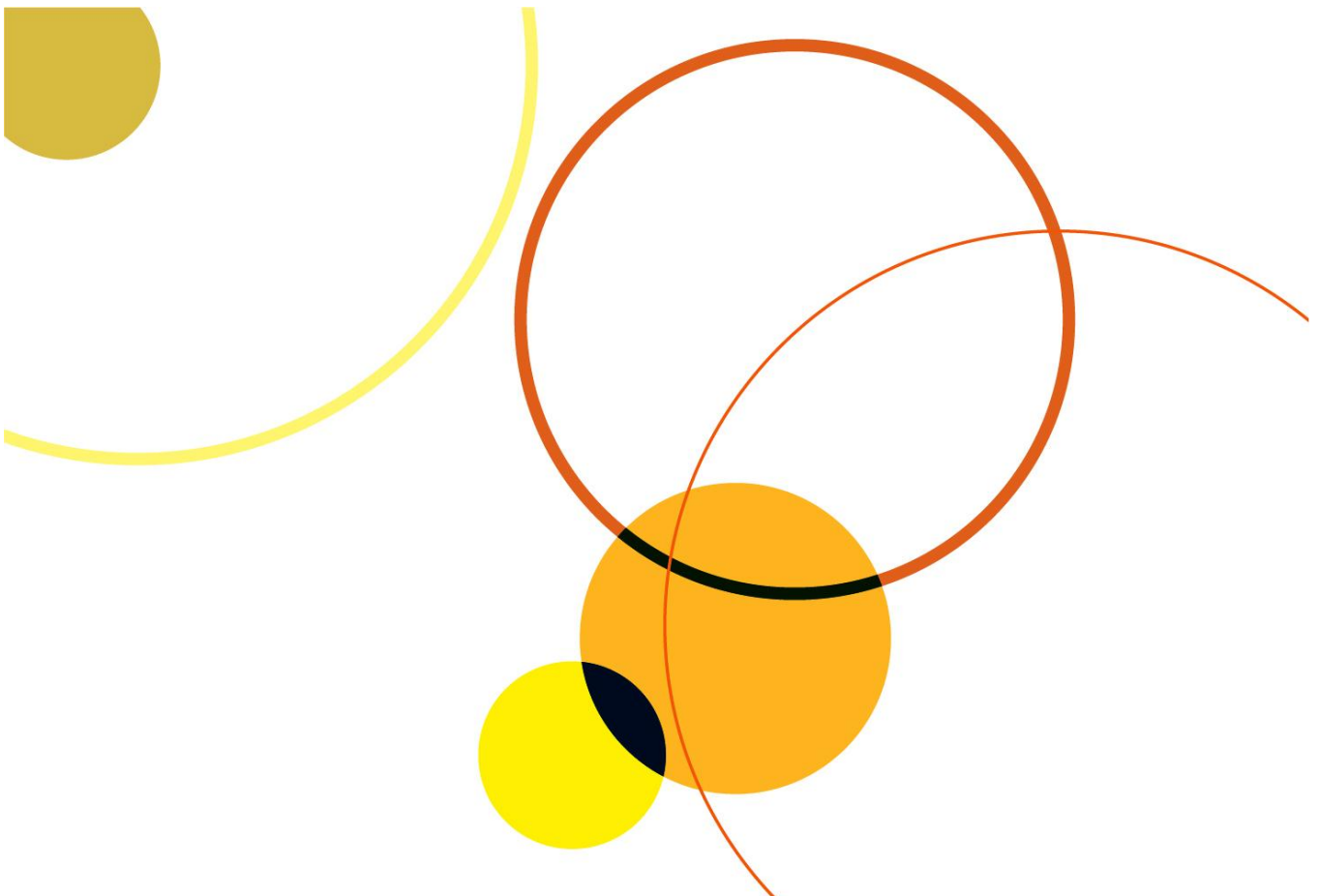


The economic impacts of the carbon pricing mechanism

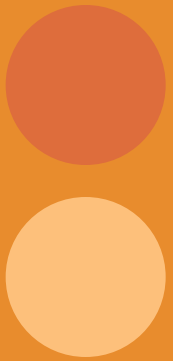
Australian carbon pricing seminar

Presentation
September 2011



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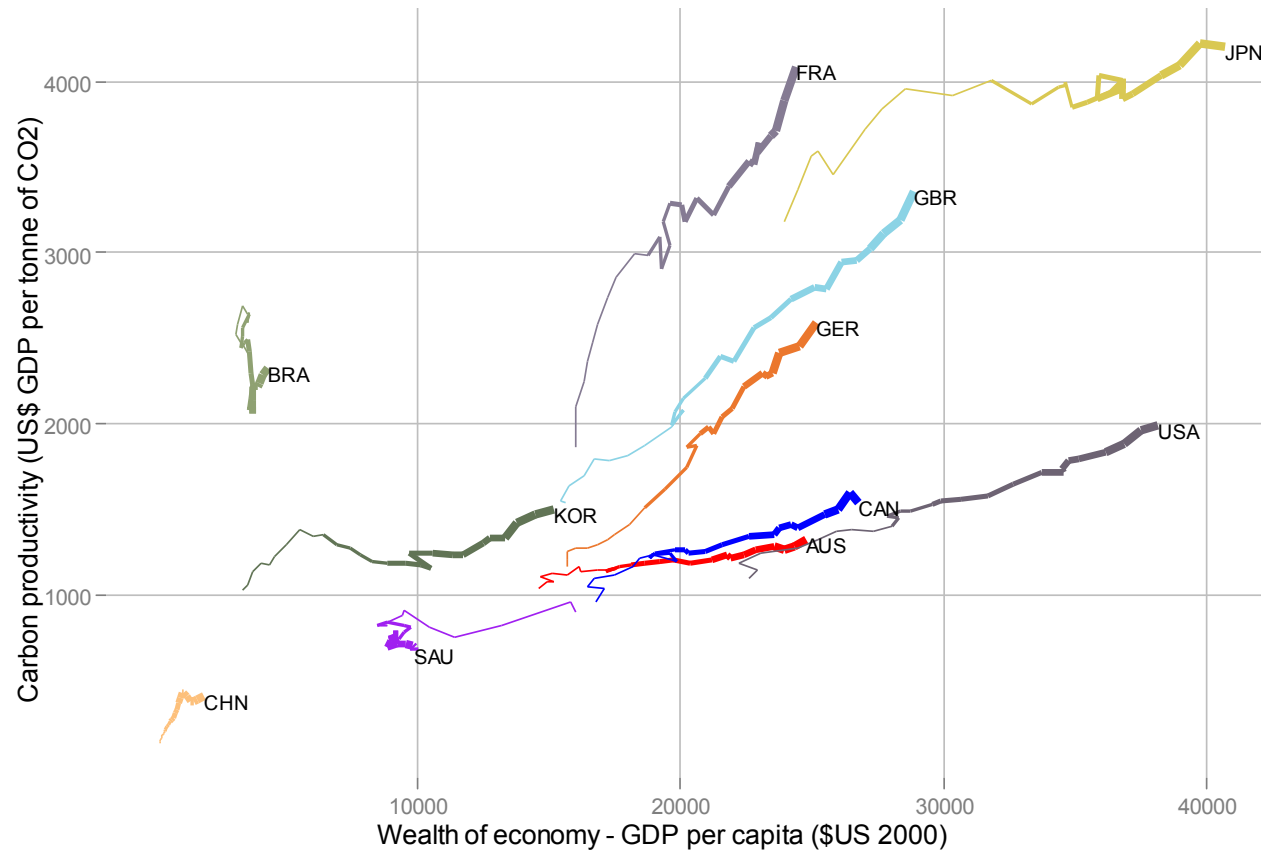
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Australia's clean growth trajectory is lower than many other countries

A shift in this trajectory, induced by a carbon price, may have significant economic impacts

Figure 1. Some countries have achieved higher rates of clean growth than others



Source: Vivid Economics

:vivideconomics

The impact of the carbon price package at the macroeconomic level is forecast to be small

However, there are significant effects at the sectoral level for particular industries

Table 1. **A carbon price is forecast to leave income per person 0.4 per cent lower in 2020 than it would otherwise be**

