Centre for Energy and Environmental Markets

UNSW THE UNIVERSITY OF NEW SOUTH WALES SYDNEY • AUSTRALIA



DESIGNING AND IMPLEMENTING EFFECTIVE, EFFICIENT AND EQUITABLE TRADING SCHEMES

Principles, Experience to date and Current Australian Proposals

Presented by Dr. Regina Betz © CEEM, 2007
E + CO2, Melbourne

Content

- Evaluation criteria and relevant design parameters
  - Environmental Effectiveness
  - Efficiency
  - Equity
- Lessons from the European Emissions Trading Scheme (EU ETS)
- Current Australian proposals (State based and Federal proposals)

Evaluation criteria

- **Environmental Effectiveness**: the extent to which the environmental objective is achieved.
  - how well the scheme is actually mitigating the dangers of climate change by delivering long-term reductions in greenhouse gases (GHG).
- **Efficiency**: the extent to which the required objective is met at least cost.
  - This includes dynamic efficiency (innovation incentives)
- **Equity aspects**: the extent to which any group is unfairly disadvantaged or favoured.

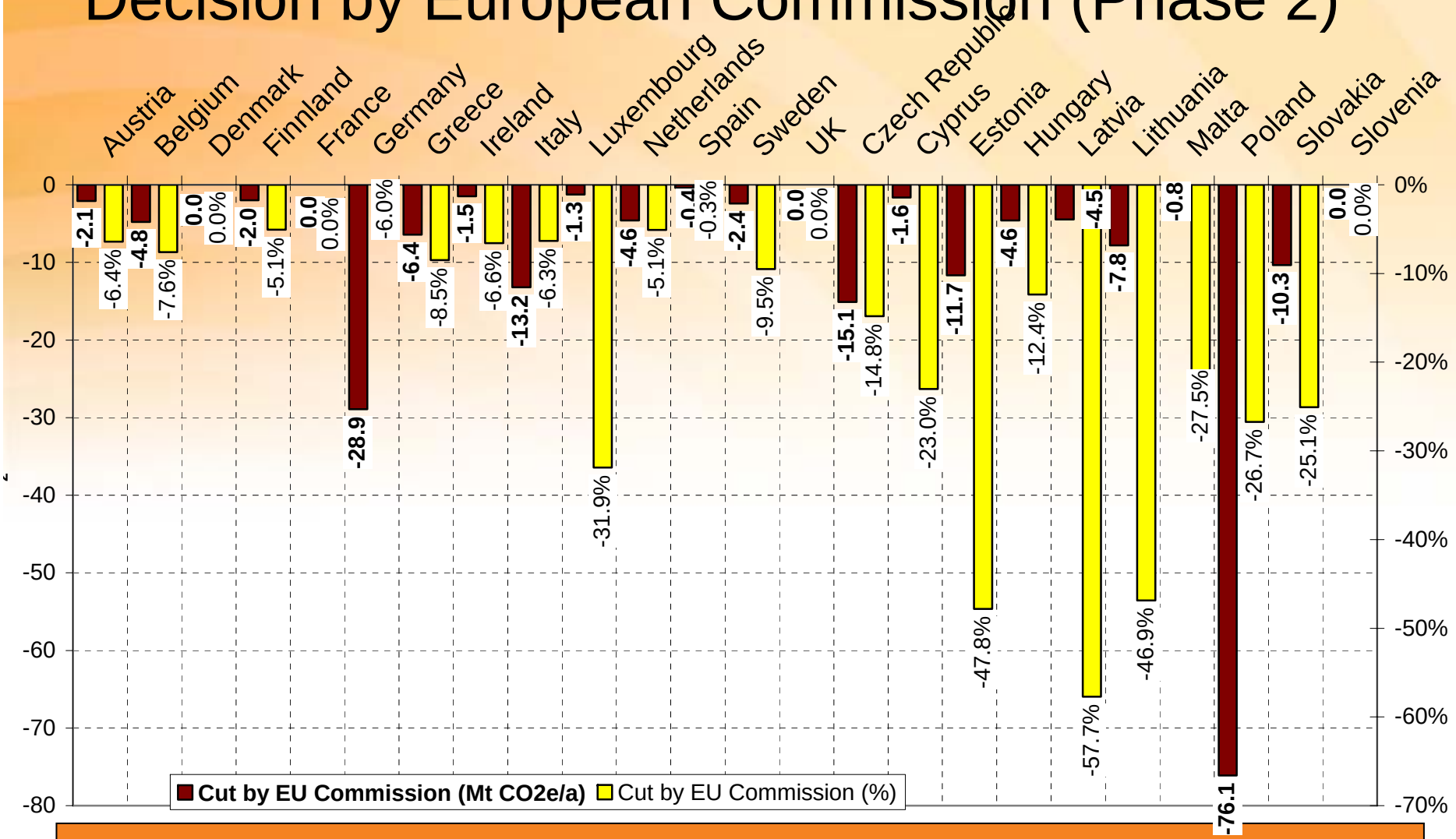
Relevant design elements

- **Environmental Effectiveness**
  - Target
  - Coverage
  - Leakage
- **Efficiency**
  - Target
  - Coverage
  - Allocation method
- **Equity aspects**
  - Target (Burden sharing between generations)
  - Allocation method
  - Burden Sharing between sectors

How effective is the EU ETS?

- **Target**:
  - First phase: EUAs allocation exceeded 2005 emissions by around 100 Mio. t CO2
  - Reasons: Uncertainties in base data were significant compared to small cutbacks
    - Technical and time constraints when determining the reductions: E.g. data was not verified by independent auditors (lack of time and accredited institutions) -> potential exaggeration of emissions
