Improving investment framework for low Carbon technologies

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www.electricitypolicy.org.uk/tsec/2
Improving investment framework for low Carbon technologies

- Background
- Reduce distortions from allocation
- Ensure strong price till 2012
- Create market confidence going forward

Objective – allow price signals to work


Karsten Neuhoff, 3
Strong price signals did deliver in the past

Results from expert survey, 2003

But we do need the other two pillars as well

- Advance low Carbon tech.
- Institutions Behaviour
- Prices reflect CO₂ costs

Climate policy
Recent data used for allocation to existing facilities – updating prevalent

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- No use of historic emissions
- NAP II not available
- Not analysed yet
- No use of historic emissions, but 2005 output


Karsten Neuhoff, 6
These distortions from repeated free allowance allocation can be ranked in a pyramid

**Impacts**

- Increased expenditure on extending plant-life
- Inefficient fuel choice
- Less efficiency improvements

**Source:** Neuhoff, Keats, Sato 2006
… and we seem to have made little progress moving up
And the level of allocation is not trivial


Karsten Neuhoff, 9
New entrant allocation distorts fuel/technology choice


Karsten Neuhoff, 10
The missing money argument

Ideas how to finance peaker without demand response:
• Long-term contracts from single buyer
• Pay for reserves at the expected costs of lost load (Hogan)
• Long term capacity requirements/payments, but distribution, intermittency
• Market power induced prices above marginal costs
• Second best, use CO\textsubscript{2} allocation as capacity payment
Why not to use CO$_2$ allocation as capacity payment

(1) Subsidies avoid price internalisation

**Might not do the trick:**

(2) Provides no incentive to be available at peak

(3) Increases volatility of net returns with CO$_2$ price
CO2 allocation to new entrants increases volatility of returns (for all but coal power stations)

Assumptions as in previous slide
Future new entrant allocation can reduce investment

Equilibrium margin required

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Reduces future investment thresholds -> reduces revenue streams for today’s investment -> increases today’s investment threshold

Assumptions: Discount rate 10%, Overnight investment cost coal 1000Euro/KW (lowest cost of IEA 2005 survey), New entrant allocation for coal in Germany, 7500h operation per year
Why not to use CO$_2$ allocation as capacity payment

(1) Subsidies avoid price internalisation
Might not do the trick:
(2) Provides no incentive to be available at peak
(3) Increases volatility of net returns with CO$_2$ price
(4) Retains uncertainty about future new entrant allocation
   (potential even negative effect)

Negative side effects
(5) Reduces government flexibility
(6) Delays move away from distorting free allocation
(7) Violates one instrument – one objective (central bank)
Conclusion on free allocation

• Distortions from free allocation strong if there are expectations of continued high allocation post 2012
• Phase out free allocation post 2012
  – Potentially conditional on measures to address international competitiveness for certain sectors

-> Go through state aid assessment
• Free allowance allocation is state aid
• Some can be justified as proportional to cost of transition
• This would likely require committing to no further free allocation post 2012
-> PERFECT
The next 10 to 20 years … transition … to [world] where carbon pricing is universal and is automatically factored into decision making. … avoid the risks of locking into a high-carbon infrastructure … additional measures may be justified to reduce the risks."
10% auctions with price floor – could facilitate investment

Coordinated auction with price floor can set floor to allowance price

- Facilitates low carbon investment
- Reduces emissions and thus allowance price

Other proposed approaches to support investment

• Longer commitment periods:
  – What framework shall we use?
  – Is the commitment sufficiently stringent?
Expected (Ex Ante) and Actual (Ex Post) Total Costs of some UK Policies during 1990-2001

* Upper estimate >£8000 mio.
Other proposed approaches to support investment

• Longer commitment periods:
  – What framework shall we use?
  – Is the commitment sufficiently stringent?
  – Is it credible that we won’t change it?
• Increased use of banking*
  – Ongoing policy decision creates uncertainty
  – Commitment to long-term price – but which??
• Open market intervention
  – Credibility?
• Splitting allowances as under US clean air program
  – Market uncertainty?

Option contracts could create long-term price floor

- Governments sell option contracts to private parties
- Creates property right, strong enforceability
- Investors can call an option:
  - Hands in option + CO₂ allowance
  - receives strike price, e.g. 15 Euro/t CO₂
- Direct hedge for investment
- Investors will call options if $p_{CO₂} < 15$ Euro/tCO₂
  - Reduce supply, pushes up price, implements price floor
- Governments avoid buying back allowances
  - Restrict issuing allowances to retain scarcity price

Robust solutions for post 2012 exist

Phase I
2005-07

Phase II
2008-12

revenues finance investment

Continued international cost differences affect energy intensive industry.

Global or sectoral agreements

Border tax adjustment*

Allocation proportional to output

Efficient production

Environmental costs reflected in price

Innovative market response

We will find the best solution in an international dialogue.

Conclusions

• Avoid distortions from allocation
  – No more free allocation post 2012
• Ensure strong price till 2012
  – Stringent caps
  – Consistent JI/CDM limits
  – Allowance auctions with price floor
• Use economic instruments to create market confidence
  – Drives innovation
  – Banking / longer commitment periods difficult
  – Government issued financial option contracts
• More detail on www.electricitypolicy.org.uk/tsec/2