	Domestic emissions (Mt CO ₂ e)	GNI per person (2010 A\$'000)	Real wages (index 2010=100)	Capital stock (2010 A\$billion)	Consumption per person (2010 A\$'000)
Current	591	58.1	106.73	4262	31.9
2020 (no carbon price)	679	65.1	121.25	6132	37.0
2020 (with carbon price)	621	64.8	120.19	6105	36.8

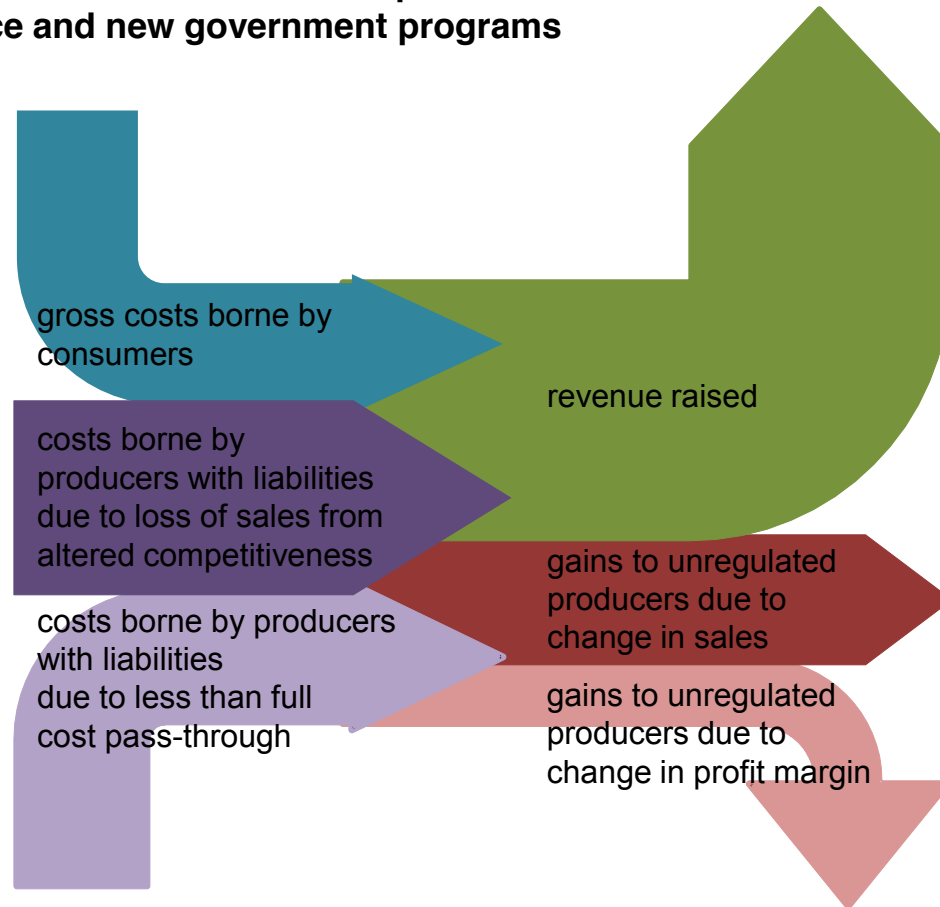
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A carbon price induces potentially large transfers of economic resources

The ultimate distribution of costs and benefits depends on market and regulatory structure

Figure 2. Revenue raised in Australia is expected to be distributed via tax cuts, industry assistance and new government programs



Source: Vivid Economics

The impact of carbon pricing on EITE industries is not always straightforward

Modelling can quantify the commercial effect of different options

carbon pricing induces changes in market share, profit margins, trade patterns and location decisions

the nature of upstream and downstream markets can impact cost pass-through and market share changes (e.g. interactions between shipping and mining markets)

investments in emissions intensity reduction can limit market share loss as well as reduce direct carbon liability

in some industries interactions between other policies and carbon policy can be critical

the relationship between output and emissions is a key determinant of the competitiveness effect of carbon pricing as changes in variable costs will have a different market impact to changes in fixed costs

in some sectors overall demand and average margins do not change but there can be substantial reallocation of market share between firms