    - Over-optimistic economic growth in the baseline since government and business sector like to believe in strong economic growth
    - Difficulties with new entrants: dividing between growth of existing installations and new installations -> double counting possible
  - Second Phase: Substantially improved by EC decision, higher prices for EUAs; signal to other MS and carbon markets
- **Coverage**:
  - First Phase: Only CO_2 from proces and combustion emissions.
  - Second Phase: Some MS cover N2O emissions
- **Leakage**:
  - Free and generous allocation to most sectors, little leakage expected

Decision by European Commission (Phase 2)



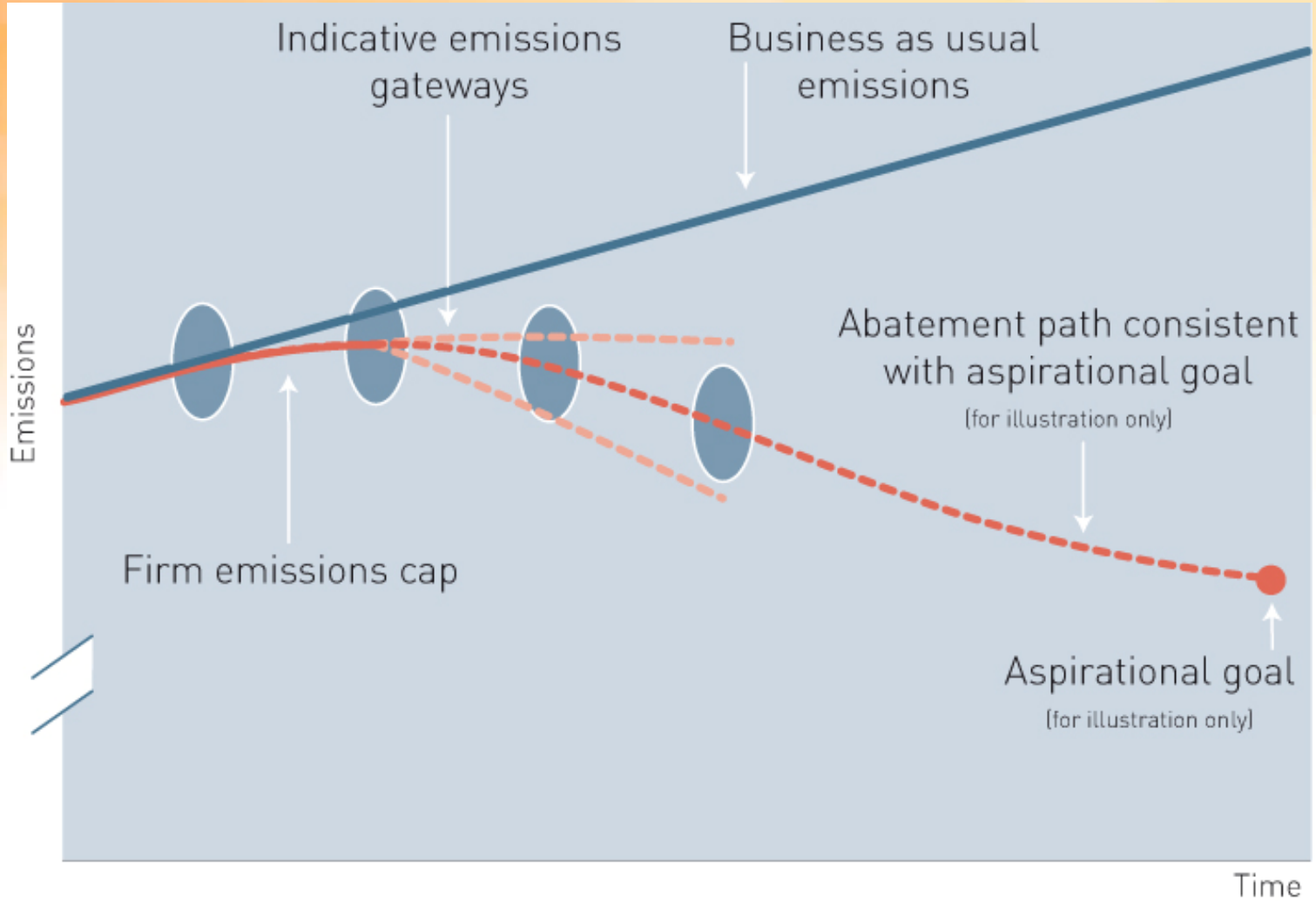
Aggregate reduction of ET-budgets for 24 MS 200 million EUA or -9%.

