

# Carbon-energy taxation: Stabilising, mitigating and compensating

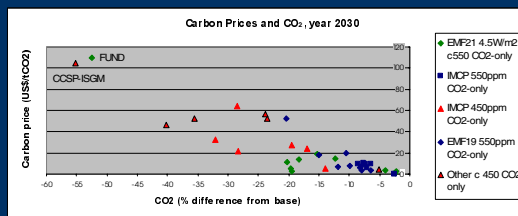
Prof. Mikael Skou Andersen  
NERI, University of Aarhus (DK)

COMETR is a Specific Targeted Research Project (STREP) of the 'Scientific Support to Policies' initiative under the EU's Sixth Framework Programme for Research (FP6)



## Targets and CO<sub>2</sub>-cost to avoid dangerous climate change

- Stern, p. 284: **"The current evidence suggests aiming for stabilisation somewhere within the range 450 - 550ppm CO<sub>2</sub>e.** Anything higher would substantially increase risks of very harmful impacts."
  - IPCC: 550ppm CO<sub>2</sub>-eq (450 ppm CO<sub>2</sub>-only) requires average reductions in global CO<sub>2</sub> around 20% in 2020; 32% in 2030; 56% in 2050; 82% in 2100
- CO<sub>2</sub>-price should be increased to a level of **20-30 €/tonne CO<sub>2</sub> in 2020** and further increase to 30-40 €/tonne CO<sub>2</sub> in 2030
  - an annual increase of 1-2 €/tonne CO<sub>2</sub>



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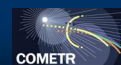
## Tax experts: Intelligent design of ETR can mitigate competitiveness impacts

- Full revenue-recycling can make the tail of the dog (of climate policy) wag (Nordhaus, 1993)
- A double dividend can arise when environmental taxes replace other distortional taxes (Goulder, 1995)
- Inflationary effects on labour salaries can be neutralised when environmental taxes replace social security contributions or other employer costs (Parry, 1995)
- *Implication: No double dividend can arise from grandfathered emissions trading, as no revenue can be recycled (Parry, 2003)*



## Key political problem for ETR tax shift

- 20% of companies consume 60% of energy
- Energy-intensive industries are usually not very labour-intensive
- At company-level revenue-recycling will not be neutral; ETR creates winners and losers
- Competitiveness effects are negative and positive

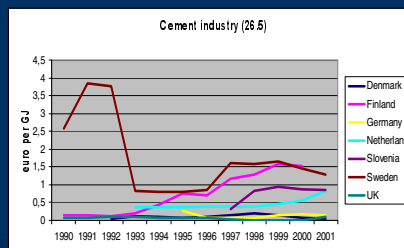
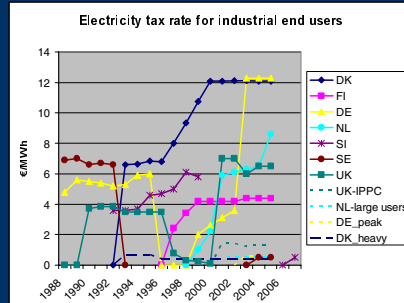


# Energy Taxation Directive

## only in principle that minimum tax rates apply to energy-intensive industries

- dual use of fuels exempted
- certain sectors exempted, e.g. metallurgical
- further exemption options for electricity, heat and motor fuels, if "on average" minimum rates are kept
  - > 50% reduction for non-energy-intensive industries
  - > 100% reduction for energy-intensive industries

## as a result member states have considerable discretion in how to mitigate competitiveness concerns



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# Mitigation approaches

## Ex-ante mitigation

- tax base modifications
- tax rate exemptions
- thresholds for tax rates
- conditional on agreements

## Ex-post compensation

- caps on tax payments
- revenue recycling
  - 1) employers
  - 2) employees
  - 3) energy efficiency measures
- subsidy programmes for energy efficiency, renewables



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## Overview of member state approaches

