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The European Union Emissions Trading Scheme. Background, lessons learnt & perspectives

University of New South Wales

“Emissions Trading for Australia: Lessons learnt from Europe”

Sydney – 17 March 2008

Dr. Felix Chr. Matthes

Structure of the presentation

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- Background on the EU ETS
- The first (pilot) phase from 2005 to 2007 and phase 2 from 2008-2012
- Lessons learnt & recent experiences from phase 2
- The revision of the scheme

The European Union Emissions Trading Scheme (1)

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- 27 participating countries
  - GDP 12,253 bn € in 2007 (= 20,045 bn AUD)
  - Population 495 mln
  - Internal (liberalized) market for energy
  - scope 44.5% of total GHG emissions
- Downstream scheme for CO2 from stationary sources
  - Installation-based
  - Power generation & selected industries
  - 2,123 Mt CO2 covered in 2005
  - 2,207 Mt CO2 extended scope CO2, +60 Mt CO2-e N2O (from 2008/2013) and ~150 Mt aviation (from 2013)
- Multi-period scheme
  - Pilot phase 2005-2007, Phase 2 2008-2012 (= Kyoto Phase), Phase 3 2013-2020
  - Tight schedule for take-off

The European Union Emissions Trading Scheme (2)

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- Characteristics
  - Full flexibility (banking / borrowing) within a period, no banking from pilot phase to phase 2
  - Penalty of 40 €/t CO2 (by 2007), 100 €/t CO2 (from 2008), no buy-out, no safety valve
  - Cap & allocation left to the Member States (National Allocation Plans), approval by the European Commission
  - Ceilings for auctioning (≤ 5% in pilot phase and ≤ 10% in phase 2)
- National Allocation Plans (NAP)
  - Total amount of allowances to be allocated
  - Allocation to installations
  - Use of project credits (CDM, JI)
  - Policies & Measures for the non-trading sectors
- Strong ties to the Kyoto Scheme

Kyoto Mechanisms and the EU ETS
Strong ties

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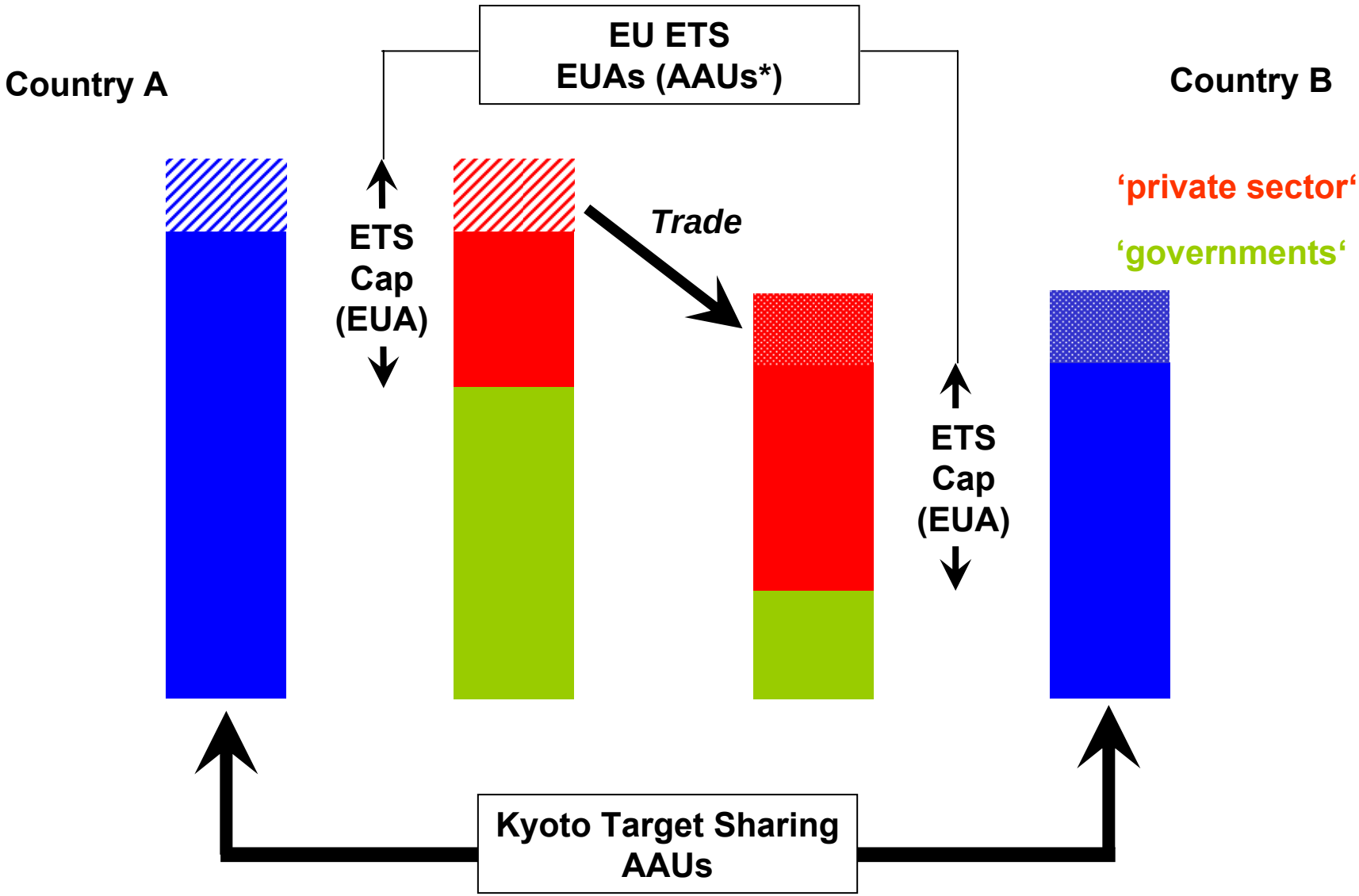

