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A laypersons guide to carbon taxes and carbon trading schemes

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'The Future is Clear'
Leichhardt Council Forum

Tuesday 3, May 2011

Leichhardt Town Hall

C already has a price… many prices

- The most ‘valuable’ of all elements
  - Forms include diamond, graphite (coal) amorphous (soot)
  - 15th most abundant element on earth

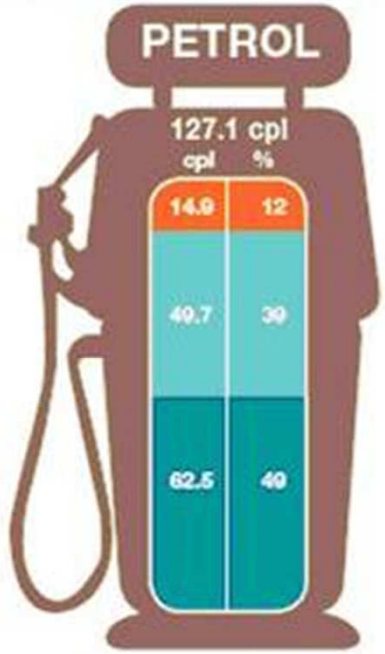
- **the basis of all known life:**
  - nearly 10 million pure organic compounds
  - 2nd most abundant element in human body
  - A wide range of potential fuels including hydrocarbons **coal, oil + gas**

… many **C** based energy prices

- Energy highly valuable – vital roles, non-substitutable
  - Not just a question of direct costs of extraction + conversion
- Potentially major differences b/n cost and value
- Many of these costs + values are externalities unless addressed by governments
- Key externalities until now include social welfare, resources management, energy security, conventional pollutants
- *… now climate change*

Chart 23 Components of Australian retail RULP prices in the five largest cities: 2008–09

(ACCC, 2010)



Margins and other costs Taxes Mogas 95

Source: ACCC calculations based on Platts, CBA and Informed Sources data.

NEM: Aust's largest environmental (externalities) market

NEM environmental externality costs likely outweigh direct costs … but both outweighed by social externality benefits of 'essential public good'

Can we reduce net costs (direct and environmental) whilst still achieving societal benefits?

Coal-fired generation in NSW (2009-10): supplying >90% of state electricity	$/MWh estimate
Direct Long Run Marginal Cost (new plant)	*$50-55 (Acil Tasman report to AEMO, 2009)*
Direct Short Run Marginal Cost (fuel, variable O&M)	$10-14 (Acil Tasman as above)
External Health damage costs (PM10, SOx, NOx)	$13 (mid-range estimate of ATSE Study, 2009)
External Climate Change damage cost	$65 (using estimate $75/tCO2 in Stern Review, 2006)

What can governments do regarding **C**?

- **Tax, Spend and Regulate**
  - We have millennia of experience in this
- … or, over last 2 decades, growing interest in creating **'designer' markets** to achieve environmental objectives
  - Renewable Energy Targets, **Emissions Trading**

- Some insights
  - To spend is to tax - *Milton Friedman*
  - Taxation impacts: revenue, redistribution, repricing + representation
  - Taxation targets: capital, labour, consumption
  - Regulation has a proven track record in environmental challenges … has only recently fallen out of favour

Carbon pricing – from theory to practice

(adapted from Clive Spash, *Brave New World of Carbon Trading*, www.clivespash.org)

- Underlying economic theory on pollution control
  - An aberration on otherwise perfectly functioning markets
  - Known or knowable pollution control costs and benefits
  - Optimal pollution control equates marginal costs of control & benefits
  - Taxes set the price, emissions trading sets the quantity
- … may not adequately address challenges of practical implementation?
  - Oversimplification – range of climate change drivers beyond **C**
  - Existing market failures + other distortions – eg. fossil fuel subsidies
  - Markets, power and vested interests
  - ***What about equity considerations?***

How does emissions trading work?

Mechanics of a cap and trade scheme *(Australian Government, CPRS White Paper, 2009)*

Emitters of greenhouse gases need to acquire a permit for every tonne of greenhouse gas that they emit.

The quantity of emissions produced by firms will be monitored, reported and audited.

At the end of each year, each liable entity will need to surrender a permit for every tonne of emissions that they produced in that year.