A carbon price may alter the long-term structure of an industry

Investment and asset management strategies will adjust to carbon pricing

in the long term, it may be that the ambition of emissions reduction, and the associated costs, converge across countries

- there is a risk that a temporary policy difference can lead to permanent changes in the location of some industries if operations tend to cluster together

for emissions intensive industries, a carbon price alters the relative cost of inputs, and this may lead to changes in the configuration and quantity of capital stock

emissions reduction policy can result in changes in product demand and lead to over-capacity

- for example, vehicle fuel efficiency standards, biofuels and carbon pricing may lead to the demand for refined oil products to be substantially lower than they would otherwise be

in certain mature industries, or those with over-capacity, carbon pricing can induce a different sequence of firm exit and asset retirement

- some assets may be more vulnerable than others in the resulting industry shakeout

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It is likely the carbon price will induce a change in Australia's fuel mix

There will be a larger role for gas, renewables and, possibly, nuclear

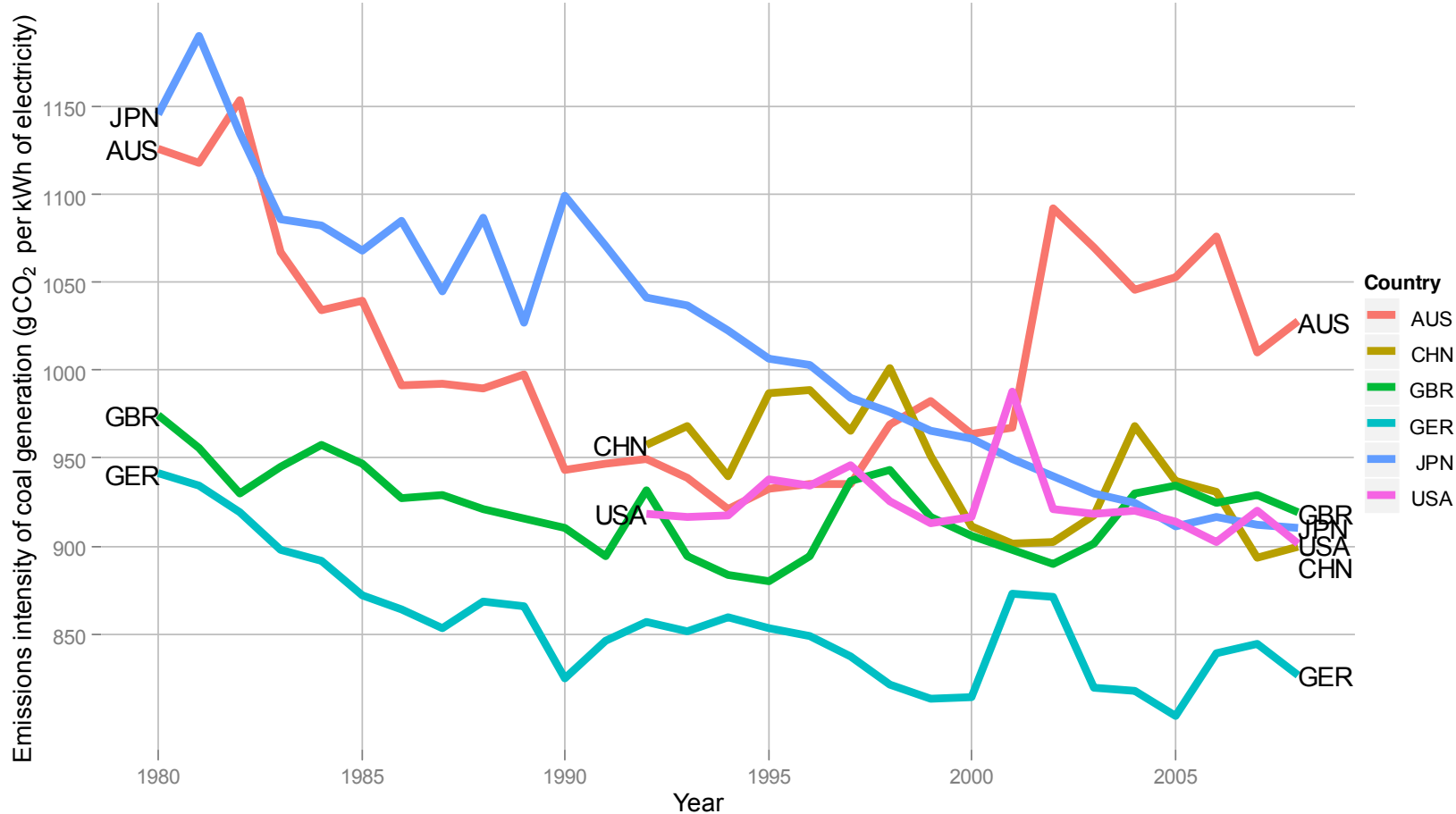
Table 2. Australia has a high share of coal and a low share of renewable generation

