Centre for Energy and Environmental Markets

UNSW THE UNIVERSITY OF NEW SOUTH WALES SYDNEY • AUSTRALIA



The impact of the Carbon Price on Industry

Australia's evolving energy + climate policy context

Iain MacGill

Associate Professor, School of Electrical Engineering and Telecommunications
Joint Director (Engineering), CEEM

AECOM Networking for the Future – Discussion Series

Sydney, 29 November 2011

www.ceem.unsw.edu.au

Centre for Energy and Environmental Markets

Climate change context

- Generally worsening scientific prognosis for warming, impacts
- Increasing global emissions
- An evident weakening international response …but
- some growing national efforts

theguardian | TheObserver

Western nations 'used bullying tactics' at climate talks

World Development Movement report accuses developed countries of threatening behaviour at climate change summits

John Vidal
theguardian

Greenhouse gases rise by record amount

Levels of greenhouse gases are higher than the worst case scenario outlined by climate experts just four years ago

Associated Press
guardian.co.uk, Friday 4 November 2011 03.03 GMT

Worst ever carbon emissions leave climate on the brink

Exclusive: Record rise, despite recession, means 2C target almost out of reach

Fiona Harvey, Environment correspondent
guardian.co.uk, Sunday 29 May 2011 22.00 BST

A larger | smaller

theguardian

World headed for irreversible climate change in five years, IEA warns

If fossil fuel infrastructure is not rapidly changed, the world will 'lose for ever' the chance to avoid dangerous climate change

Fiona Harvey, environment correspondent
guardian.co.uk, Wednesday 9 November 2011 10.01 GMT

The shock rise means the goal of preventing a temperature rise of more than 2 degrees
theguardian

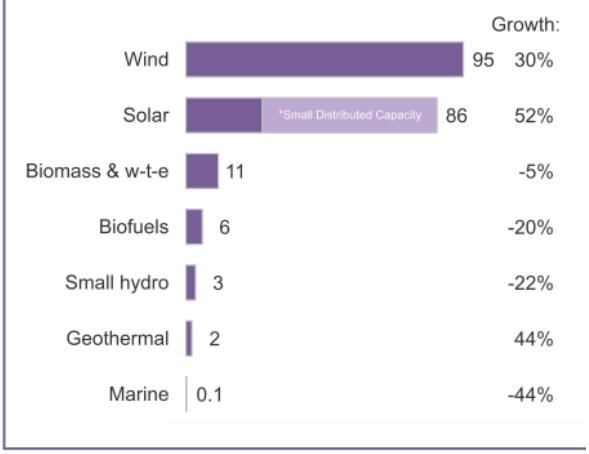
UN chief slams rich nations' plans to delay climate change treaty

Achim Steiner says reaching an agreement in 2020 instead of at next month's Durban conference would be 'very high risk'

Fiona Harvey, environment correspondent
guardian.co.uk, Wednesday 23 November 2011 17.48 GMT

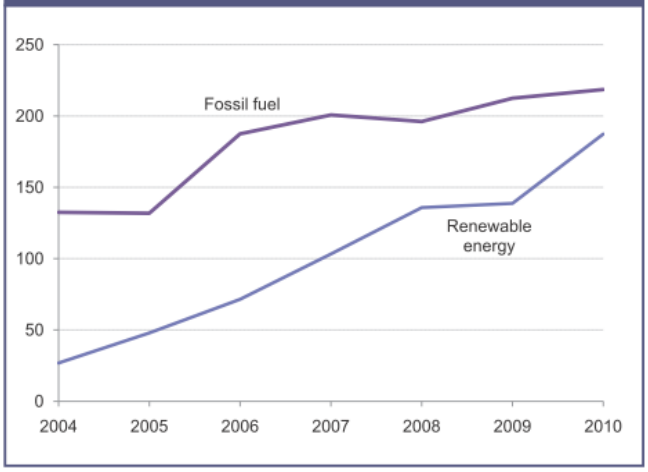
Some good news… renewables

FIGURE 6: FINANCIAL NEW INVESTMENT IN RENEWABLE ENERGY BY TECHNOLOGY, 2010, AND GROWTH ON 2009, $BN



(UNEP/NEF, *Global Trends in Renewable Energy Investment*, 2011)

FIGURE 25: INVESTMENT IN CLEAN ENERGY V CONVENTIONAL CAPACITY, 2004-2010, $BN



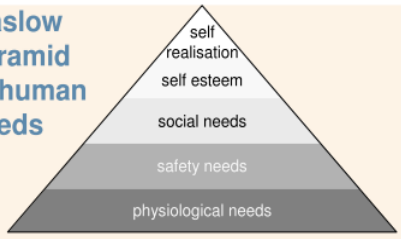
Fossil Fuel investment is calculated from EIA & IEA data. Clean energy investment includes asset finance and small scale projects, but excludes large hydro).