### Nordic model (SE; FI): reduced income taxes

- cap on tax liability (above 0,8 per cent of total)
- cap exchanged by threshold because of minimum rates required by Energy Taxation Directive

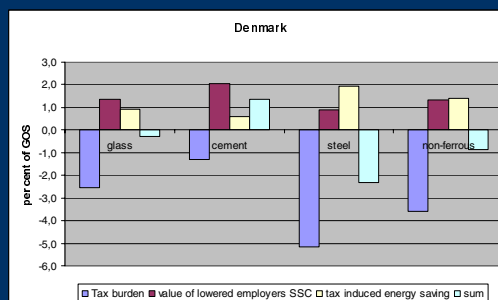
### Fiscal conventionalists (UK; DK): reduced SSC

- agreements as condition for reduced tax rates in energy-intensive industries
- recycling of revenue for energy efficiency measures, e.g. Carbon Trust

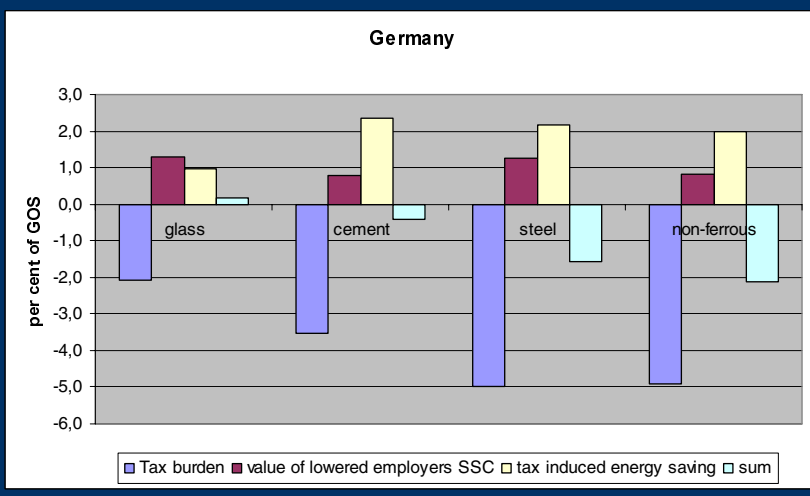
### Pragmatic model (DE; NL): mix

- DE: Spitzensteuer-ausgleich (peak tax adjustment) conditional on self-commitment
- NL: Long-Term Agreements and adjustments in corporate taxation

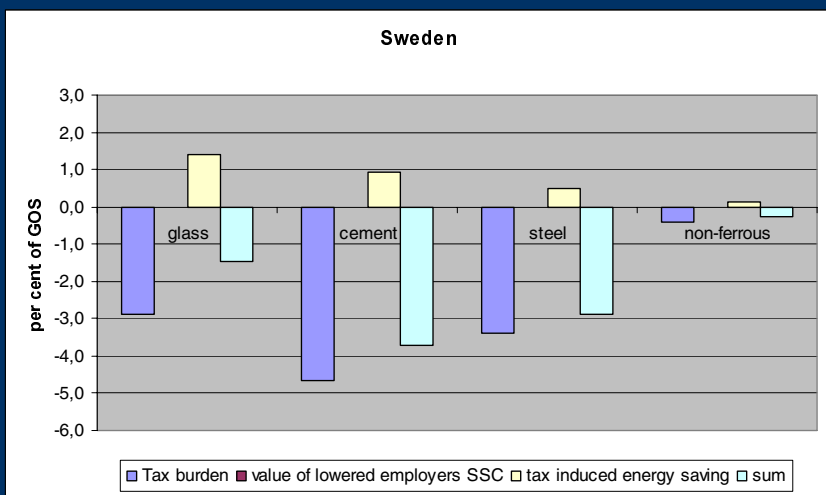
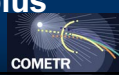
## COMETR database of sector-specific industrial energy consumption