The EU Emissions Trading Scheme
Differences in industry coverage

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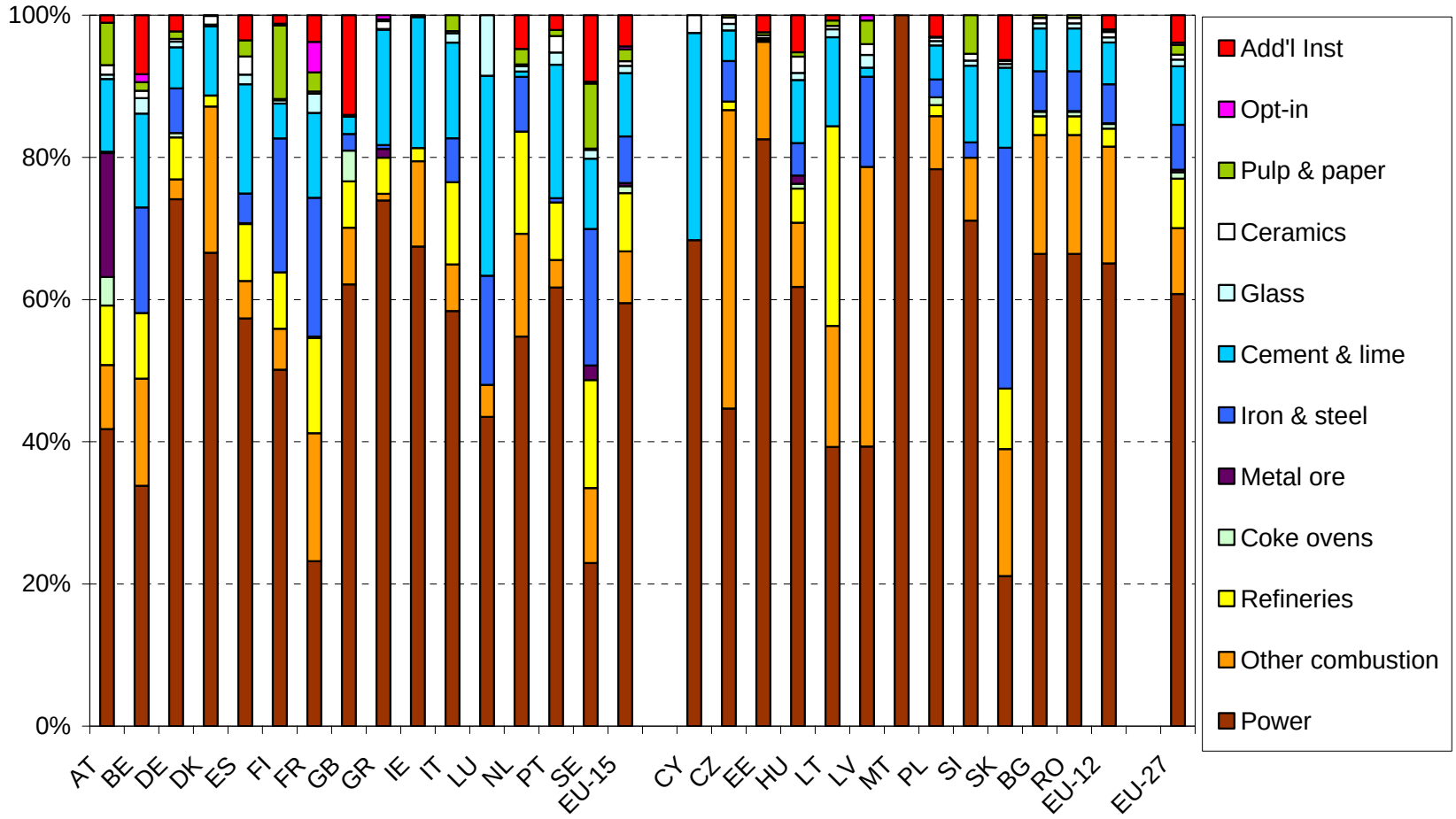

The EU Emissions Trading Scheme
Large & small emitters (Germany)

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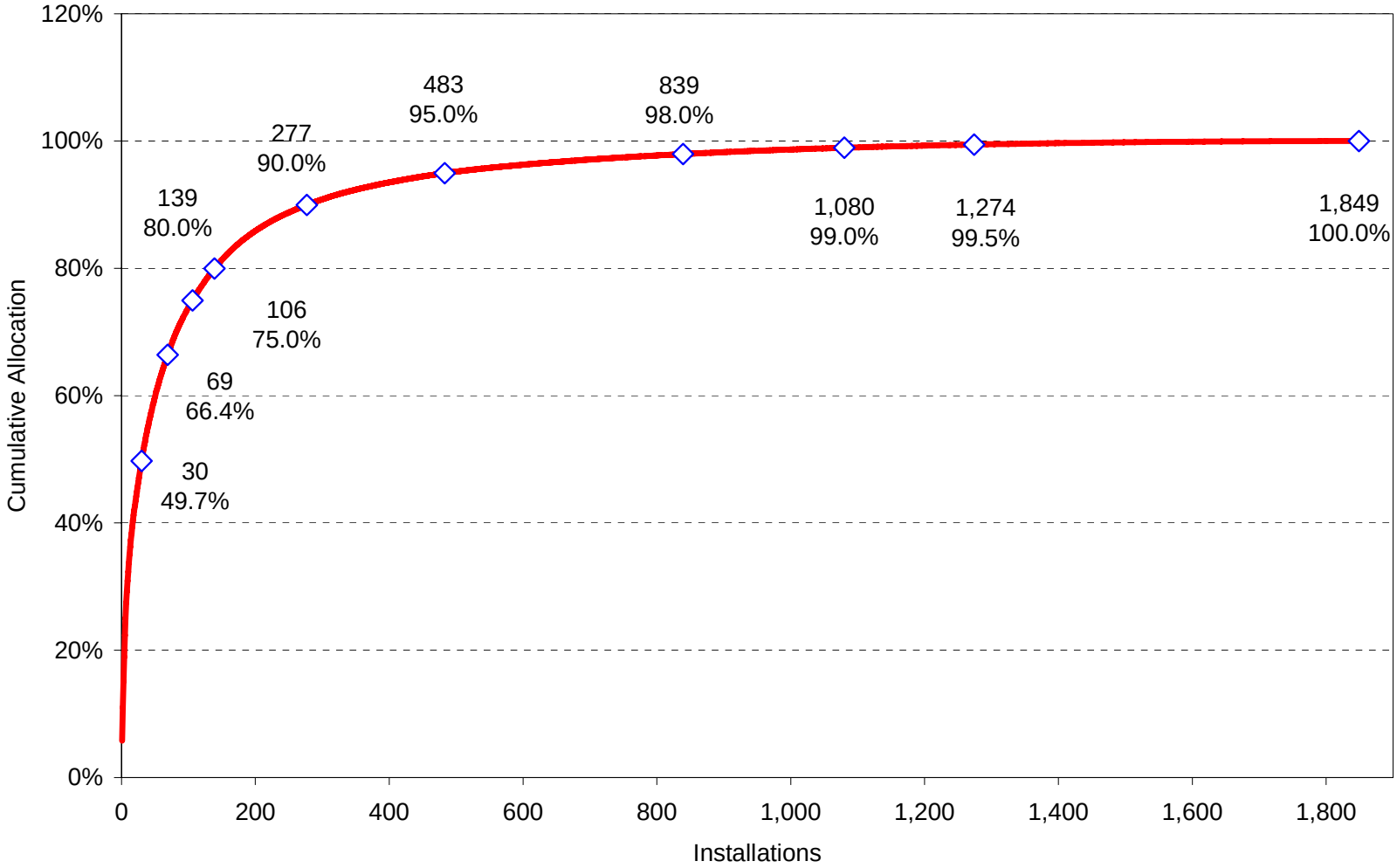

The EU ETS phase 1 environment
Fuel prices (for illustration only)

