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Climate Policy: Comparing cap and trade and tax schemes

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Parliamentary Library Vital Issues Seminar
Carbon Tax and Emissions Trading
Canberra, Tuesday 17 March

www.ceem.unsw.edu.au

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Overview

- Coherent Climate Change Policy Mix
- Tax versus Cap and Trade
  - Theoretical comparison
  - Practical experiences
  - International aspects
- Voluntary action
- Recession
- Conclusions

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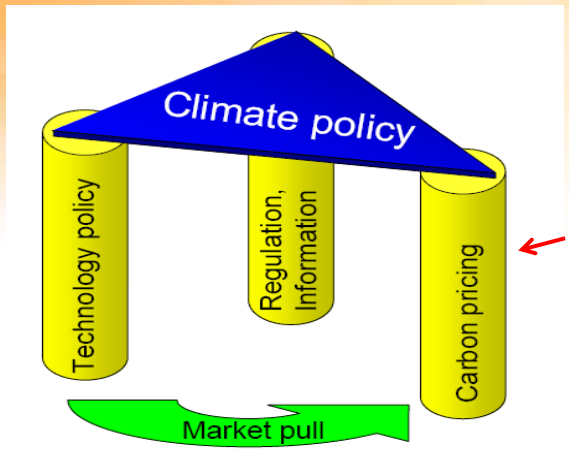
There are three main pillars of climate change policy



Emissions trading or carbon taxes – as part of a carbon pricing policy – is just one pillar

Neuhoff (2008)

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A coherent and effective policy mix

Drivers of emissions reductions	Informational and regulatory approaches ▪ Information disclosure ▪ Auditing ▪ Technical Regulation	Economic instruments: ▪ Subsidies and taxes ▪ Environmental 'designer' Markets	Innovation instruments : ▪ Market engagement programmes ▪ Strategic R&D, demonstration and deployment ▪ Infrastructure program
Behavioural changes			
Substitution effects			
Technical innovation			

➢ **Different drivers and concerns imply different instruments**

Source: Adopted from Grubb 2006

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Carbon pricing rewards individuals and firms that reduce emissions.

- Carbon price creates incentives for the use of more carbon efficient technologies
- Induces substitution towards lower carbon fuels, products and services by industry and consumers
- It also creates market potential for low carbon and energy efficient innovation.
- To deliver this outcome the carbon price has to feed through the economy.
- This builds on extensive empirical evidence: energy prices drive energy efficiency.

➢ **Carbon pricing is a challenging, but indispensable, component of climate policy.**

Neuhoff (2008)

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Emissions trading and carbon taxes are theoretical twins or 'duals'

- Both set a price on emissions
- Both aim at achieving emission reductions from where they are least costly.
- Under idealised conditions (including no uncertainty) they are equally effective.
  - Price of carbon permit = carbon tax rate
- Under uncertainty (of mitigation costs or damage costs) it depends on the relative slope of the curves:
  - Considering atmospheric stock of gases that drive climate change damage curve is flat: carbon taxes more efficient instrument
  - Taking tipping points into account marginal benefits are potentially very steep: emission trading scheme more efficient option

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Emissions Trading and Carbon Taxes share a range of considerations

- Setting targets: "It is neither easier or harder to name the right price than the right quantities because in principle exactly the same information is needed to correctly specify either" (Weitzman, 1974) –> Climate Science delivers quantities
- Energy intensive trade exposed industries – same problem
- Stranded assets – e.g. coal – same problem
- Low income distributional impacts – same problem
- Investment decisions – uncertainty of price in ETS could become trial and error of carbon tax to achieve specific target (who bears the uncertainty?)

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EU Emissions trading scheme

- Participation
  - 27 participating countries (+3 Norway, Lichtenstein and Iceland)
  - All electricity, ferrous metals, pulp & paper, cement and all facilities > 20MW, total 46% of EU emissions
  - International Link via limited use of Kyoto Units in all Phases
- Timing:
  - Started 2005
  - Pilot Phase (2005-2007), Phase 2 (2008-2012= Kyoto), Phase 3 (2013-202)
  - Full flexibility (banking / borrowing) within a period, no banking from pilot phase to phase 2
- Cap, Allocation and sanctions
  - Phase 1+2: Cap & allocation left to the Member States (National Allocation Plans), approval by the European Commission: Mainly free allocation
  - Phase 3: Central cap setting, -21% compared to 2005, around 60% auctioning 2013, increasing over time
  - 100 €/t CO2 (from 2008), no buy-out, no safety valve
- Lessons learnt:
  - Abatement can be proved for the pilot phase (when there was an EUA price)
  - Emission reduction resulted more from 'unexpected' sources (coal-to-coal shift, biomass co-firing) than from the 'conventional' fuel shift
  - Cap setting important and free allocation complex