- revenue recycling via SSC-lowering as well as tax-induced energy-savings may offset ETR burdens
- ETR costs are 1-2 per cent of gross operating surplus only for some energy-intensive industries



- Germany: value of spitzensteuer-ausgleich (peak tax adjustment) not included
- ETR burden does not exceed 2% of gross surplus



- Sweden: no SSC revenue recycling hence higher direct burden at company level – up to 4% GOS



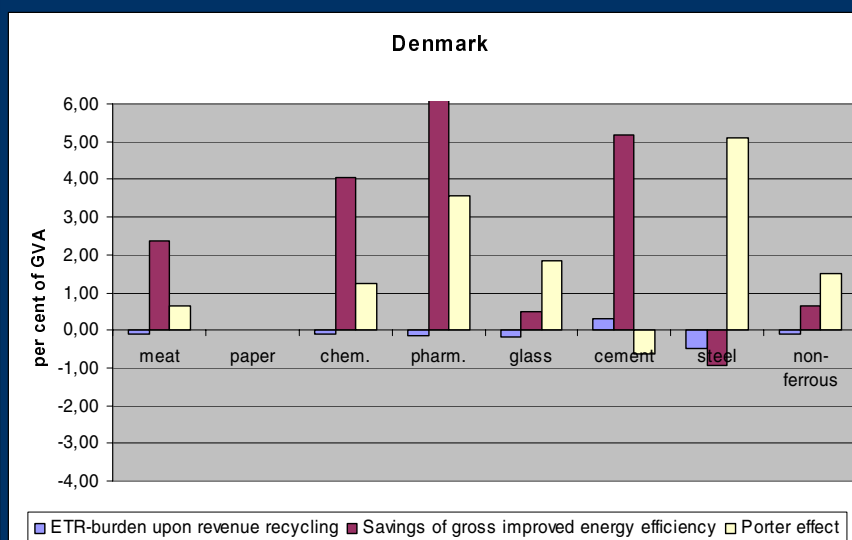
## How about the double dividend and the Porter hypothesis ?

- **Porter's claim**
  - intelligent and flexible environmental regulation can improve competitiveness
  - not only because of energy savings but also due to positive demand effect for innovative products
- **COMETR analysis**
  - Porter demand effect estimated for 56 industrial sectors (panel-regression technique)
  - gross energy cost savings attained to place ETR in perspective (no claim for causal effect)