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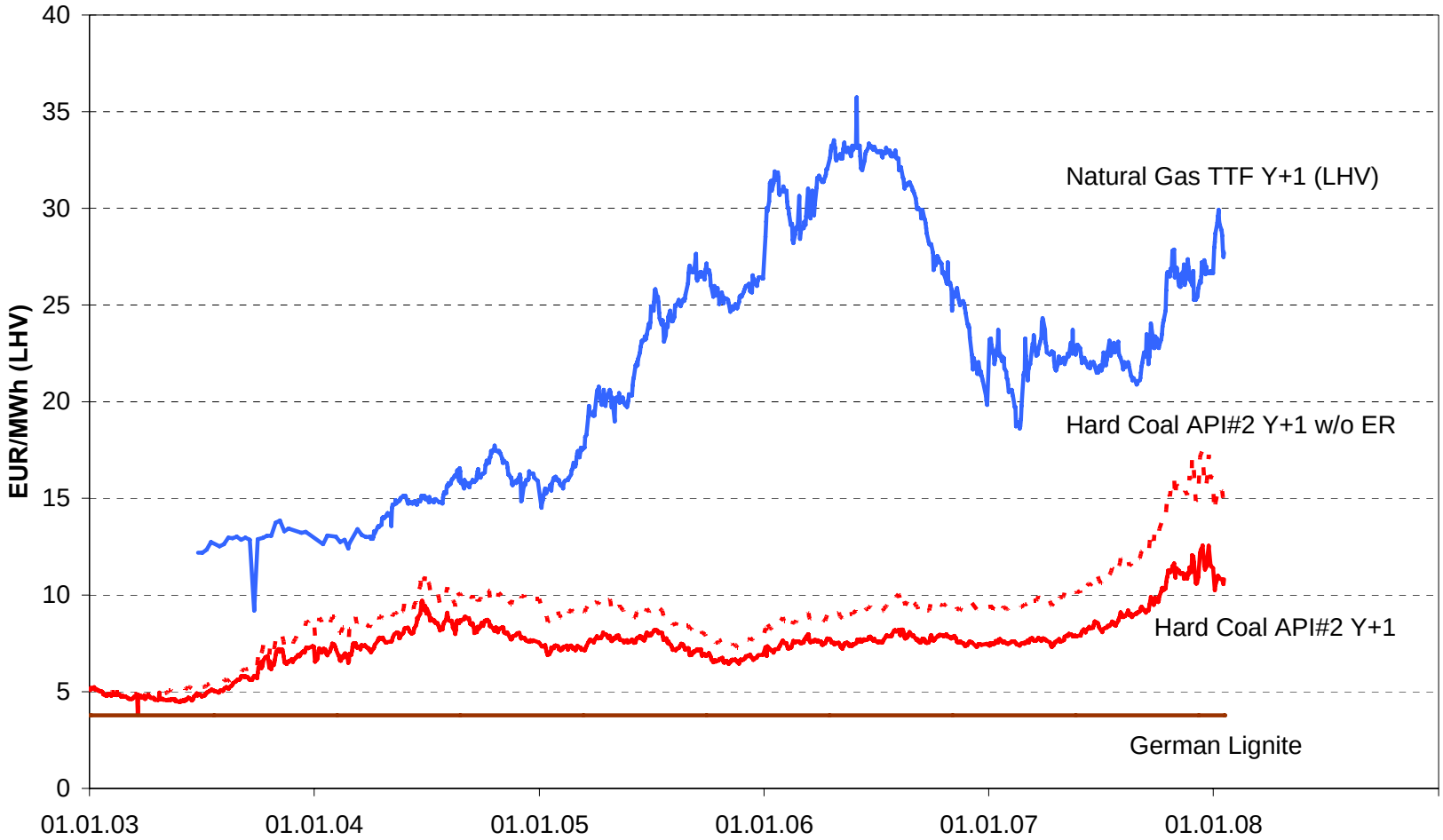

The EU Emissions Trading Scheme
The European allowances price

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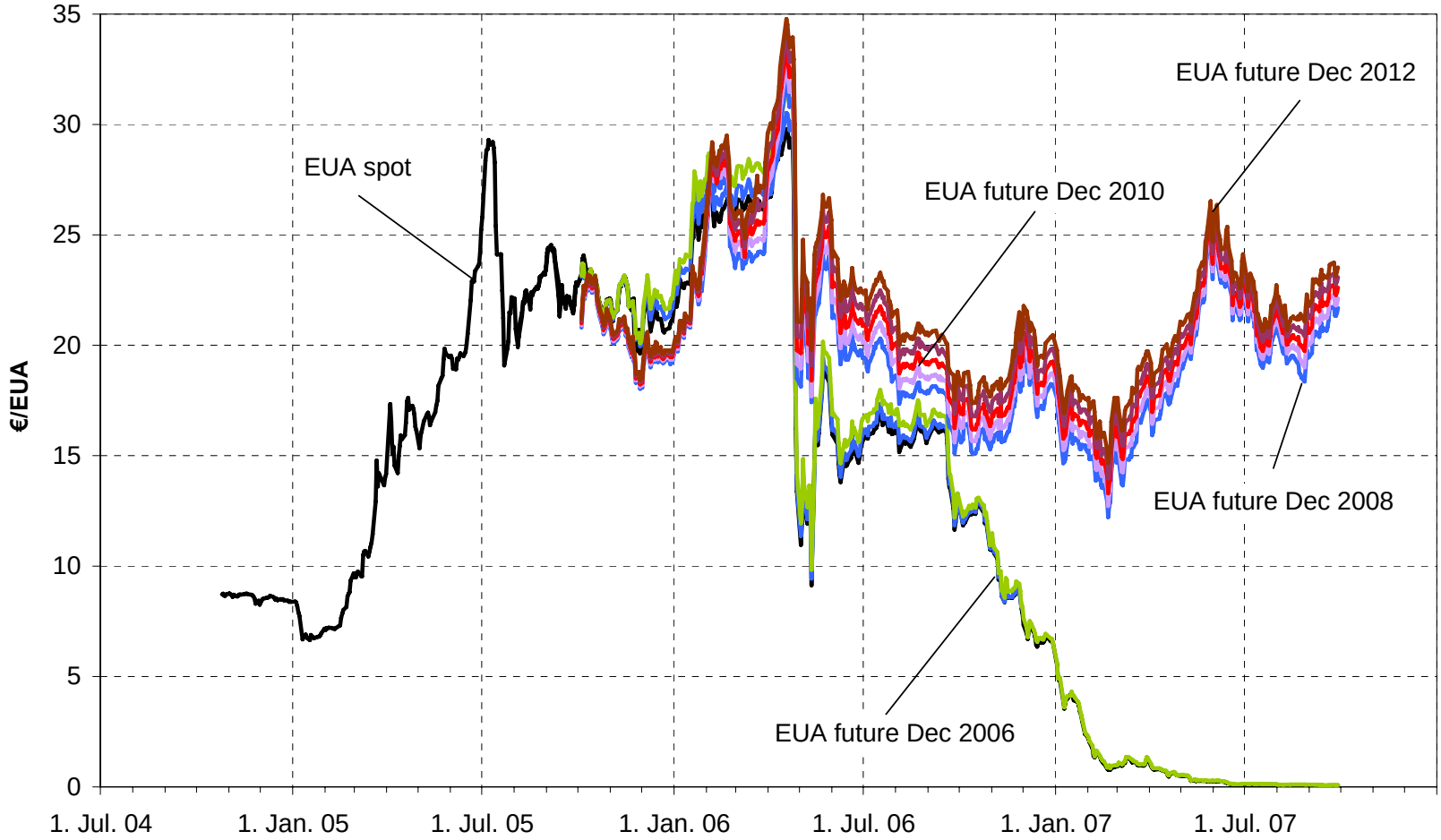

The EU Emissions Trading Scheme
EUA price developments

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- Significant uncertainties in the market
  - Approval of National Allocation Plans by the European Commission step by step (and not in time)
  - Take-off problems with the (national) registries and the link to the Community Independent Transaction Log (CITL)
- Fundamentals
  - Fuel prices
  - Weather (winter/summer temperature, rainfalls)
  - Economic activities
- ETS & climate regime specifics
  - Asymmetric risk exposure because of (free) allocation
  - Ex post adjustments (Germany)
  - Availability of international offsets
- Gaming (power generators, speculations, etc.)???
- … and the price crash from April 2006

The EU ETS price crash
April 2006 and beyond

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- No transparent data available to the market before data on verified emissions under the EU ETS leaked in April 2006
- Overallocation by the Member States
  - Base period flexibility
  - Growth factors
- Biased data from the operators
  - Original goal: precise data = plant specific data
  - Plant-specific data offer (legal) flexibility for biased data calculation for the years (a) before the start of the scheme and (b) under the compliance regime of the scheme = consistency problem
- The data problem
  - Total cap for pilot phase 2,299 mln EUA
  - 2005 verified emissions (for compliance): 2.123 Mt CO2
  - Market was long for 175 Mt CO2 → price crashed

The EU ETS price crash
April 2006 and beyond

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The EU Emissions Trading Scheme
Daily trading volumes

