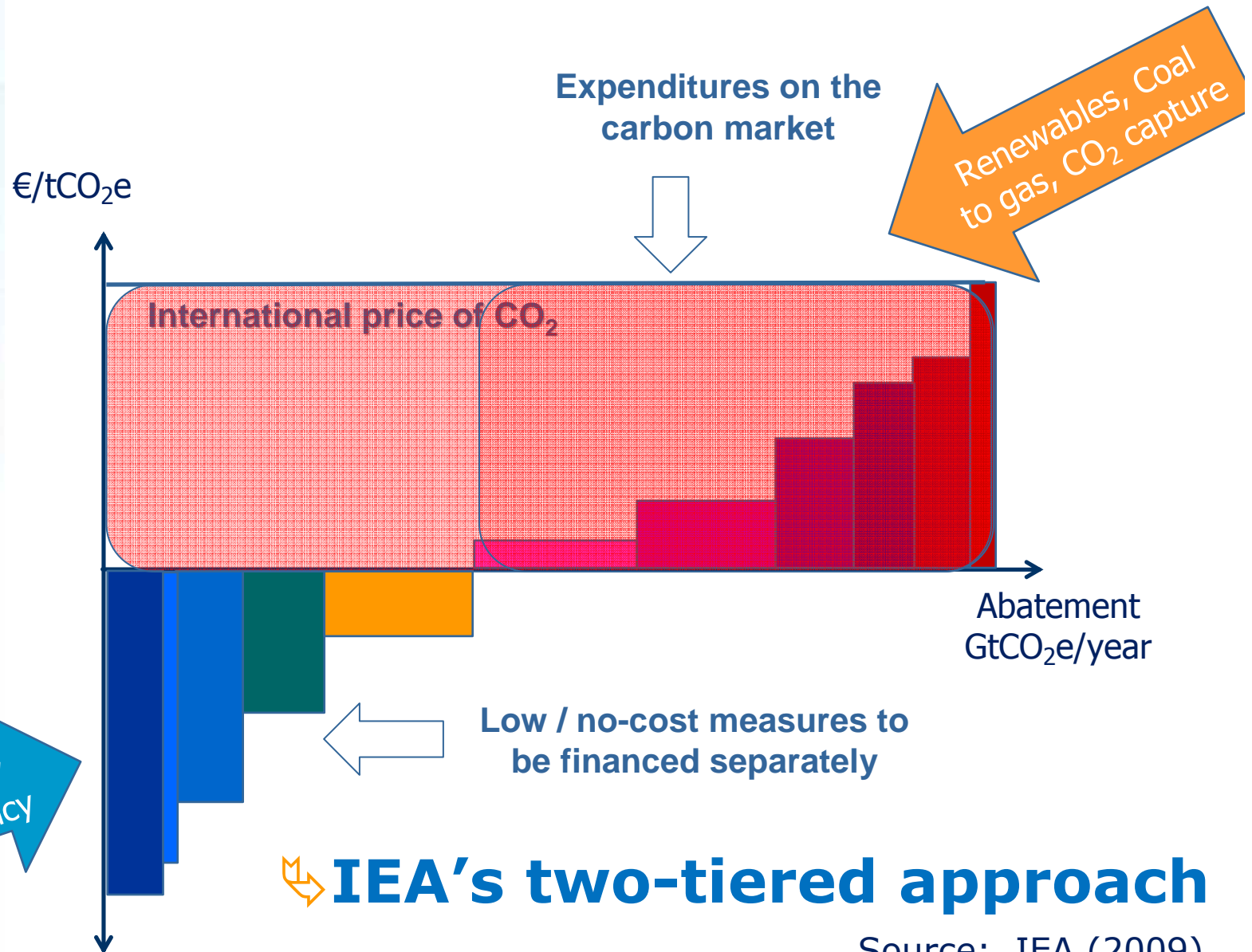
EU ETS, phase I:

- Many problems, most importantly some over-allocation
- Nonetheless, the pilot phase was successful
 - Provided important lessons
 - Infrastructure is place
 - The carbon price has induced some emissions abatement in the EU ETS
- Exact magnitude of abatement hard to pin down to due poor data and inherent difficulties
 - However, a long position is not a per se indicator of over-allocation

Bottom line

- **Price signal is needed to internalize CO₂ costs - market instruments are essential to transmit it**
 - EU ETS is creating a 'fact on the ground'
 - importance of these instruments also confirmed within climate negotiations
- **In addition, other targeted policy interventions may be more appropriate to reduce emissions in certain areas**
 - price signal is not always effectively transmitted – market barriers exist
 - setting caps and monitoring emissions can be difficult and costly
- **Beyond politics, practical implications of options on the domestic/negotiation table should be examined to ensure an effective, broader market in the future**
 - E.g., linking

A cost perspective: a rational use of the carbon market



IEA's two-tiered approach

Source: IEA (2009)



References

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Background: An ex-post evaluation of the EU ETS

A joint research initiative led by

- **Massachusetts Institute of Technology (MIT)**
- **University College Dublin (UCD)**
- **Mission Climat of Caisse des Dépôts**
- **in collaboration with the International Energy Agency (IEA), the Université Paris-Dauphine, the Öko-Institut in Berlin and the Centre International de Recherche sur l'Environnement et le Développement (CIRED) in Paris**

- **More information and the Interim Report available at <http://www.aprec.net/>**