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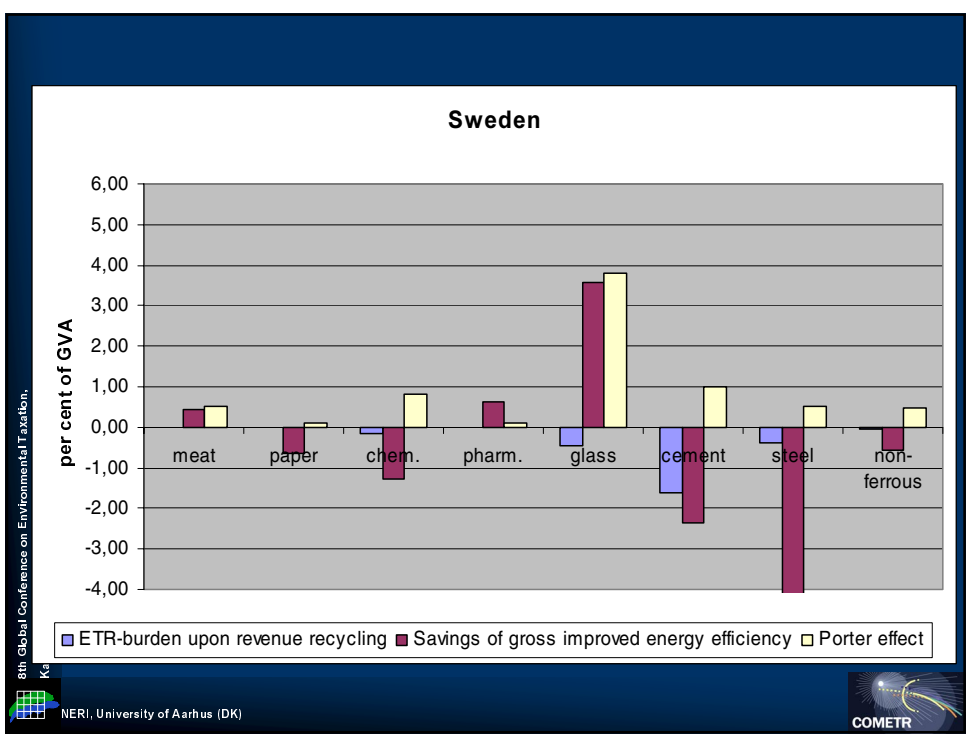
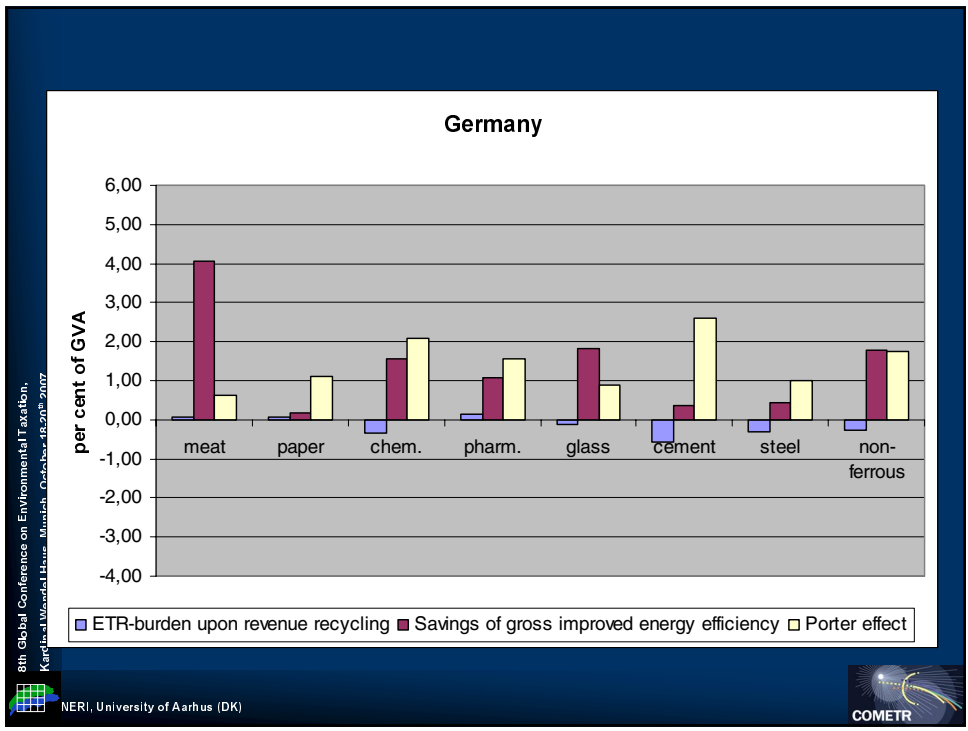


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## Observations

- In Sweden cement and steel sectors increase their energy consumption per unit of value added
  - a response to the lowering of CO2-taxes from 1993 ?
  - no reductions in SSC to offset directly the costs of ETR
- For most sectors the costs of ETR are more than offset by the gross energy savings attained (1996-2002)
- Porter demand effects accumulate and appear to contribute several per cent increase of GVA, though generally less than do energy savings

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## Conclusions

- Cement and steel are the key challenges to address under ETR – other sectors not
- IEA report on energy efficiency indicates that alternative technologies are available
- Yet, grandfathered ETS provides "the wrong signal" e.g. for electric arc furnaces in steel
- **Transparent ETR with revenue recycling and targeted subsidies for technology upgrade in cement and steel the recommended mitigation approach, cf. Danish experience**

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