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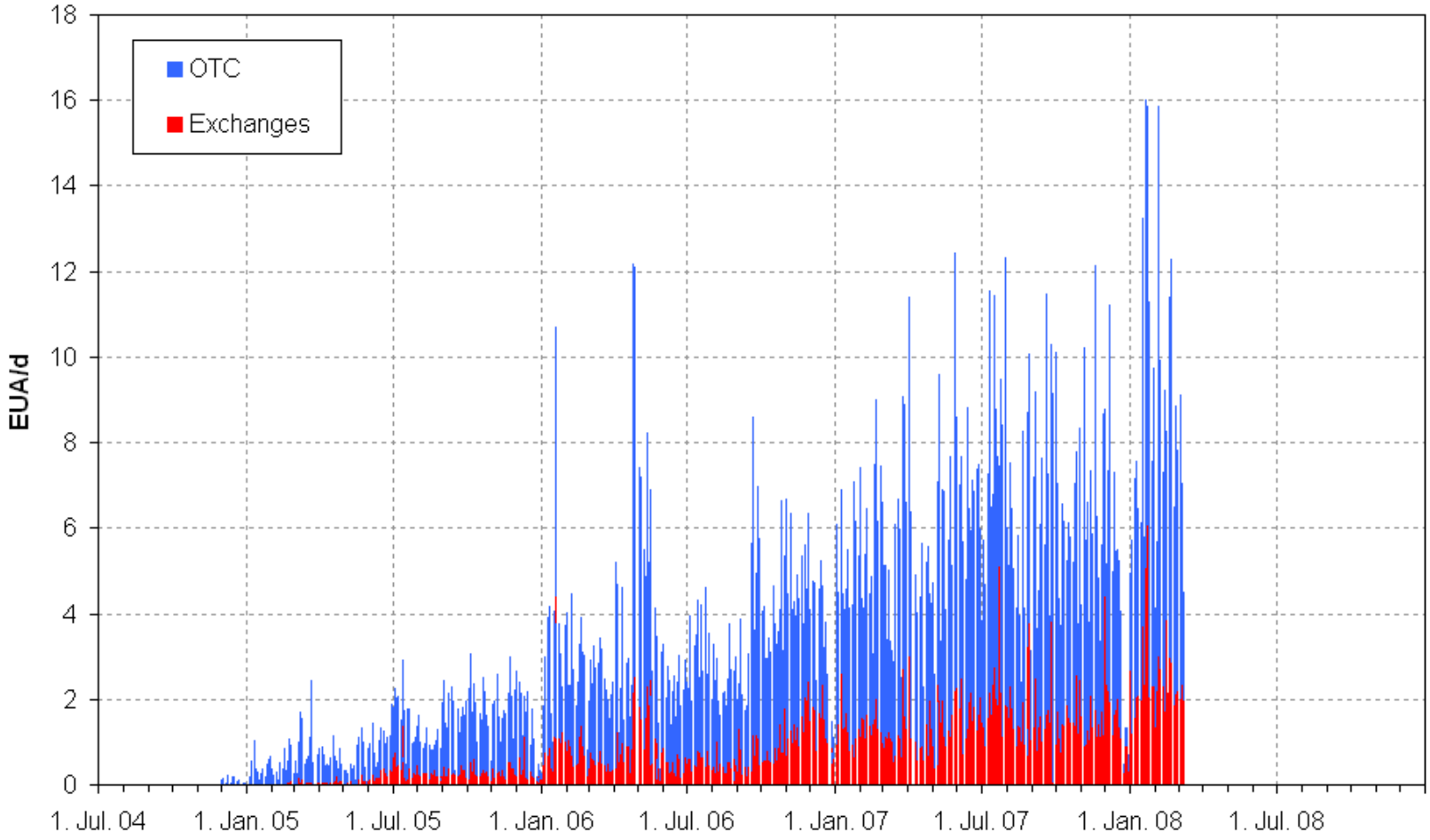

Modeling exercise /w and w/o CO2
A closer look to Germany (1)

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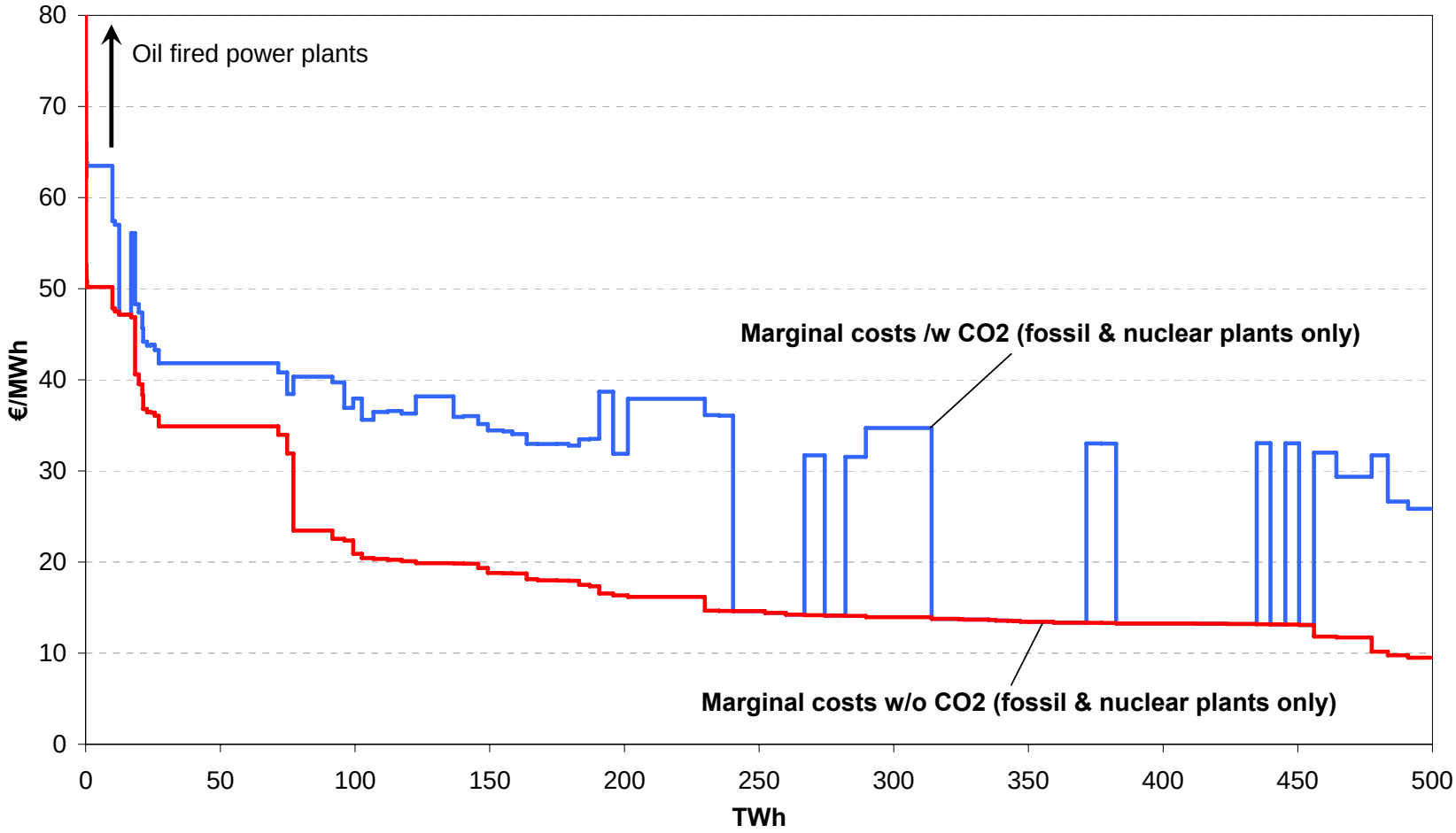

