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The governance challenge for implementing effective, efficient and fair market-based climate policies: Case studies of the EU Emissions Trading Scheme (EU ETS) and the Carbon Pollution Reduction Scheme (CPRS)

Presented by Dr. Regina Betz © CEEM, 2009
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Content

- Motivation
- Evaluation criteria and relevant design parameters
  - Environmental Effectiveness
  - Efficiency
  - Equity/Fairness
- Lessons from Phase I & II of European Union Emissions Trading Scheme (EU ETS) and outlook on Phase III based on Council Conclusions 12.12.08 + EU Parliament 17.12.08 final reading
- Australian White Paper Proposal (15.12.2008)
- Conclusions

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Motivation

- Emissions trading schemes are designer markets and policy makers have to choose the coverage
- Australia, US and other countries are preparing to introduce emissions trading schemes
- Economic textbook argues that it is an efficient and effective policy instrument and has advantages compared to environmental taxes
- Lessons from EU Emissions trading Scheme shows that it is hard to get the design "right" from the outset

Research question

What role does governance play in implementing effective, efficient and fair emissions trading schemes?

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EU Emission trading system

- Cap and trade
- Started in 2005,
  - Phase I: 2005-2007
  - Phase II = Kyoto phase: current phase 2008-2012
  - Phase III: 2013-2020
- Covers around 12,000 installations from power generation & selected industries (only downstream), 2,083 Mt CO_2e 2008-2012, around 45% GHG emissions EU-27
- Directive passed in 2003, new directive for Phase III passed early 2009

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Australia's proposed CPRS

- Emissions Trading for Australia first proposed in late 1990s, have seen State-based efforts (GGAS) and proposals (NETT) in 2006, former Federal Government Prime Minister Task group design (PM&C) in 2007
- Kevin Rudd Federal Govt's primary proposed climate policy response
  - CPRS Green and White paper in 2008, Draft Bill Feb. 2009 and Bill introduced in Parliament May 2009 (some changes wrt draft) to be voted in Senate 13th of August 2009 with a start of the scheme in 2011/12
- Implementation closely linked to national emissions targets because CPRS covers and therefore caps most Australian emissions (70%)

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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
  - This includes international equity issues

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Relevant design elements

- **Environmental Effectiveness**
  - Target
  - Allocation method (Leakage)
  - Sanction mechanism
- **Efficiency**
  - Allocation method
- **Equity aspects**
  - Burden sharing between generations: Targets over time
  - Burden Sharing within generations: Allocation method
  - Burden Sharing between nations: Targets and revenue recycling

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How effective is the EU ETS?

- **Target**:
  - Phase I: EUAs allocation exceeded 2005 emissions by around 100 Mio. tCO_2
  - Phase II: around -13% compared to 2005, substantially improved by EC decision in approval process of National Allocation Plans
  - Phase III Proposal: -21 % compard to 2005 for ETS sector under the -20% scenario; Member States are permitted to borrow max. 5% under extreme meteorological conditions
- **Allocation method to avoid Carbon Leakage (see additional slide)**:
  - Phase I: Free and generous allocation to Industry Sector at Risk of Carbon leakage
  - Phase II : Free allocation to Industry Sector at Risk of Carbon leakage
  - Phase III: 100% free allocation based on Best Available Technology and share in 2005-2007 emissions, capped and declining annually
- **Sanction mechanism:**
  - No price cap: deterrend penalty (100€/tCO2e) and make good provision

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How **effective** is the Australian proposal?

- **Target**:
  2020 target based on 2000: -5% unconditional or -15% in context of global agreement and -25% if very stringent global agreement
  Long-term target: -60% in 2050
  - The unconditional and long-term targets are too low to avoid dangerous climate change based on latest science
- **Allocation method to prevent leakage**: Free allocation to emissions-intensive trade-exposed industry (EITE) to avoid industrial relocation of production to countries with no climate policy
  - How real is leakage problem? Why not border-tax adjustments?
- **Sanction mechanism in form of a price cap**: unlimited issuance of permits at 40$/permit for first 5 years (annual 5% increase + inflation adjustment)
  - No change of price cap if moving from 5% to 15% reduction target is increasing likelyhood of breach
  - Consequence: compromising target achievement and combind with unlimited banking may loosen future caps beyond first 5 years

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How **efficient** is the EU ETS?