	Australia	China	Germany	Japan	UK	USA
Renewables	6%	17%	13%	9%	6%	10%
Nuclear	0%	2%	22%	27%	18%	20%
Coal	76%	79%	42%	25%	28%	45%
Gas	16%	1%	14%	32%	44%	23%
Oil	1%	1%	2%	6%	1%	1%
Other, waste, biomass	1%	0%	7%	2%	3%	2%

Australian power stations pollute more, even if they use the same fuel as elsewhere

Upgrading the generation and transmission capital stock will play a role in closing this gap

Figure 4. Australian coal power stations have higher emissions intensity than in other countries

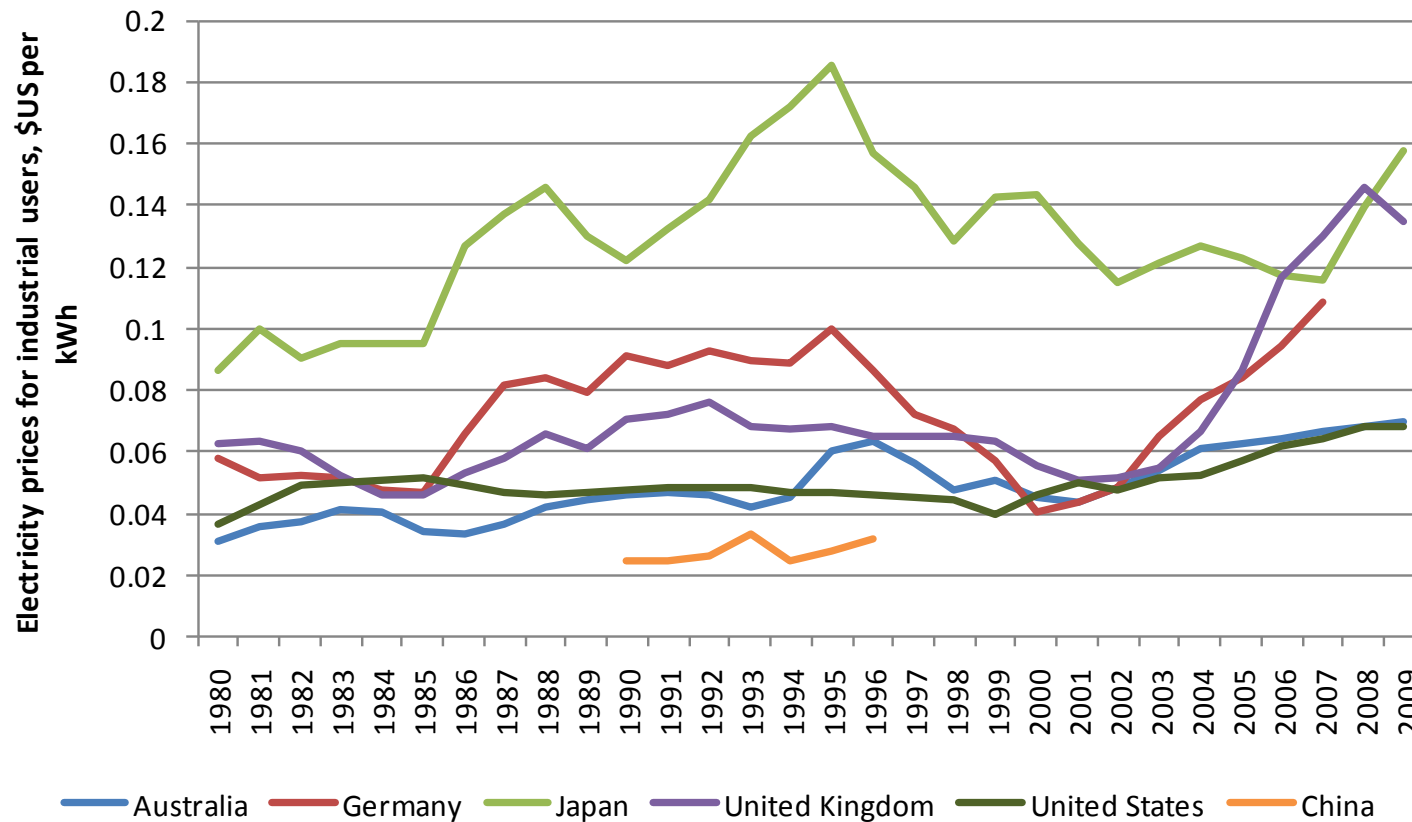


Source: Vivid Economics from IEA data

The carbon price will change relative input costs for business

Energy prices will rise from a low base, and labour costs will fall due to income tax changes

Figure 3. Electricity prices have historically been lower in Australia than in some other countries



Source: Vivid Economics, IEA and the Garnaut Climate Change Review

The carbon price will induce investment to increase Australian industry's energy efficiency

Existing technologies can often be used to increase energy efficiency

Table 3. Australia's industrial energy efficiency is lower than in some other countries

Energy intensity (GJ per tonne)	Iron and steel	Pulp and paper	Cement	Petrochemicals	Oil refining	Ammonia
AUS	24.3	N/A	4.2	N/A	N/A	47.4
CHN	35.0	N/A	5.0	N/A	4.5	N/A
GBR	21.0	11.2	N/A	33.8	2.6	38.7
GER	17.0	13.4	3.0	32.9	2.6	37.8
JPN	16.6	19.2	3.1	25.1	2.1	N/A
USA	18.5	34.0	6.1	33.9	4.3	40.1

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The policy package is more than just a carbon price

Significant resources will be at play through the renewable electricity target and direct funding

the Carbon Farming Initiative may be a large supply of Kyoto-compliant offsets from the land use sector, but will require development of new methodologies

the Energy Security Fund will purchase, by tender, the closure of 2 GW of emissions intensive generation

around one-third of the revenues from the carbon price will be used in industry assistance to selected industries

— the aluminium sector, for example, is projected to receive more in assistance than it will pay; coal generators will receive up to A\$5.5 billion

around half of revenues will be used as compensation to households

the remainder of revenues will be used for a number of clean energy programs

— billions are being allocated to clean energy and efficiency programs and a possible green investment bank

Australia's relatively stringent renewable electricity target remains in place and will drive renewable energy generation independently (and at a higher cost) than a carbon price

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Prices within a scheme will depend upon the scope of ambition and the efficiency of policy

In turn, this determines demand and supply, and therefore price, in international offset markets