Modeling exercise /w and w/o CO2
Merit order of public power 2006

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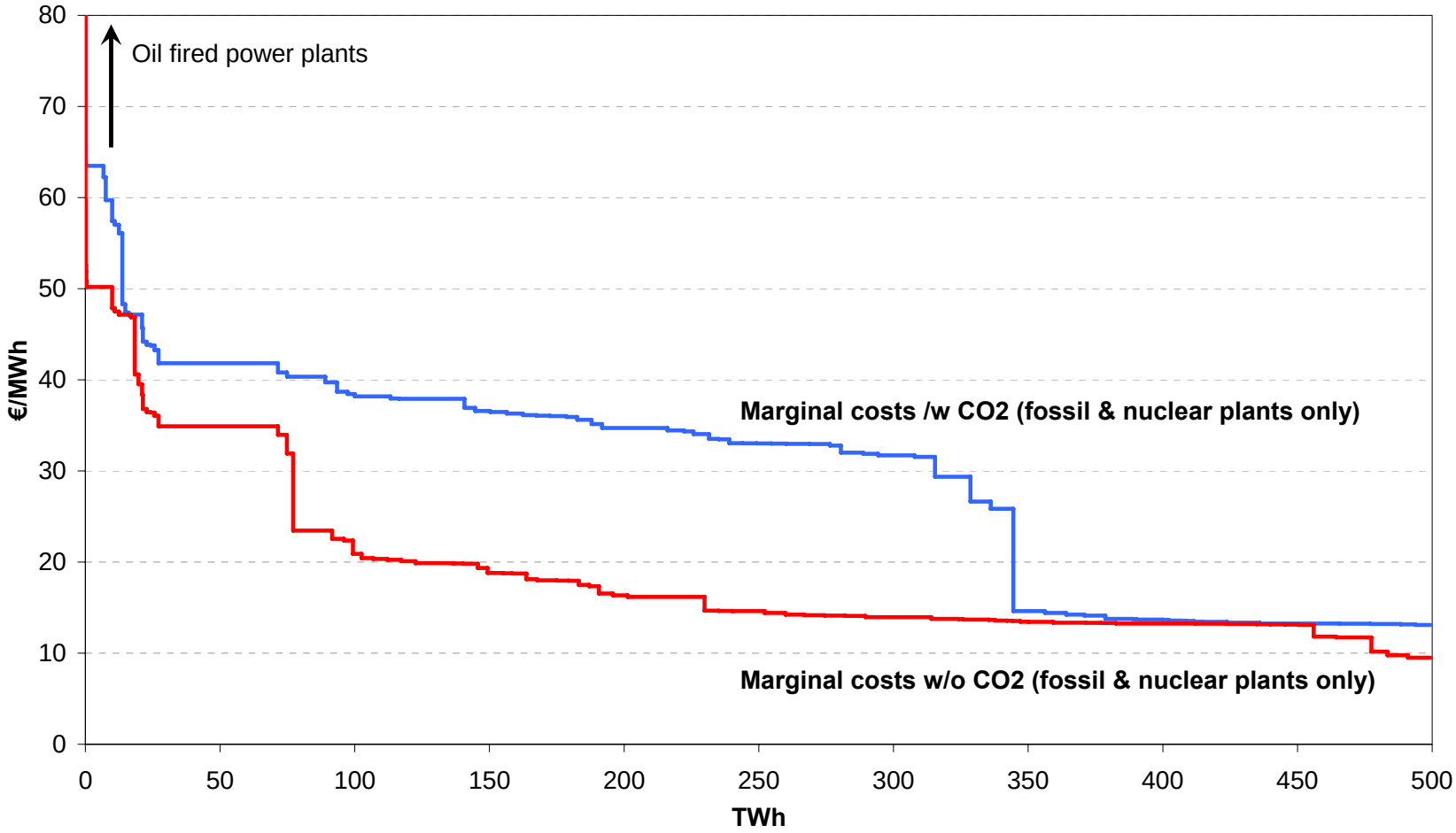

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Modeling exercise /w and w/o CO2
A closer look to Germany (2)

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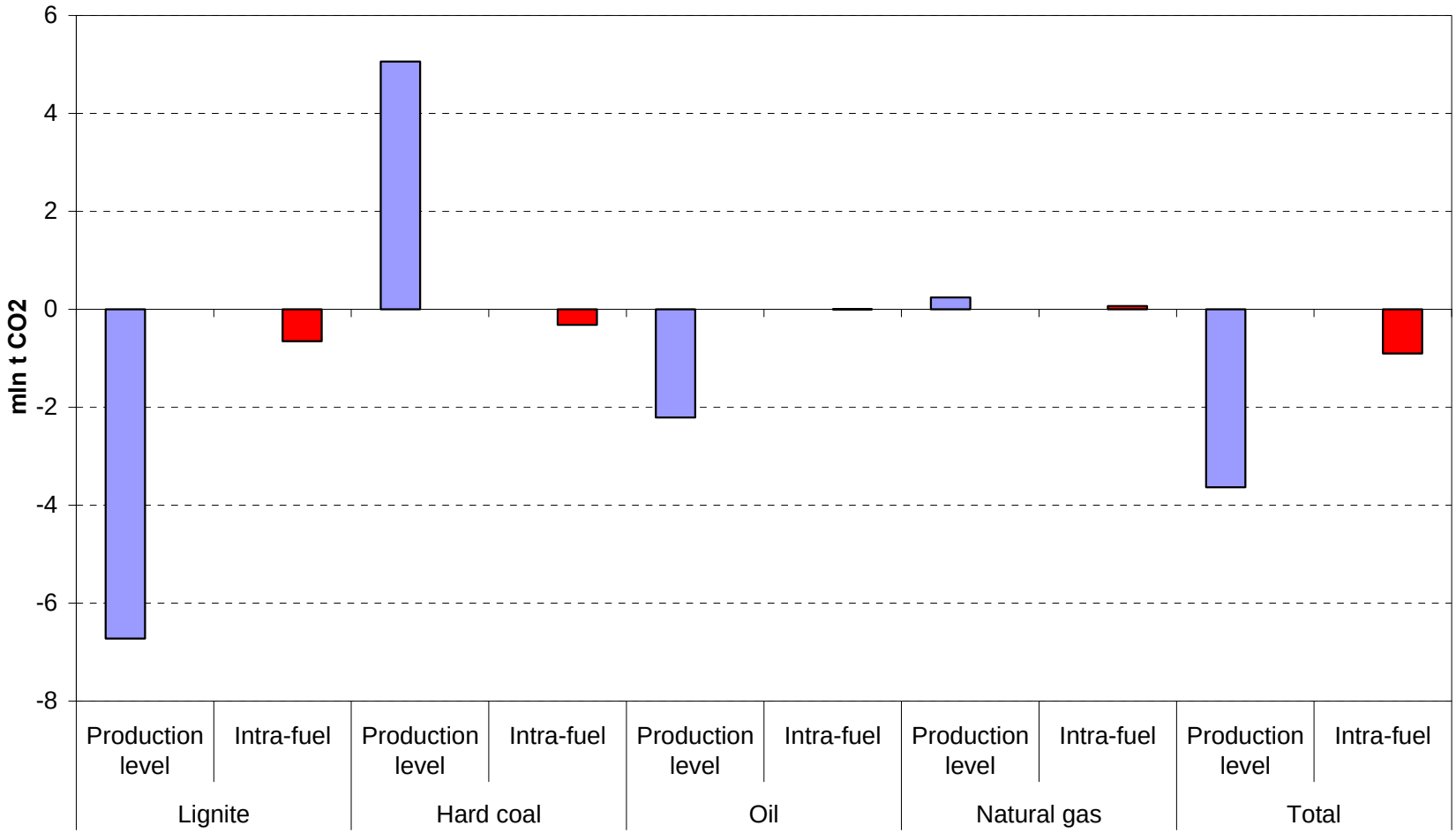

(Additional) CO2 emission abatement from biomass use (induced by ETS?!)