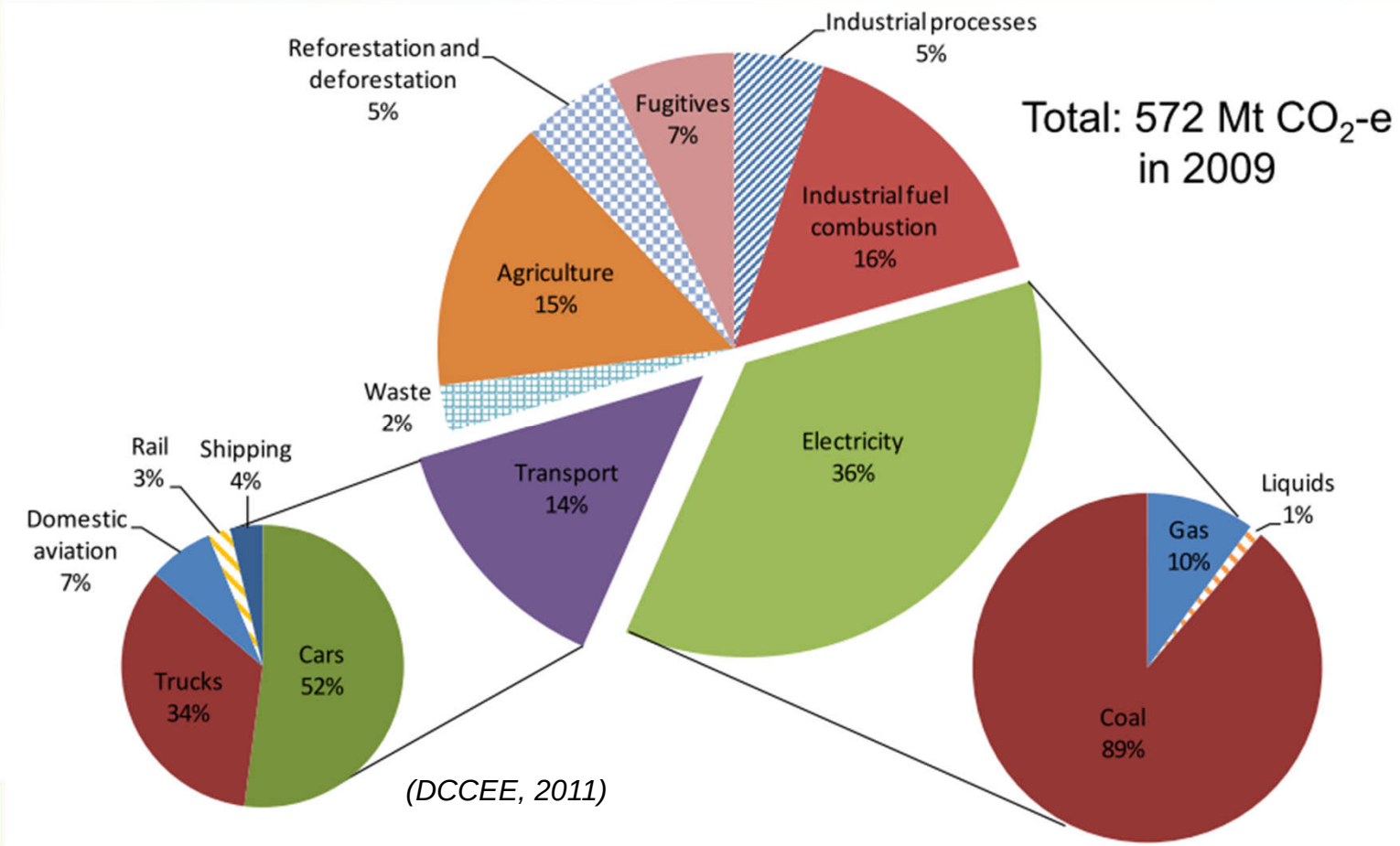
The number of permits issued by the Government in each year will be limited.

Firms will compete to purchase the number of permits that they require. Firms that value the permits most highly will be prepared to pay most for them, either at auction or on a secondary trading market. For some firms, it will be cheaper to reduce emissions than to buy permits.

Certain categories of firms will receive an administrative allocation of permits, as a transitional assistance measure. Those firms could use the permits or sell them.