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Environmental taxes

- Carbon tax in Norway (Bruvoll and Larsen 2004)
  - Introduced in 1991
  - highest carbon tax rate was US$51 per tonne CO2 in 1999, and the average tax was US$21 per tonne CO2
  - Despite carbon tax CO2 increased by 19 percent from 1990 to 1999 but GDP growth of 35 percent
  - Small effect of carbon taxes on emission-reducing components (total 2.3%, on-shore only 1.5%)
  - Reason: exemption for a broad range of fossil fuel intensive industries (e.g. fishing, agriculture, land-based gas use, metals refining, cement, and several others) principally motivated by concern about competitiveness
- Eco tax in Germany
  - Introduced 1999
  - Apart from reducing energy consumption aim to generate revenue to lower burden on labour costs to increase employment
  - Mineral oil and electricity tax (excludes coal!!)
  - Net burden cap for manufacturing industry: Refund of full eco tax if tax burden is 1.2 of the savings received through social security payment

  Administration costs of exemptions can be very high!!

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International Agreements

- Coming to any global agreement is extremely difficult – whether global cap-and-trade or harmonized carbon tax policies
- However, the former is probably more likely and there is institutional inertia and important lessons already learned.
- Kyoto Mechanism may help to achieve a unique carbon price internationally through indirect linkiages
- The EU failed with a carbon tax
- The Scandinavians, which do have some carbon taxes, have also never harmonised schemes
- Setting different carbon tax levels is inefficient

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'Voluntary' action incentives debate – some clarifications

- Ethically driven voluntary reductions (beyond price driven motives) are relatively small
- The CPRS is **not** a 'zero-sum game' or 'carbon pollution *reallocation* scheme'
  - To reach the cap from business-as-usual requires significant carbon reductions → these net savings are **not displaced** by 'big polluters'.
  - Under Treasury scenarios, the Australia carbon price is usually set by the international CDM price, so adding, say, a voluntarily solar panel has little effect on this price and thus industry pollution → Rather there are less purchases overseas credits and Australian emissions are reduced (but not globally).
  - Those voluntary actions increase the capacity for reductions in the long run and allow for a tighter cap when reset.
- Reductions are available through retirement funds and, for example, planting trees (that have not opted into the scheme).
- A reserve to be set aside to lead to a more stringent target should be considered
- Tax under the cap of Kyoto will also need government support e.g. retirement of Assigned Amount Units

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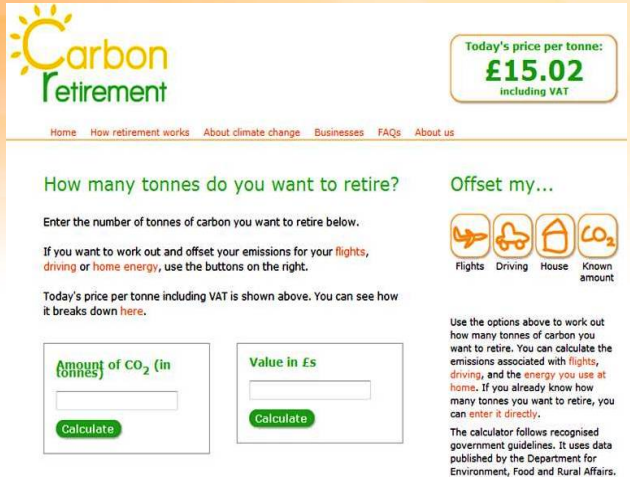
European example of a carbon retirement site



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What about the recession?

- An 'emissions pause' in the short term
  - Kyoto (2008-12) compliance easier
  - But no likely change in emission intensity (Emission/GDP)
- Emission trading is counter-cyclical → lower carbon prices with lower economic growth (as evident in the EU ETS carbon price fall recently)
- Likely followed by resumption of business-as-usual carbon intensive growth
  …*unless* mitigation policies in place
  - 2020 targets remain a significant challenge.
- "*We must not let the financial and economic crisis distract our attention from moving towards long-term rational climate policies."* – OECD Secretary-General

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Conclusions

- Comparison of *implemented* tax schemes with *implemented* emissions trading scheme: differences vanish
- Emission trading schemes have worked but needed improvement
- Taxes have only shown limited success in reducing emissions and a lot of exemptions which have not been reduced over time
- Success of reducing emissions depends on the stringency of the target or the level of the tax (what is more likely to be achieved?)
- Multi-national schemes are possible as illustrated by EU
- Many of the problems with emissions trading that have been highlighted by commentators (the target, EITEI, Coal) will be present with a carbon tax
- The latest science increasingly emphasizes the urgency of the issue and the need to act now, therefore do not waste time by discussing taxes vs. ETS
- However, do not log in the wrong target and policy for a long time
- Use the time to design the coherent POLICY MIX we need to achieve an adequate target!


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