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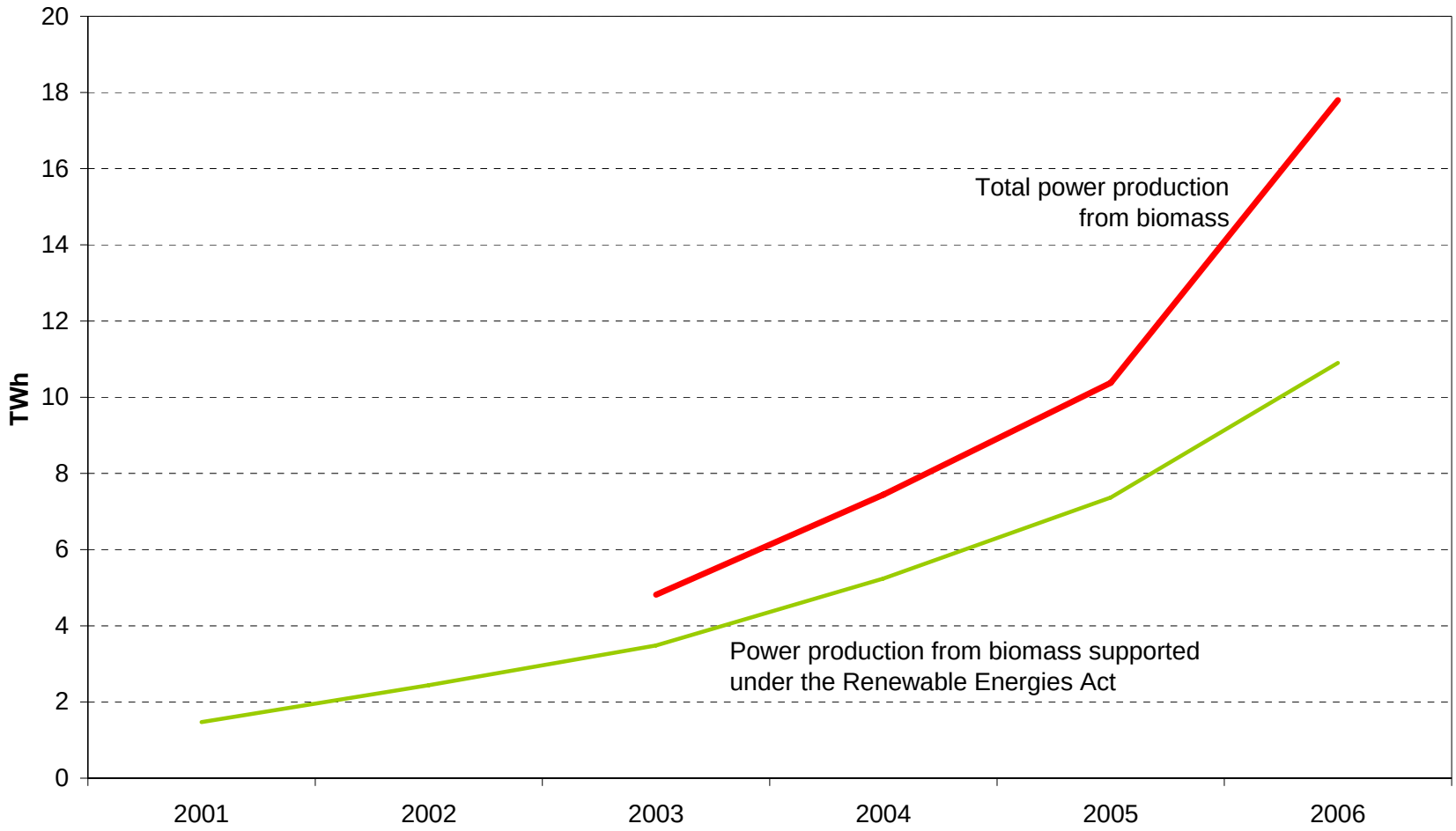

The EU Emissions Trading Scheme
About abatement

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- Abatement can be proved for the pilot phase (when there was an EUA price)
- Emission reduction resulted more from 'unexpected' sources (coal-to-coal shift, biomass co-firing) than from the 'conventional' fuel shift
- Significant indication for innovation
- However, significant distortions of the CO2 price signal
  - Free allocation
    - Expectations for updating of base periods (phase 2+)
    - Ex post adjustments (Germany)
    - Free allocation to new entrants (in general and fuel-specific)

EU ETS new entrant allocation
Economic and competition distortions

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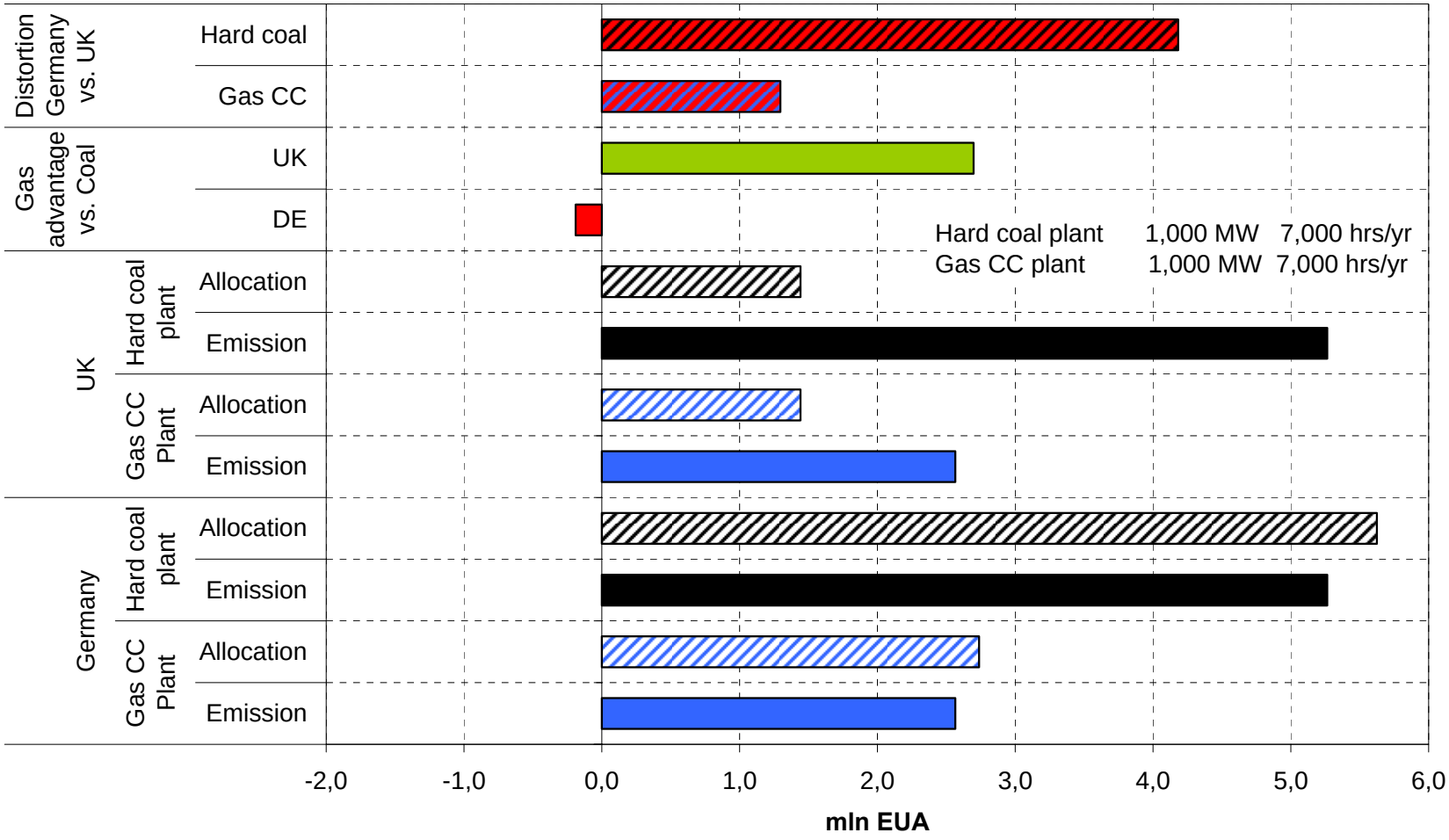