The complexity + scale of effective **C** action

- Almost all economic sectors have emissions
- Australian emissions amongst highest per-capita in the world, avoiding dangerous warming might require reductions of 90% by 2050



(DCCEE, 2011)

C pricing around the world to date

- Developed countries *(DCCEE, 2011)*
  - ETS already operating in 27 EU + 4 other countries, New Zealand, 10 US states. Trials in South Korea + Japan.
  - Carbon taxation in UK, Denmark, Finland, Norway, Sweden, Netherlands + Canada
- Developing countries
  - India: coal tax to fund research and development on renewable energy technologies
  - China: value-based tax on coal, oil and gas extraction in largest gas-producing province, plans to extend to all other western provinces
- *Almost all countries*
  - *A range of 'implicit' **C** prices and subsidies*

Current Australian **C** Pricing Framework

Multi-Party Climate Change Committee

- Could commence with fixed price (within ETS framework) as early as mid 2012
- Convert to ETS within 3-5 years subject to Australian and international factors
  - Including International **C** markets, progress on negotiations
- Likely ETS design (starting point the former CPRS)
  - Broad coverage (but not land-use?)
  - International linkages (potentially limited)
  - Assistance to households and businesses still to be determined
- Complementary policies still required (but limited scope?)

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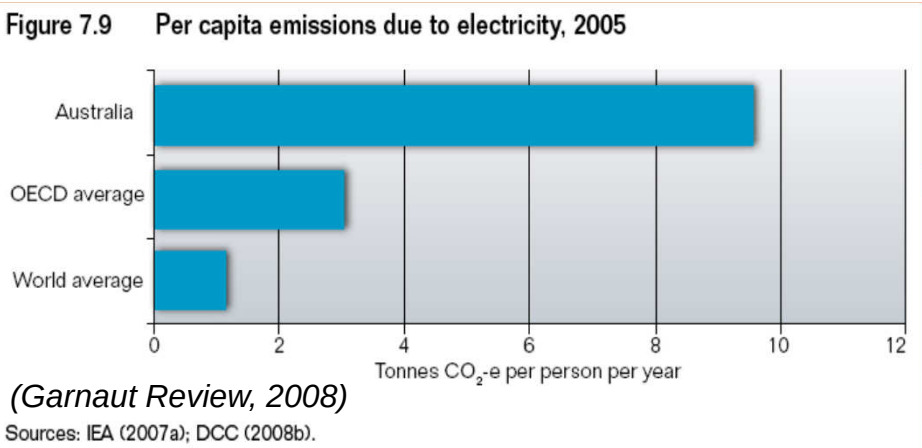
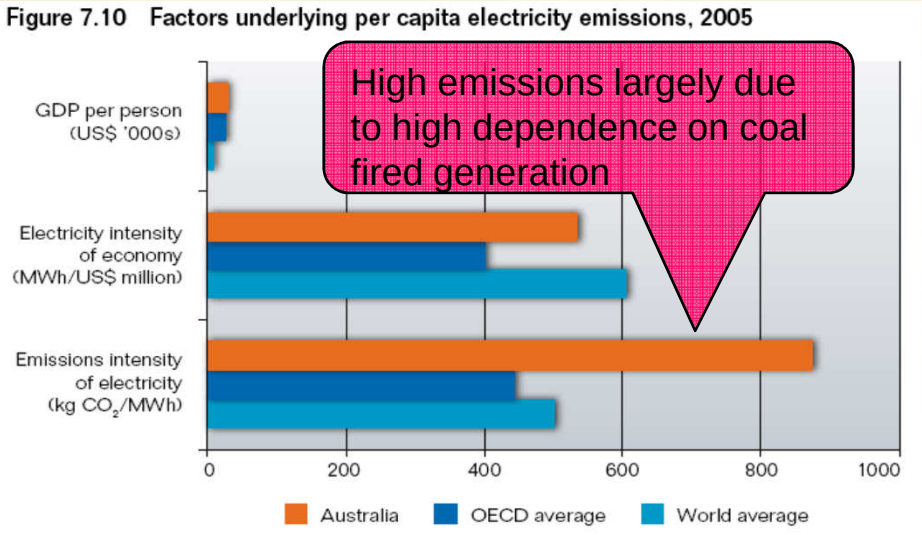
C pricing & electricity