- **Allocation method**:
  - Phase I: Almost 100% free allocation and perverse incentives:
    - 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
    - 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)
  - Phase II: Little auctioning (3.4 %) mainly allocation for free (96.6%)
  - Phase III: Electricity industry in EU15 100% auctioning from 2013 (Eastern European Countries exemptions), others sectors 20% auctioning reaching 70% in 2020 and 100% in 2027 (original Directive Proposal: 100% in 2020), no auctioning to Industries with risk of carbon leakage

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Distortions of Allocation Methods

Allowance allocation method	*Impacts*	More expenditure on extending plant life relative to new build		Increase plant operation		Less energy efficiency investment
	Distortions	Discourage plant closure	Distortion biased towards higher emitting plants	Shields output (and consumption) from average carbon cost	Distortion biased towards higher emitting plants	Reduce incentives for energy efficiency investments
Auction						
Bench-marking	capacity only	X				
	capacity by fuel/ plant type*	X	X			
Updating from previous periods'	output only	Y		X		
	output by fuel/ plant type*	X	X	X	X	
	emissions	X	X	X	X	X

Note: X indicates a direct distortion arising from the allocation rule. Y indicates indirect distortions if allocation is not purely proportional to output/emissions.
* Differentiating by plant type adds additional distortions compared to purely fuel-based.

Source: Neuhoff et al. Climate Policy 2006

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How **efficient** is the Australian proposal?

- **Allocation**:
  - Free allocation to EITE industry will eliminate internal price signal and increase costs to rest of economy.
  - Free allocation of 130.7 million permits over 5 years to brown coal industry reduces budget to invest in low carbon economy (e.g. Infrastructure)
  - Free permit allocation has already increased lobbying and withdrew resources from mitigation and will do so in the future (e.g. when review of rules). Complex rules will lead to legal disputes which will also be a loss to the society.

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Is the EU ETS fair?

- Burden sharing **between generations: Target**
  - Equity with regard to future generations is questionable for Phase I, Phase II targets have improved and Phase III proposal with international agreement seems more fair. However, with regard to science still to be made more stringent
- Burden Sharing **within generation: Allocation method**
  - Companies pass through the carbon opportunity costs to their customers with a regressive impact (low income households will have higher impact compared to high income households)
  - Free allocation leads to high windfall profits (Phase II electricity sector: €16-23 bn) for emitters and high income households profit more from increase in share values
  - Use of auction revenue will be decided by Member States (some transfer of solidarity increased by 2% for Eastern European Countries compared to Directive proposal)
- Burden Sharing **between nations: Targets, CER use and revenue recycling**
  - Phase II: substantial amount of Kyoto Units is allowed
  - Phase III: International use of Kyoto Units CERs & ERUs is limited to 50% of the EU-wide reductions over the period 2008-2020
  - Phase III: Voluntary declaration to use part of auction revenue for mitigation and adaptation in developing countries (e.g. Measures to Avoid Deforestation) BEFORE 20% of revenue had to be used for a range of measures (stronger wording: should). Now mainly left to Member States.

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Is the Australian proposal fair?

- Burden sharing **between generations: Target**
  - Initial cap (especially the -5 and- 15%) not in line with science seem unfair with regard to future generations
- Burden Sharing **within generation/ covered sectors: Allocation method**
  - Free allocation approach with thresholds for EITE potentially unfair
  - CPRS will have a higher impact on low income households (see slide), however auction revenue will be used to lower regressive impact
  - Free permits to EITE industry and strongly affected industries will reinfoce regressive impact since high income households tend to benefit more from higher share values (Pezzey 2008):
    - the wealthiest 1/5 of households own 2/3 of Australian shares
    - 1/3 of listed Aus shares are owned by foreigners
- Burden Sharing **between nations: Targets, CER use and revenue recycling**
  - Unlimited use of CERs may be unfair: Where is Australia‘s contribution?
  - Targets so far seem unfair since Australians will have highest per capita emissions allocation for next 42 years (see next slide)
  - No transfer of auction revenue foreseen to compensate developing countries for lower per capita emissions

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Regressive impact of carbon price

Household Type	% Pop.	Modeling Treasury in 2010 Price impact in %		Brotherhood of St. Laurence utility adjusted carbon costs % of annual expenditure	
Carbon Price		**CPRS-5 US$23**	**CPRS-15 US$32**	**$25**	**$50**
Poor family households	*6.6*	1.2	1.6	2.3	4.6
Age pension households	24.9	1.3	1.8	0.8	1.6
High income tertiary educated households	7.4	0.8	1.2	0.4	0.7
Average		1.0	1.4	0.7	1.4

Some difference can be explained by difference in data, difference what is included (CPRS only direct energy costs, BSL also cost of goods consumed), carbon price...