Source: EU Commission

How **effective** are the Australian proposals?

- **Target setting**: long-term aspirational goal, with gateways defining short-term windows (see next slide)
  - Difficult to assess since no targets have been published yet
  - Danger of backsliding at each review point
  - Price cap / safety valve may reduce GHG reductions, since more permits will be issued over the price cap.
- **Coverage**: Broad coverage based on a mixture of upstream (small emitters) and downstream (big emitters).
  - Only effective if double counting is avoided and GHG can be accounted for with high accuracy
- **Leakage**: Free allocation to TEEII to avoid industrial relocation of production to countries with no climate policy
  - Additional permits for significant new Trade-exposed emissions-intensive industries (TEEII) will reduce GHG reductions

The Emissions Trajectory



Source: TG report

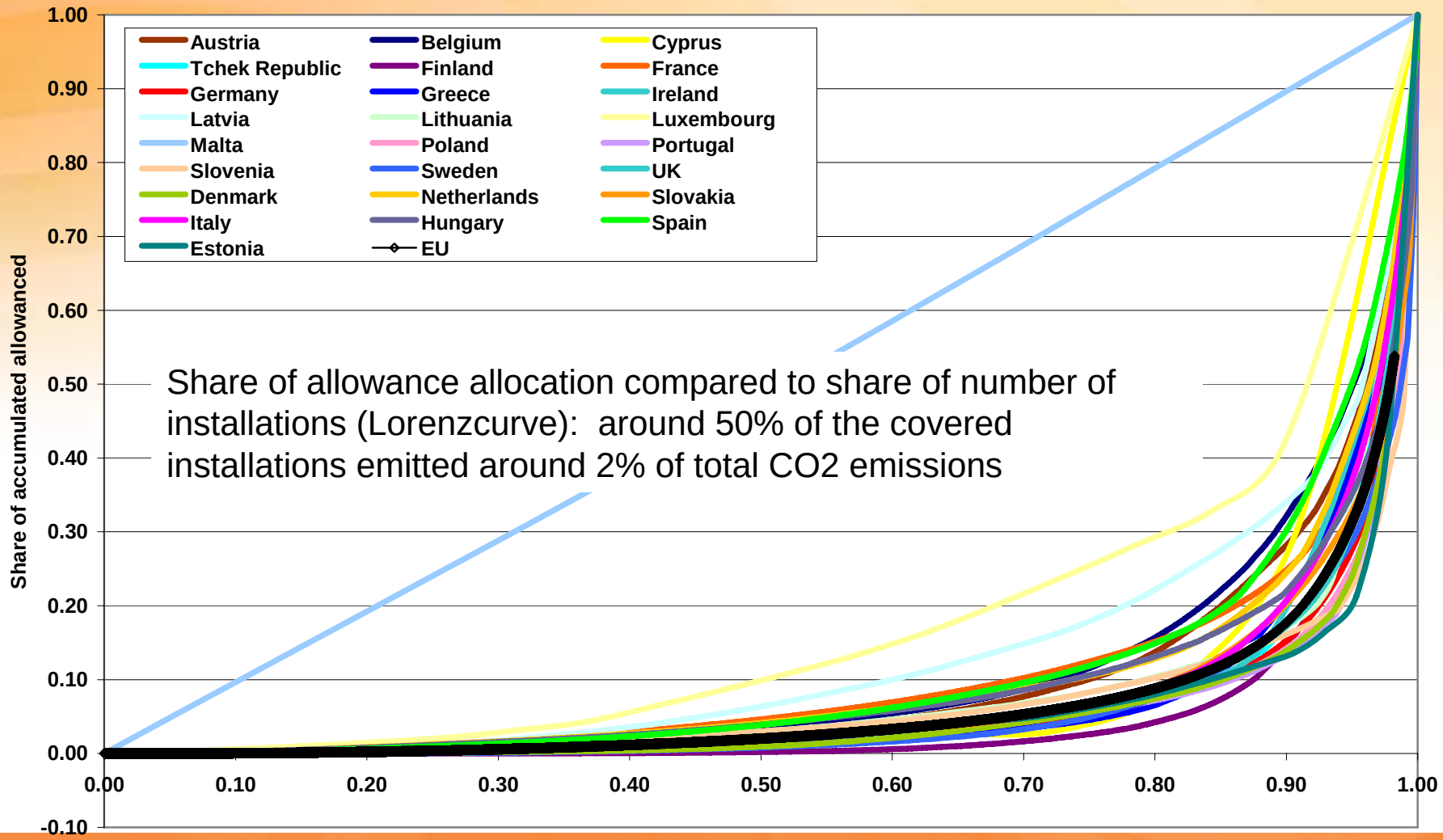
How **efficient** is the EU ETS?