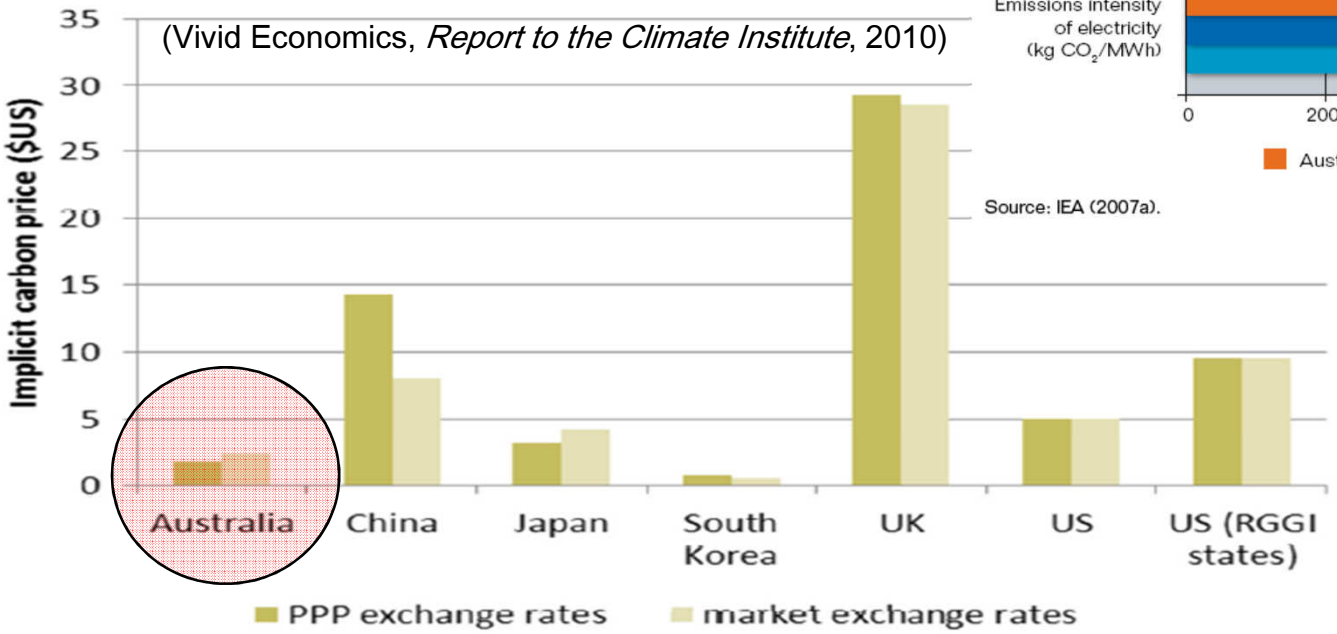
- One of the world's most emissions intensive electricity industries
- Current policies including eRET represent modest 'implicit' **C** price
- Explicit (eg. EU ETS) and implicit **C** prices of many other countries exceed current Australian efforts



(Garnaut Review, 2008)