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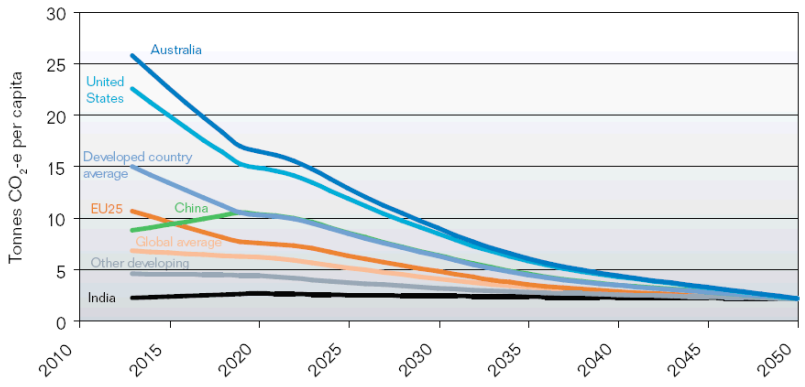
Garnaut: Global agreement scenario

Figure 9.5 Per capita emissions entitlements for the 450 scenario, 2012–2050



Note: The graph starts in 2012. Australia's 2012 starting value assumes Kyoto compliance, as do those for the EU25. Other countries start at their emissions level given by the reference case (the no-mitigation scenario) in 2012.