The impact of the carbon price on industry

Centre for Energy and Environmental Markets
UNSW THE UNIVERSITY OF NEW SOUTH WALES SYDNEY • AUSTRALIA

A long history of energy policy with some efforts to address some environmental impacts

Maslow pyramid of human needs



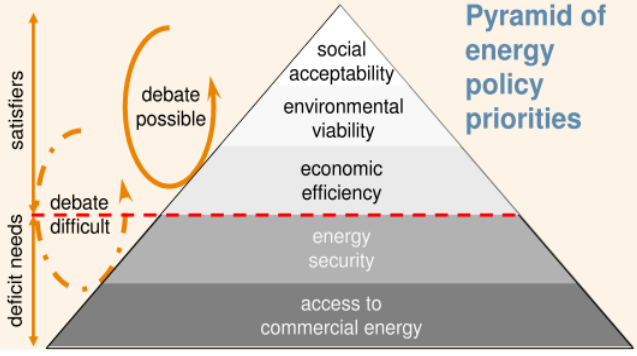
"A person who is lacking food, safety, love and esteem would most probably hunger for food more strongly than for anything else," stated the American psychologist Abraham Maslow in 1943 while formulating a theory to explain the motivational structure of a healthy person.

If Maslow were in Energy Politics…

Abraham Maslow

… he would argue that access to energy, supply security, energy costs, environmental issues and social acceptance are not subject to trade-off, but to a hierarchy: we cannot successfully address higher order issues before proposing and implementing solutions for more direct needs.

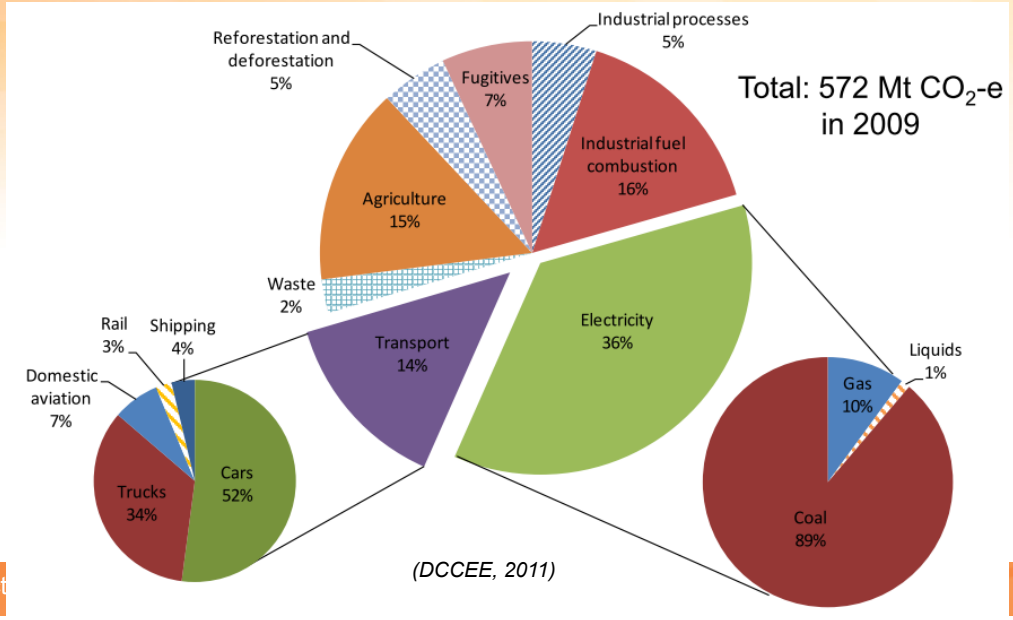
Pyramid of energy policy priorities



(World Energy Council, 2010)

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



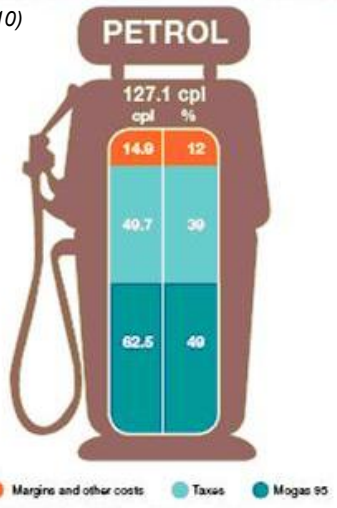
(DCCEE, 2011)

Already 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 govts
- Key externalities until now include social welfare, resources management, energy security, pollutants
- *… now climate change and an environmental price on carbon in Aust.*

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

(ACCC, 2010)