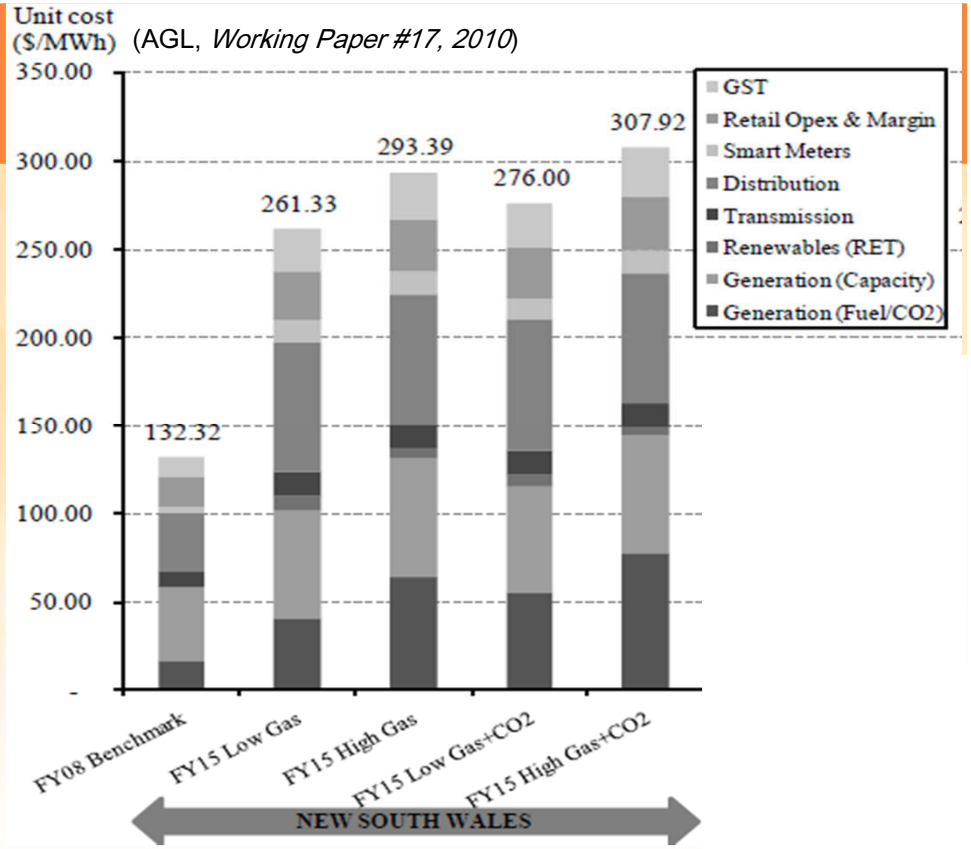


(Vivid Economics, *Report to the Climate Institute*, 2010)



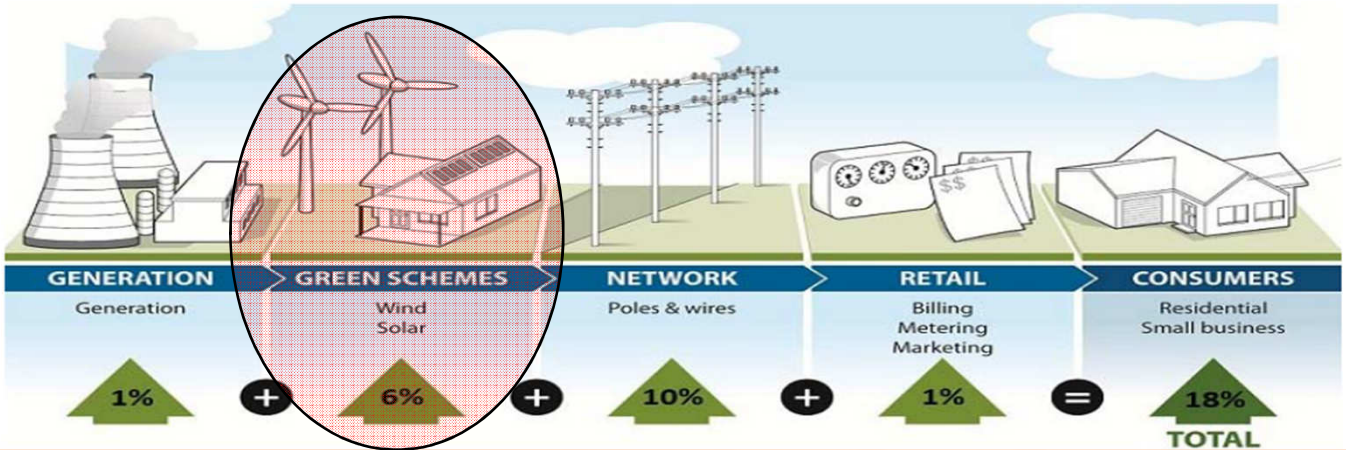
Potential impacts of a **C** price on electricity prices

- Many price drivers
- Many uncertainties wrt **C** pricing
- Renewable support as an implicit **C** price
- Future price estimates have been rising over last few years…
- *Your final bill still depends on you*



(AGL, *Working Paper #17, 2010*)

Figure 1.1 Contributions from the supply chain to overall price increases on 1 July 2011 (IPART, *Draft Determination on Regulated Electricity Prices, 2011*)



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Thank you… and *questions*

Comments, suggestions and corrections regarding this presentation are all welcome. Please contact Iain at i.macgill@unsw.edu.au

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