Source: Garnaut 2008

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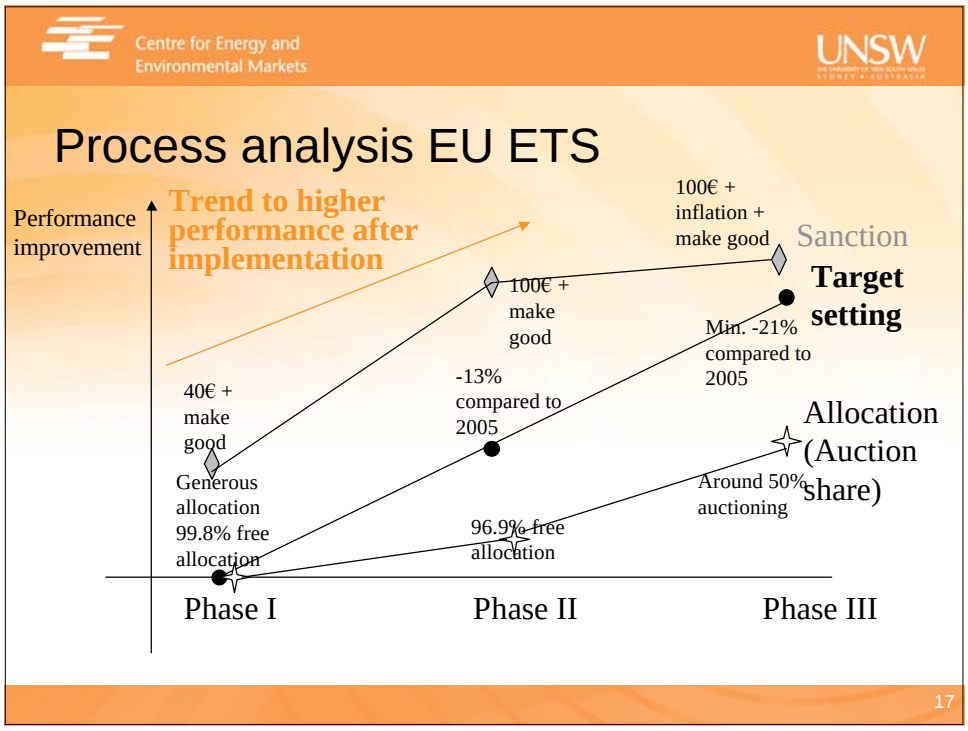
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Process analysis EU ETS
Performance improvement
Trend to higher performance after implementation
100€ + inflation + make good
Sanction
Target setting
100€ + make good
Min. -21% compared to 2005
-13% compared to 2005
40€ + make good
Allocation (Auction share)
Around 50% auctioning
Generous allocation 99.8% free allocation
96.9% free allocation
Phase I
Phase II
Phase III
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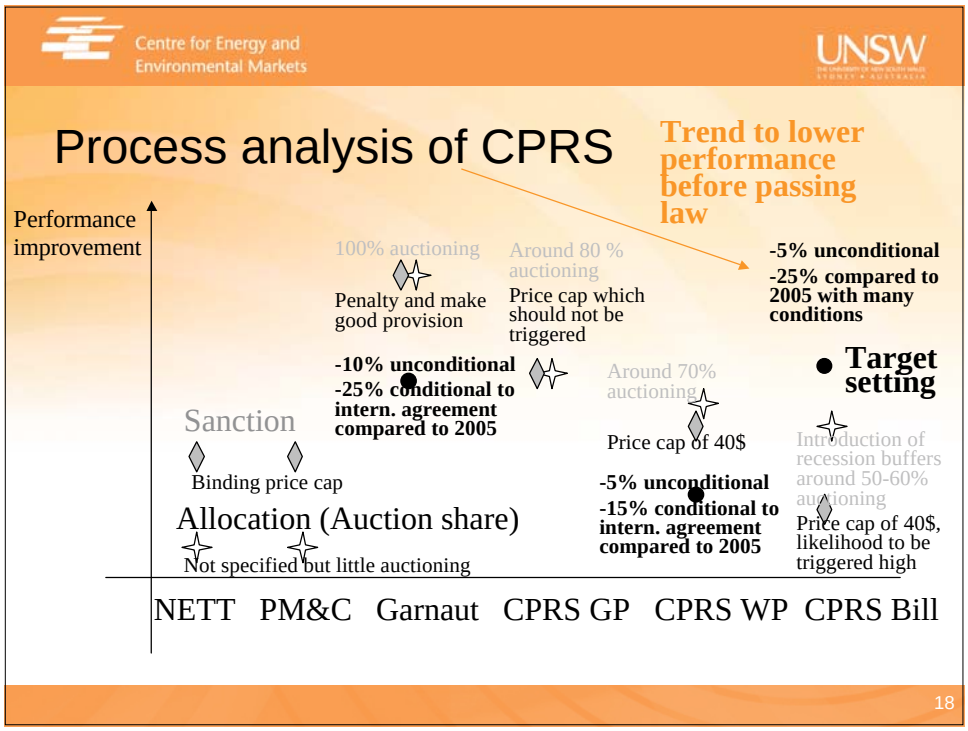
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Process analysis of CPRS
Trend to lower performance before passing law
Performance improvement
100% auctioning
Penalty and make good provision
Around 80 % auctioning
Price cap which should not be triggered
-5% unconditional
-25% compared to 2005 with many conditions
-10% unconditional
-25% conditional to intern. agreement compared to 2005
Around 70% auctioning
Target setting
Sanction
Price cap of 40$
Introduction of recession buffers around 50-60% auctioning
Binding price cap
-5% unconditional
-15% conditional to intern. agreement compared to 2005
Price cap of 40$, likelihood to be triggered high
Allocation (Auction share)
Not specified but little auctioning
NETT
PM&C
Garnaut
CPRS GP
CPRS WP
CPRS Bill
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Conclusions

- **A flexible process to improve the design over time seems crucial to achieve an effective, efficient and fair ETS... Lobbying is compromising early design**
- **EU ETS:**

  Phase III seems to achieve higher effectiveness, efficiency & equity, but even Europe has struggled:
  - to keep auctioning share high (e.g. Eastern European power sector will get free permits, other industry 7 years longer) and in addition new coal power plants may receive investment subsidies
  - to ensure that auction revenue will be used to transform to a low carbon economy (now it is only a voluntary declaration)
- **Australia's CPRS:**

  Effectivness
  - Targets have improved over time: -5 up to -25% target in 2020
  - Price cap was not changed therefore it may require government to use tax-payers money to buy international credits to meet target (no auctioning revenue is allocated for this risk)

  Efficiency:
  - Investor uncertainty may be rather high since borrowing, price cap and unlimited use of international Kyoto Credits will help to keep prices low but do not ensure a minimum price level for investors. – Who cares about the investor certainty who want to drive change?

  Equity:
  - Share of auctioning has already been reduced compared to Green Paper and lobbying efforts may further reduce it (free allocation is uncapped, auctioning is the residual)
  - Auction revenue should be spend to achieve double benefits (e.g. on energy efficiency in low income households, this is mentioned as a side note and relatively low share of auction revenue allocated towards energy efficiency measures)
  - Auction revenue needs to be spend on international mitigation & adaptation for developing countries to get their support for an effective international agreement

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Thank you for your attention!

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