- **Target**
  - Introduction of ETS is questionable if only little reductions compared to Business as usual are achieved, since scheme bears transaction costs
- **Coverage**:
  - Too many small companies included in scheme: Costs outweigh benefits
- **Allocation**:
  - Little auctioning (3.4 %) mostly allocation for free (96.6%)
  - Up-dating dilemma (see next slide): If future allocation is a function of today's emissions it provides a perverse incentive for less abatement today in order to receive more permits in the future
  - Perverse incentives for new entrants and closures:

    Free allocation to new entrants coupled with withdrawal of allocation from ceasing installations gives an incentive to keep inefficient plants in operation

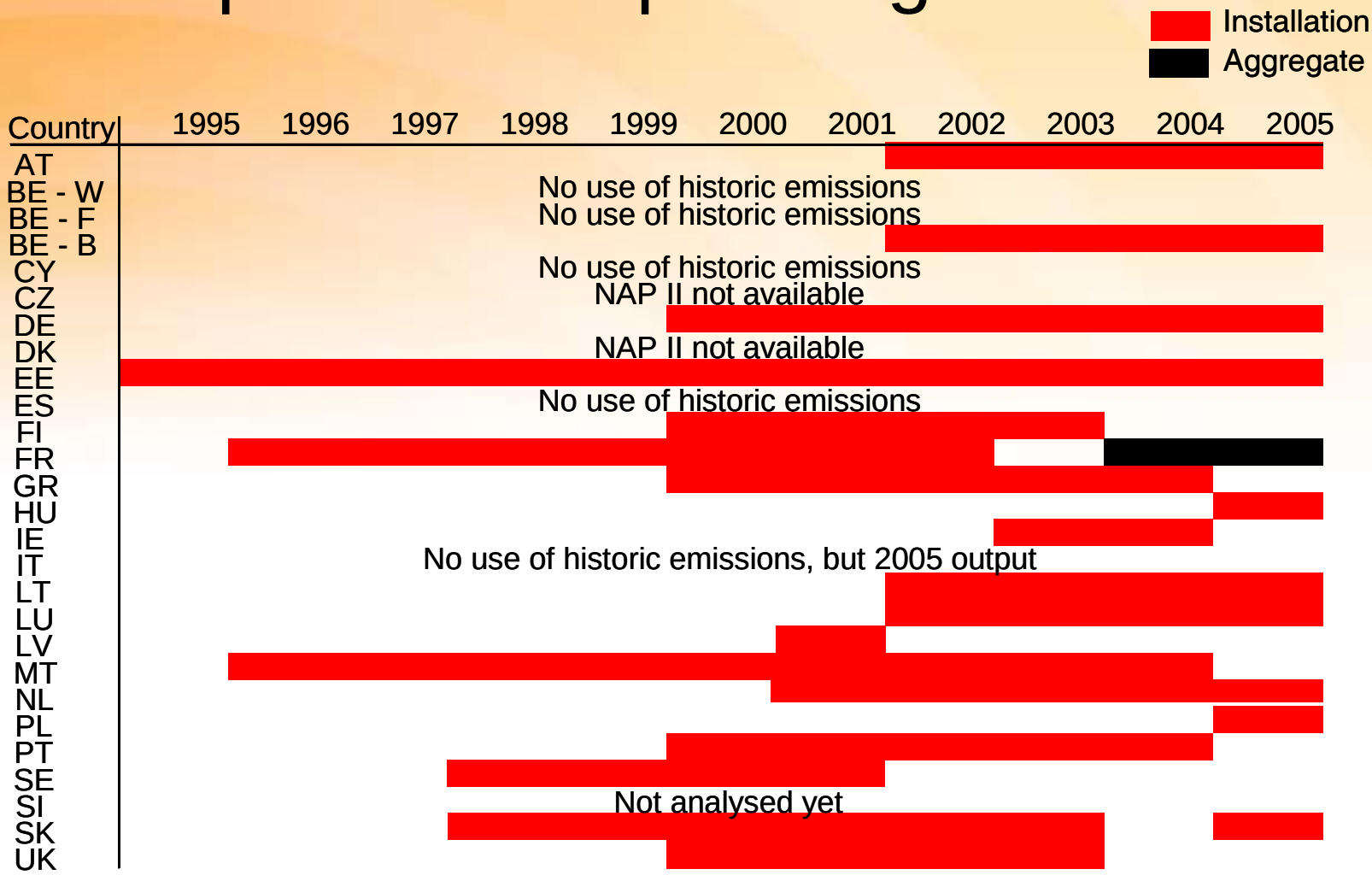
    Allocation to new entrants based on benchmarks on capacity installed gives perverse incentive to build oversized boilers (Denmark has reduced allocation BAT/benchmark)

Coverage: Emissions – Installation relation



Share of allowance allocation compared to share of number of installations (Lorenzcurve): around 50% of the covered installations emitted around 2% of total CO2 emissions

Base periods – Up-dating



Source: Neuhoff et al. Climate Policy 2006

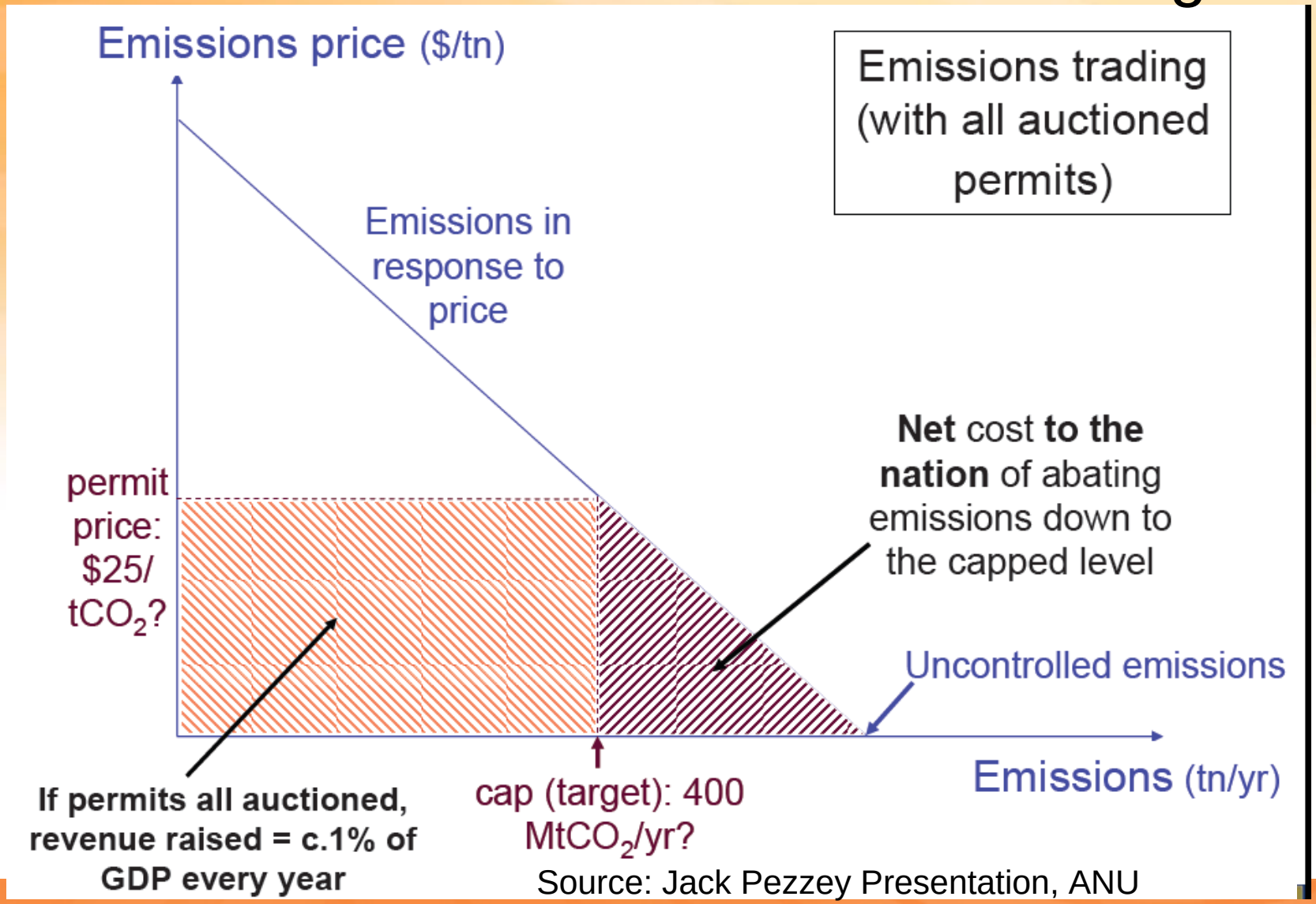
How **efficient** are the Australian proposals?