The EU Emissions trading scheme
Cap proposals from the MS for phase 2

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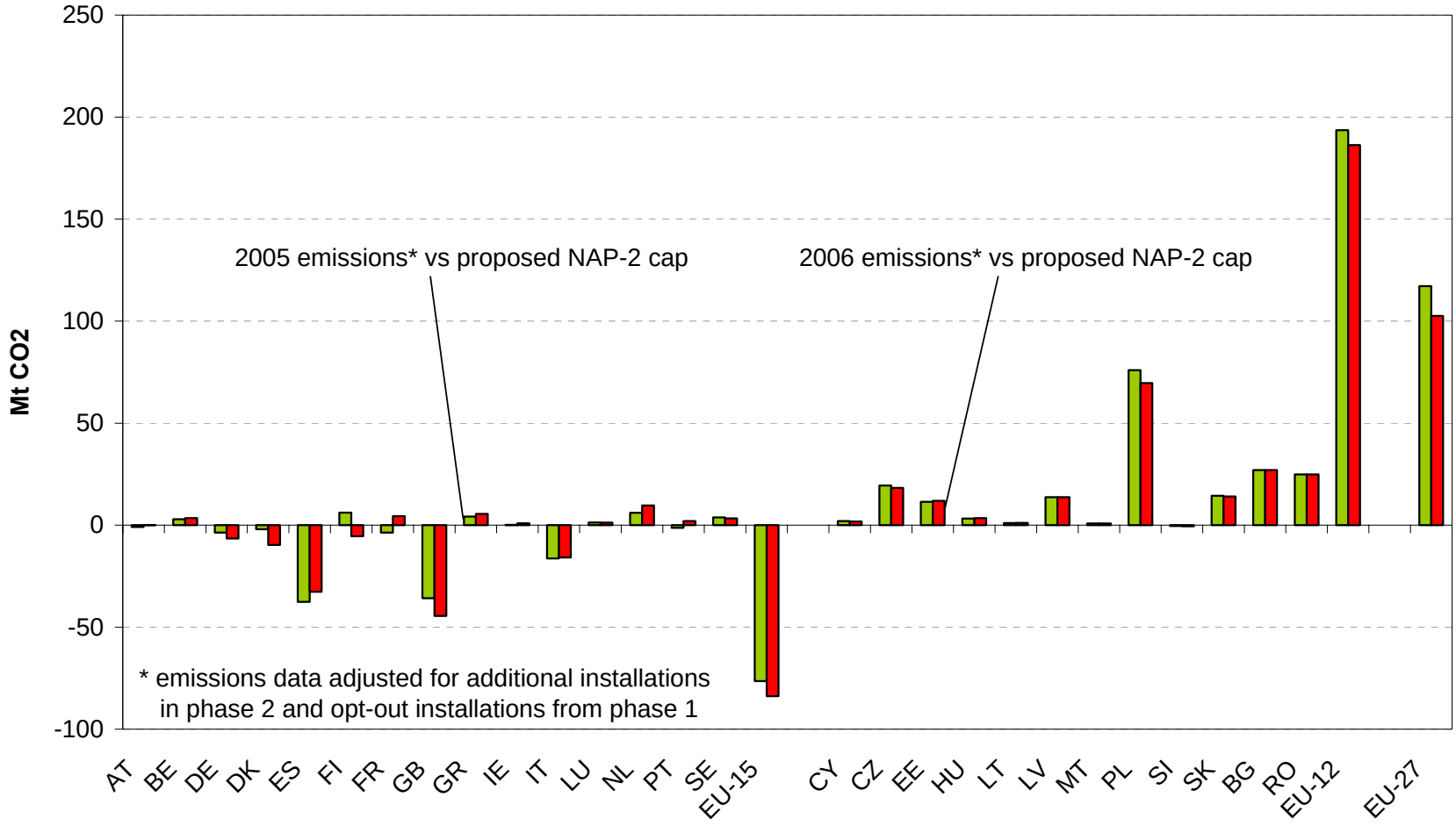

The EU Emissions trading scheme
Approved caps for phase 2

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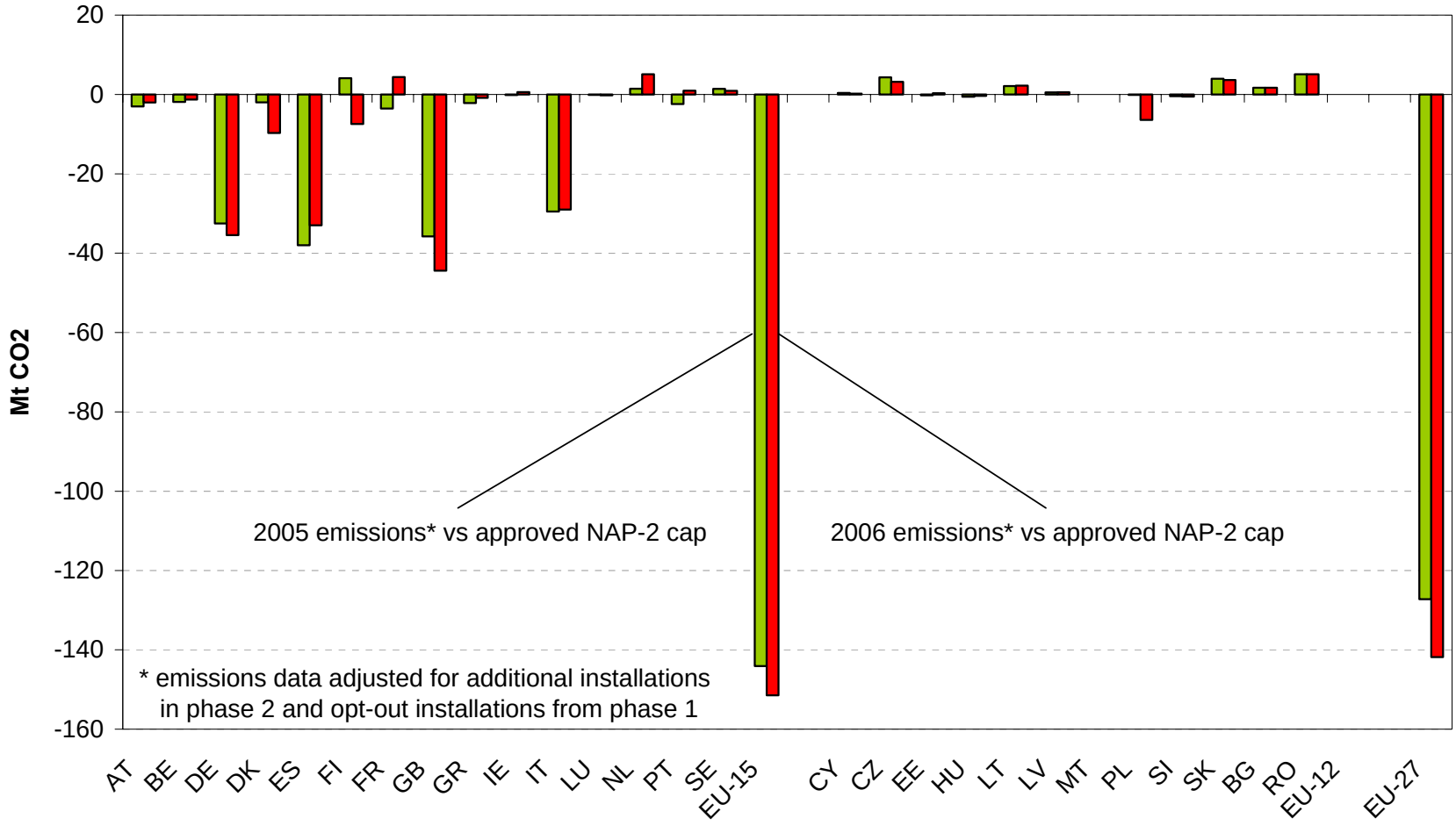