Figure 5. Australia has a mix of more and less cost-effective policies

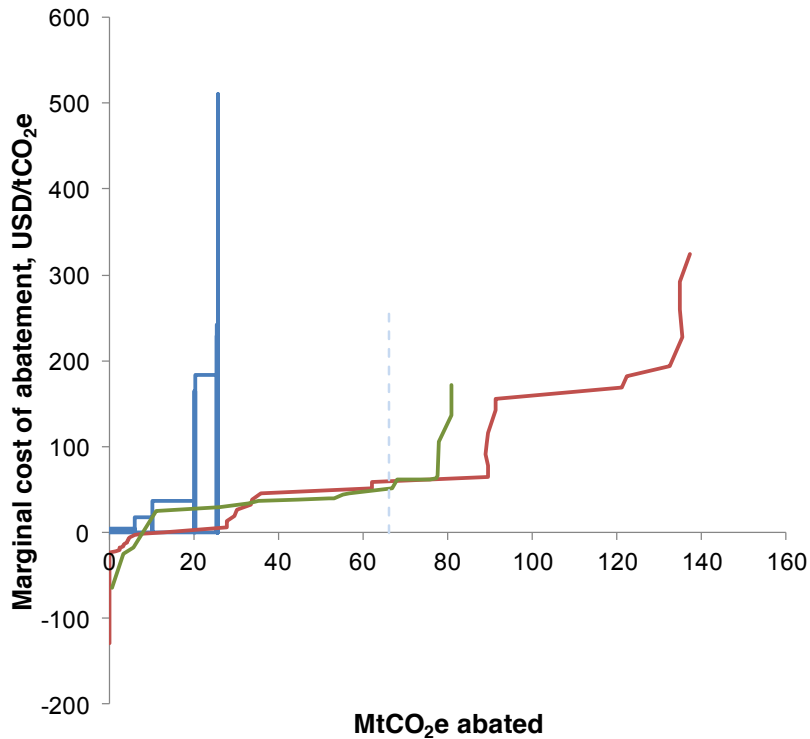
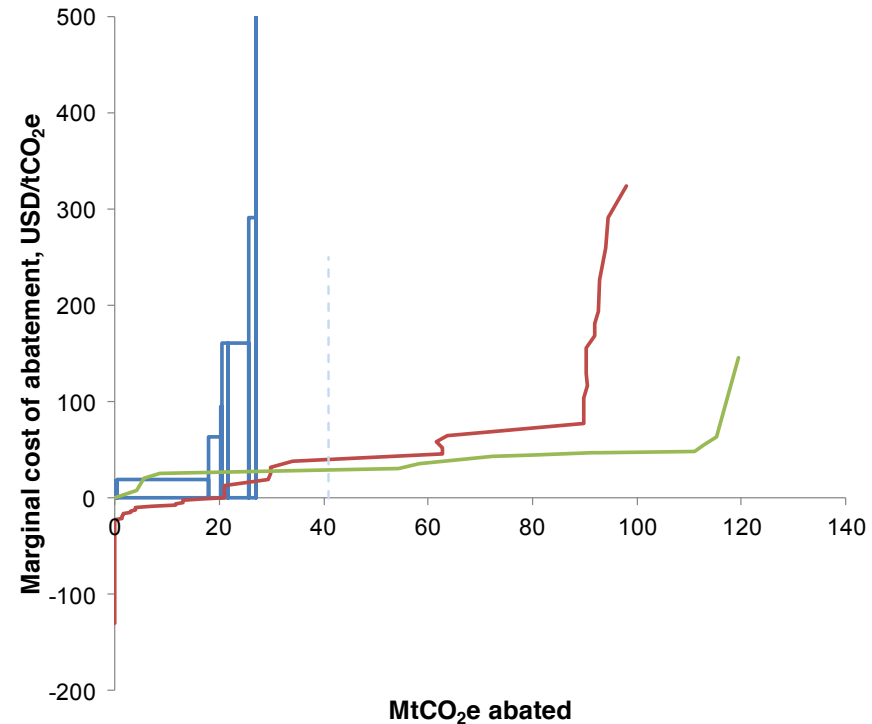


Figure 6. Abatement costs are lower in the UK for a range of targets, suggesting Australia will be a net buyer of allowances



Source: Vivid Economics
: vivid economics

Note: the red and green lines are estimates of minimum abatement cost to reach different targets, while the blue boxes represent the cost of current policy

Contact us:

306 Macmillan House
Paddington Station
London W2 1FT

Author contact details: Simon Baptist
T: +44 7906 476 502
E: simon.baptist@vivideconomics.com

Company Profile

Vivid Economics is a leading strategic economics consultancy with global reach. We strive to create lasting value for our clients, both in government and the private sector, and for society at large.

We are a premier consultant in the policy-commerce interface and resource and environment-intensive sectors, where we advise on the most critical and complex policy and commercial questions facing clients around the world. The success we bring to our clients reflects a strong partnership culture, solid foundation of skills and analytical assets, and close cooperation with a large network of contacts across key organisations. From our beginnings in 2006, we have become well recognised and trusted in our field, and known for our uncompromising quality.

Practice areas

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Infrastructure & resources

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Innovative policy