- **Target:**
  - Difficult to assess since no targets published yet
- **Coverage**:
  - Mixture of upstream and downstream should avoid having small companies directly liable - they will be incorporated via upstream trading
  - Inclusion of wide range of offset projects can reduce costs further. However, additionality and measurement needs to be ensured.
  - International linking will improve efficiency but some of current design elements likely to not be compatible (e.g. safety valve, non-Kyoto offsets, forestry offsets)
- **Allocation**:
  - Compensation approach will require many untestable assumptions under large information asymmetry, might not be feasible and potential for legal challenges
  - Perverse incentives before 'announcement date'
  - TEEII compensation through free allocation will eliminate internal price signal and increase costs to rest of economy. Output (benchmark * output) on which free allocation to TEEII is based will function as a subsidy of output.
  - Auctioning might have positive impacts on efficiency of market. Proposal does not set a minimum share and might therefore be subject to lobbying.
  - Safety Value and banking trigger might have negative impacts on price stability

Is the EU ETS fair regarding **equity**?

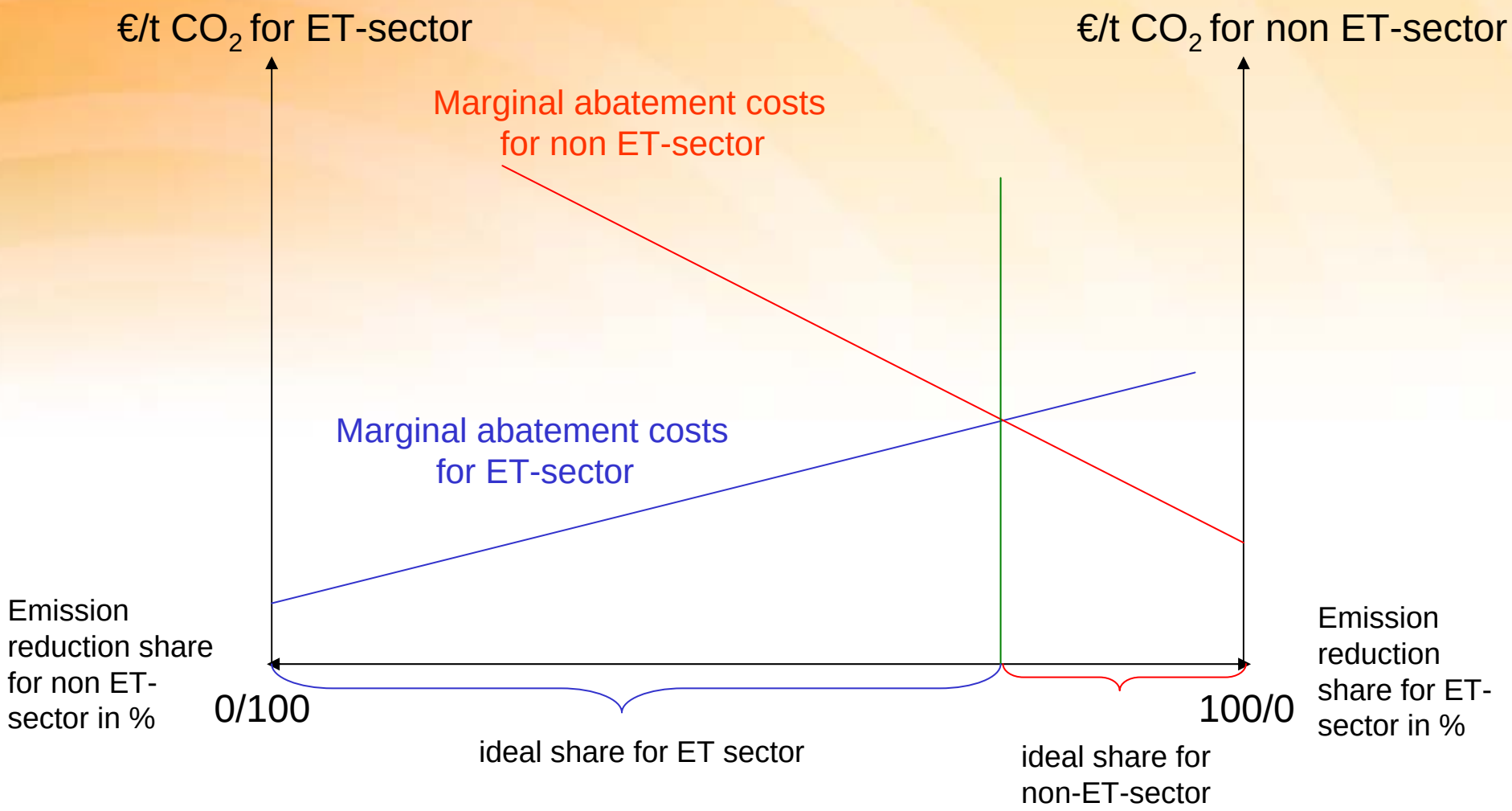
- **Target**
  - Equity with regard to future generations is questionable
- **Allocation**
  - Companies pass through the carbon opportunity costs to their customers
  - Free allocation leads to high windfall profits for emitters
  - Rough estimate (Sijm) of windfall profits for phase II (reduced to phase I, since free allocation to electricity generators was reduced):
    - non-fossil producers EUR 8-11 bn
    - fossil generators approximately: EUR 8-12 bn
- **Sectoral Burden Sharing**
  - Cut in emissions for ETS covered sectors relatively low. However, cut in total allocation by EU commission has improved this burden sharing.
  - Empirical evidence from bottom-up and top-down models: mitigation costs in ET-sector are smaller than in other sectors (households, services, transport)
  - To meet Kyoto target non-covered sector and Government treasuries will bear costs e.g. by buying Kyoto credits

