

Electricity Policy  
Research Group



# Allocation matters – so what can we do about it?

Strategies for the electricity sector 2008-2012

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## EU ETS allocation and the power sector

- Power generation accounts for c.2/3 of EU ETS emissions and the response of the power sector is central to both Kyoto compliance and to the price of EU ETS allowances
- This study aims to:
  - Explain current allowance prices and impact on electricity price
  - Look at how allocation affects prices, operation and investment
  - Draw out implications for policy in Phase II and beyond
- The executive summary will discuss
  - Price impacts
  - Distortions from allocation
  - Recommendations
  - Higher-level conclusions on allocations approaches for longer term

## Determinants of CO2 allowance prices

- Current CO2 allowance prices are higher than expected
  - Major abatement option was expected to be switch from coal to gas in power generation
  - Rising gas prices have made switch more costly
- Future development
  - Projected gas prices remain high but uncertain, dependent on progress of liberalisation,
  - Confidence in future of emission trading decisive
    - ensures investment in energy efficiency (demand and supply)
    - creates market for CDM and JI projects to import allowances
    - increases investment in carbon free generation technologies
  - This creates emission reductions to reduce CO2 price

# Impact of CO2 allowance prices on electricity prices

- In countries with liberalised markets and competition:
  - Empirical evidence confirms that generators add opportunity cost of allowances to energy offers
  - Simulations show that a CO2 price of 20Euro/tCO2 increases the average electricity prices by 10-16 Euro/MWh
- In countries without competitive retail prices:
  - Regulation or threat of regulation can prevent pass through of opportunity costs to domestic consumers
  - If governments intervene to prevent pass through to industrial contracts, then transparency/liberalisation further reduced
  - Likely to undermine incentive structure of ETS towards efficient investment and operation as CO2 prices are not internalised

## Distortions from updating on existing facilities

- Repeated allocation process means that today's production will enter baseline of future allocations ("updating"):
  - Attempts to avoid updating would create many complexities and perverse incentives as governments deal with "special cases"
  - With updating today's behaviour is influenced by future allocations, risking distortions
- Three updating methods assessed in this study:
  - Emission based updating
  - Uniform benchmark based on electricity production levels
  - Fuel-specific benchmark based on combination of electricity production levels and fuel used
- In all cases updating inflates emissions and/or allowance prices, creates distortions between sectors/countries and increases abatement costs
- Fuel specific and emission based updating reward production with CO2 intensive technologies, increasing emissions/CO2 prices and abatement costs
- Emission based allocation reduces the incentives to improve efficiency of existing plants

## Distortions from closure conditions applied to existing facilities

- When closed power stations receive no more allowances (“contingent” allocation):
  - Can lead to unwarranted life-time extensions
  - Thereby increasing system costs and allowance prices
- Problem can persist in countries even if NAPs has no explicit closure conditions if operators expect to receive no allowances in future after closure
- This is a fundamental difference between the EU ETS and successful cap and trade programs in the USA (SO<sub>2</sub> Acid Rain Program) where a one-off allocation remained unaffected by closures of power stations

## Distortions from new entrant allocation

- Allocation plans grant free allowances to new entrants partly to compensate for distortions created by closure conditions
- If new entrant allocation is fuel or technology-specific
  - Creates incentives to build the more CO<sub>2</sub>-intensive technology
  - Leading to inefficient investment in carbon-intensive plants and extra costs
- If new entrant allocation is based on uniform benchmark
  - Acts as a capacity payment supporting all new investment
  - Can reduce electricity prices as it reduces scarcity premium
  - But requires new entrant reserve to be large enough, as well as low barriers to entry, access to fuels (e.g. gas), and regulatory certainty about future allocation

*There is no 'easy fix' for allocation to existing facilities. Reducing the degree of free allocation will reduce social costs and perverse incentives.*

- In liberalised markets, evidence of opportunity cost pass through has been established
- State aid compliance (proportionality rule) may require significant reduction of free allocation to power generators in phase II
- Therefore, should limit allocation to compensate for reduced profits arising from implementation of ETS
- Remaining allowances should be
  - auctioned, or
  - allocated to consumers (would require change to Annex III)



*An inherent logic must drive allocation rules for new entrants towards capacity-based benchmark across EU*

- Avoid that individual country or all countries implement fuel or plant specific new entrant allocation:
  - It creates incentives to build CO<sub>2</sub> intensive technology, leading to inefficient abatement and extra costs
  - Can increase electricity prices in all countries
- Any new entrant allocation should be capacity based (eg. t CO<sub>2</sub>/kW)
  - Similar to capacity payment, supports new investment
  - Can reduce electricity prices as it reduces scarcity premium
- Combine with continuing reform of EU electricity market
  - Reducing costs of entry reduces mid and long term electricity prices
  - Sufficient size of new entrant reserve, competitive markets, free entry, access to other fuels (e.g. gas), regulatory certainty about allocation

## *Deciding now on efficient post 2012 allocation method improves today's investment and operation decisions*

- Allocation should move towards uniform benchmark
  - Use benchmark to reward investment in efficiency improvements
  - Make it uniform, so that:
    - updating shifts marginal costs of all plants by the same amount and does not distort dispatch
    - investment decisions 2005-2012 are not biased towards technologies with higher future allocation
  - Avoid minimum run conditions and explicit closure rules
- Reduce volume of free allocation
  - This minimises today's distortions from updating
  - This ensures post 2012 electricity prices will represent full costs
    - Increases profitability of generation and energy efficiency investment today
    - Reduces today's electricity price
- Only a credible government attracts investment. This requires a consistent long-term strategy which is reflected in phase II allocation decisions.

*The pursuit of long-term objectives using instruments that have to adapt to shorter term cycles requires institutional independence*

- Governments decide on the distribution of free allowances
  - Unlike SO<sub>2</sub>/NO<sub>x</sub> in US, not lump sum because of 5 year cycles
  - Therefore, market repeatedly exposed to government intervention
  - This creates uncertainty for investment (technology choice, timing), and distorts operation and consumption decisions
- Historically monetary policy was in government hands
  - But political process too short-sighted for long-term commitment
  - Complex economic interactions difficult to manage in political process
  - Therefore, independent central banks were created
- Minimise government influence on ETS via allocation process

*The 'terms of reference' for allocation institutions should focus on a specific clearly articulated objective, not a diverse collection of conflicting goals*

- Allocation process aims to achieve security of supply, secure industry support, and compensate for forgone profits
    - Political process with multiple objective creates complex NAPs
    - NAPs create perverse economic incentives
    - Investment delayed/distorted because future NAPs unpredictable
  - Historically monetary policy had multiple objectives
    - Governments could not credibly commit to low inflation target as market knew employment and GDP growth are important
    - Therefore, they had to compromise more on GDP growth and employment to convince market of low inflation objective
    - Central banks now have one objective: control inflation
- Use allocation process only to compensate existing installations for the reduction in profitability under ETS

## *A consistent long-term strategy creates investment security*

### Phase out free allocation

- Reduces distortions created by political allocation process
- Eliminates investment uncertainty from unknown future allocation
- Eliminates 'early action problem' created by future updating
- Enhances European competitiveness as auction revenue/free allocation to consumers reduces industry taxation

### Get all countries on board

- High allowance costs only in some countries for a long time are likely to effect energy intensive industries
- Large free allocation to these industries likely inefficient
- Fall back option – border tax adjustment for CO<sub>2</sub> content to create level playing field among industries in all countries