The EU Emissions Trading Scheme
Windfall profits

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- Most generators (in the liberalized market segments) passed through the opportunity costs of the allowances
- Rough assessment for phase 2
  - 70% free allocation for power generators @ 25 €/EUA = 22 bn €/yr
  - Pass-through of 500 g CO2/kWh (EU average)
    - Windfall profits for fossil power generation (1,778 TWh) = 13 bn €/yr @ 25 €/EUA
    - Windfall profits for nuclear & hydro power generation (1,282 TWh) = 16 bn €/yr @ 25 €/EUA
- The power sector is not the only one …

The EU Emissions Trading Scheme
Lessons learnt (1)

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- The system worked in general
  - A uniform European price signal was generated (for a time)
  - Downstream approach created interesting results
  - An impressive secondary market emerged
- Cap setting is essential: clear distinction between cap setting and allocation process
- Free allocation is complicated
  - No Member State was able to implement a simple scheme
  - Many complicated issues: capacity extensions, new entrants, plant closure, integrated installations (e.g. blast furnace gas), process emissions
  - Opportunity cost pass-through & windfall profits (not only for the power sector)
  - Myths & reality in an installation-based scheme (early action, etc)

The EU Emissions Trading Scheme
Lessons learnt (2)

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- Allocation is not only about distribution
  - Significant distortions of the CO2 price signal: updating, new entrant allocation & ex post adjustments
  - Major problems for market transparency
- Technicalities does matter
  - Data, data, data: consistency of time series is more important than precision at a point of time
  - Market transparency is needed not only on allocation and compliance (allowance flows in the market)
- The pilot phase was crucial
  - Many practical experiences: markets are more creative than consultants …
  - No 'contamination' of next phases with flaws from take-off
- Important interactions must be considered between the EU ETS and the international climate regime

The EU Emissions Trading Scheme Revision for 2013 an beyond

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- Ongoing review and revision process
  - Legislation in end-2008
  - Revision clauses regarding the outcome of the international process (caps, treatment of industry with high exposure to CO2 price and international competition)
- Extended scope (CO2, N2O from industrial processes, aviation), but special provisions for small emitters
- Centralized cap setting
  - EU-wide (recent proposal: -21% compared to 2005)
  - (no) assignment to the Member States
- Harmonized allocation
  - Free allocation with harmonized rules (benchmarking)
  - High share of auctioning
    - Power generators 100%
    - Exposed industries (auctioning vs free allocation for direct/indirect emissions, border adjustments, direct compensation)?

The EU Emissions trading scheme
CO2 cost & trade exposure

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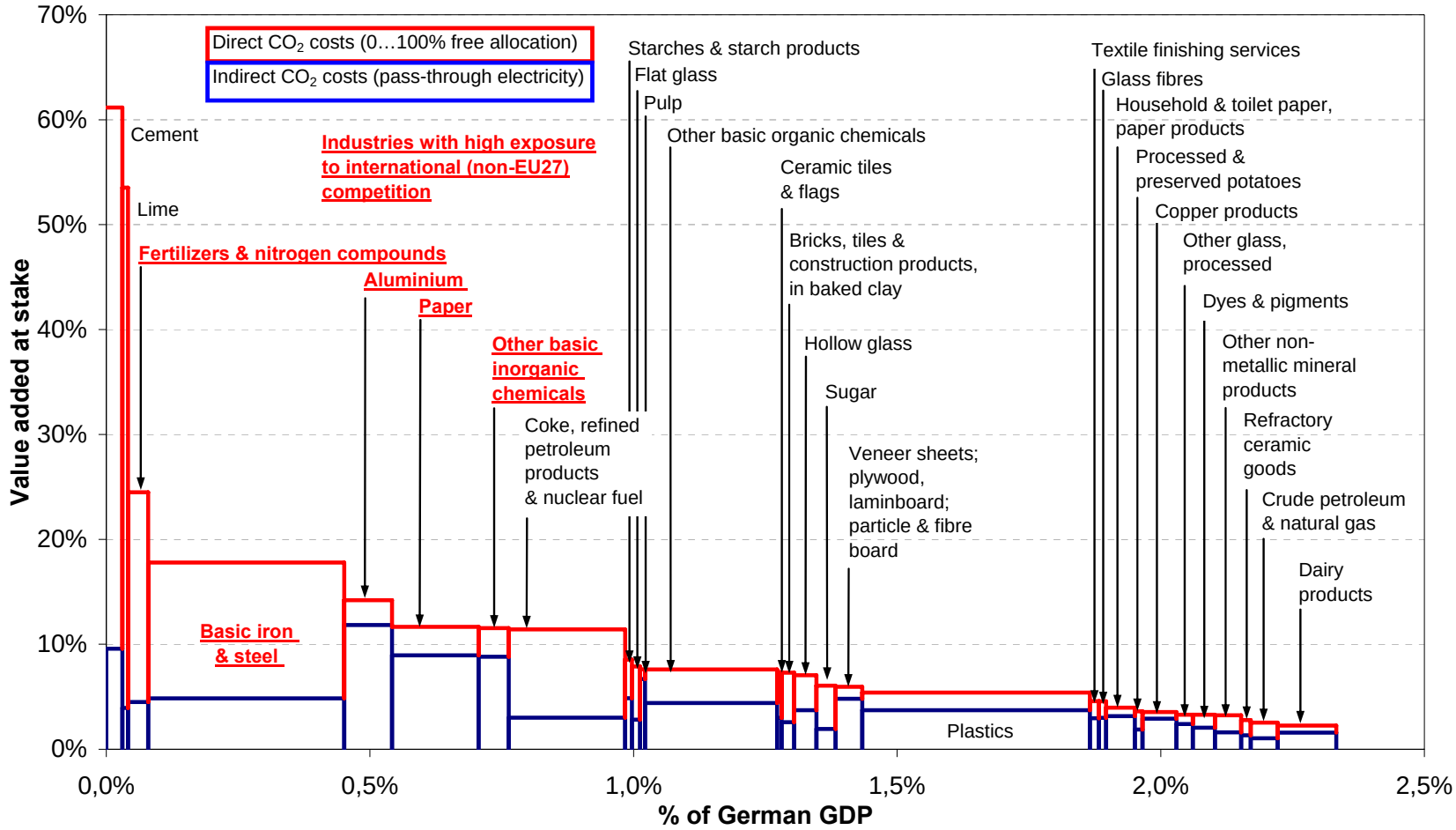

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Thank you very much

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