Distributional effects of emissions trading



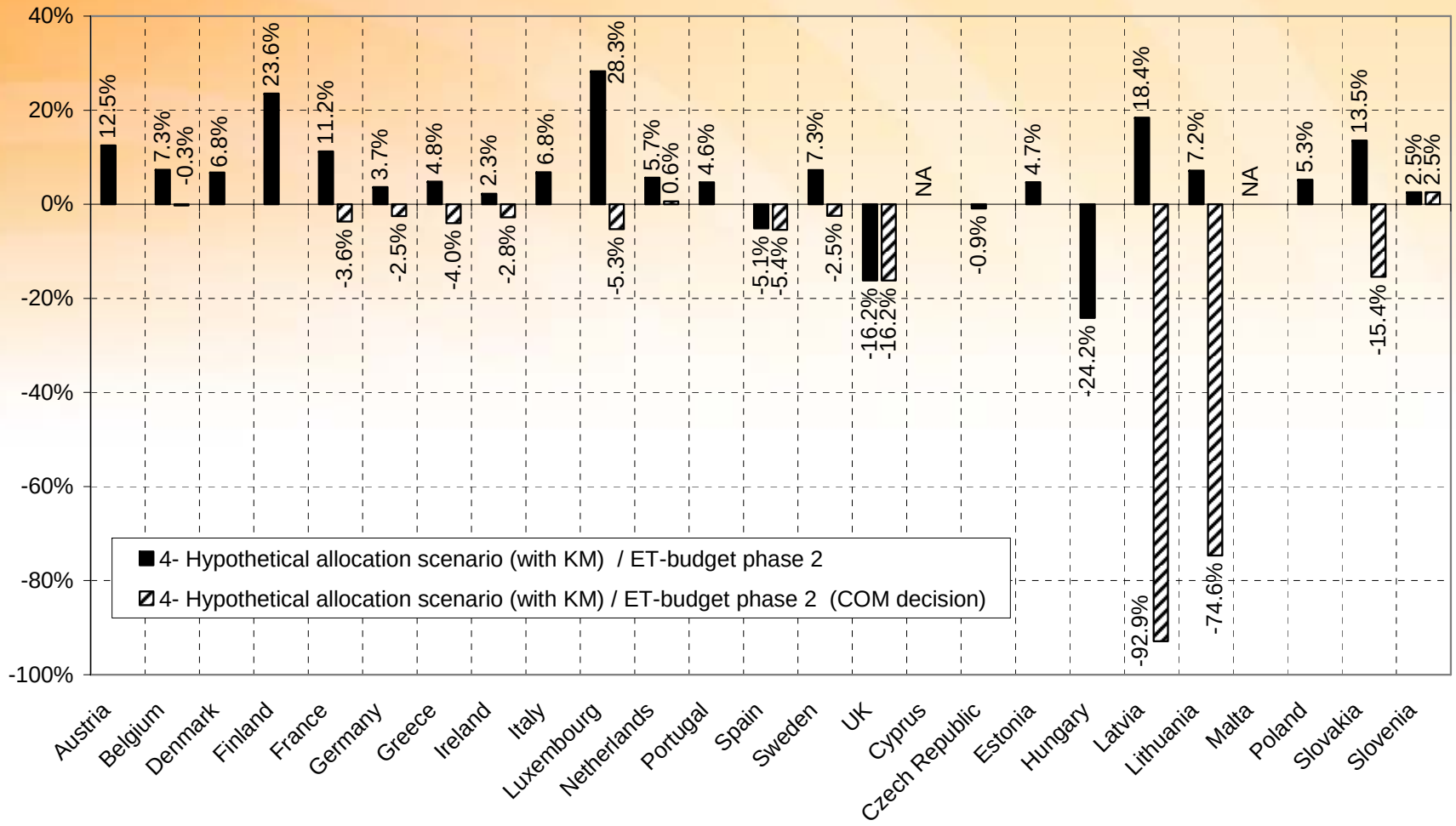
Source: Jack Pezzey Presentation, ANU

Allocation between ET and Non-ET sector



Source: Schleich, Fraunhofer ISI

Sectoral Burden Sharing EU ETS



Source: Betz et al. Climate Policy 2006

Are the Australian proposals equitable?

Target:

Difficult to assess since no targets published yet

Allocation

- "provides an up-front, once-and-for-all, free allocation of permits as compensation to existing businesses identified as likely to suffer a disproportionate loss of value due to the introduction of a carbon price"
- "free allocation [to ameliorate] the carbon-related exposures of existing and new investments in trade-exposed, emissions-intensive industries"
- "Govt. will move early to establish the information base on which free permits will be allocated...Treasury will model...impact on different sectors of the economy"

- Depends on share of auctioning which depends on compensation to industry (modeling approach) e.g. if "net" figures are taken or only "losses" (individual generators vs. generator portfolios; losses and winning years)
- Depends on recycling of auction revenue if this is used to compensate consumers, support technology development or lower taxes

Sectoral Burden Sharing

Wide coverage should reduce unfair burden sharing

Conclusions on Australian proposals

- Some innovative design features, ambitious coverage
- Targets not published yet which are key elements to evaluate the proposals
- Some implementation issues unclear
- Balance of auctioning vs. free allocation questionable
- International linking will be challenging under current offset, price-cap arrangements
- Could end up with a well-designed but (initially) toothless scheme since the devil is in the details!
  - Perverse incentives are easily created
  - BUT auctioning could cure most of the problems

CEEM Short courses: Climate change and Emissions trading

Next: 2 & 3 October 2007 in Sydney

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