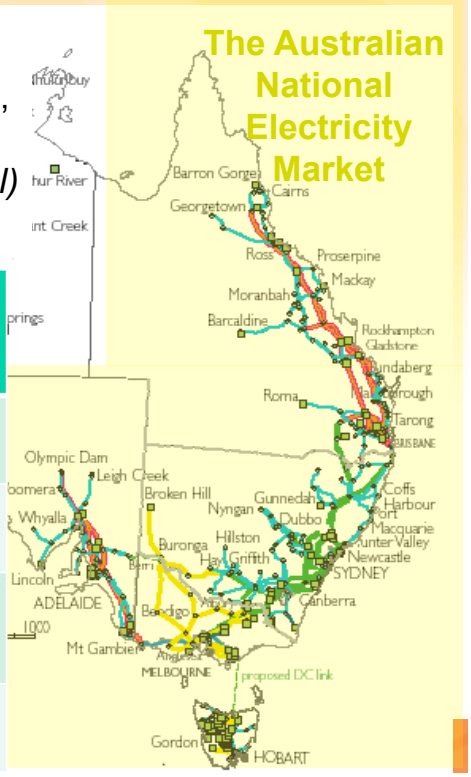
Source: ACCC calculations based on Platts, CBA and Informed Sources data.

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)



Centre for Energy and Environmental Markets
UNSW THE UNIVERSITY OF NEW SOUTH WALES SYDNEY • AUSTRALIA

Possible industry responses

- General positioning
  - Virtually all Australian industry stakeholders favour carbon price… debate instead revolves around what price, when and on who?
  - Direct action alternatives increasingly derided
- Some key Industry options
  - Seek to stay outside pricing regime
    - Best carbon price is one you don't pay but others do, subsidies possible *however possible risks of other policies, sovereign risks*
  - Compensation
    - Best carbon price is one that others pay for you, windfall profits also possible …. *however can this be maintained?*
  - Compliance
    - Carbon just another cost of doing business, focus on core competencies … *however underlying principle of emissions trading is that price increases until sufficient action occurs*

Centre for Energy and Environmental Markets

Significant existing fossil-fuel subsidies in Australia

	2010-11	2011-12	2012-13	2013-14	Total
Concessional FBT treatment of company cars	$1,110	$1,220	$1,290	$1,340	$4,960
Exemption from fuel tax for aircraft	$1,000	$1,050	$1,100	$1,150	$4,300
Concessional tax treatment of oil from north west shelf	$580	$580	$580	$590	$2,330
Accelerated depreciation for planes, oil and gas assets and commercial vehicles	$915	$1,000	$1,030	$1,055	$4,000
Exemption from excise for LPG, LNG and CNG	$550	$320	$350	$370	$1,590
Fuel Tax Credits Scheme for vehicles used in Mining, agriculture and other non-road purposes	$5,162	$5,289	$5,680	$5,799	$21,930
Total	$9,317	$9,459	$10,030	$10,304	$39,110

(The Australian Institute, 2011)

$4 billion in coal subsidies in NSW?

by Solar Choice on November 7, 2011

0 The Auditor-General of NSW released a report today condemning the previous Labour government's implementation of the Solar Bonus Feed-in Tariff Scheme, which became political hotpoint last year when it was found that it would go severely over budget. The irony is that the Auditor-General's report comes on the heels of an article by Climate Spectator that estimates an effective $4 billion subsidy to the Cobbora coal mine to keep the price of coal low enough to facilitate the sale of the state's gen-traders to private firms.

0 Like

Th

Centre for Energy and Environmental Markets

Compensation for some

Spending C revenue, related policies

(Clean Energy Plan, 2011)

CARBON PRICING MECHANISM

Carbon price: a two-stage approach:

1. Fixed price period—The carbon pricing mechanism will commence on 1 July 2012, with a price that will be fixed for the first three years. The price will start at $23 per tonne and will rise at 2.5 per cent each year in real terms.

2. Emissions trading scheme—On 1 July 2015, the carbon price will transition to a fully flexible price under an emissions trading scheme, with the price determined by the market.

Coverage

Broad coverage from commencement, encompassing the stationary energy sector, transport (as described below), industrial processes, non-legacy waste, and fugitive emissions. Only landfill facilities with direct emissions of 25,000 tonnes CO2-e a year or more will be liable under the carbon price.

A carbon price will not apply to household transport fuels, light vehicle business transport and off-road fuel use by the agriculture, forestry and fishing industries. An effective carbon price will be applied to domestic aviation, domestic shipping, rail transport, and non-transport use of fuels. Users of these fuels can opt-in to the mechanism under the Opt-in Scheme.

International linking

International linking to credible international carbon markets and emissions trading schemes from the commencement of the flexible price period. At least half of a liable party's compliance obligation must be met through the use of domestic permits or credits.

years of the flexible carbon price
e expected international price and
price floor will be $15, rising by

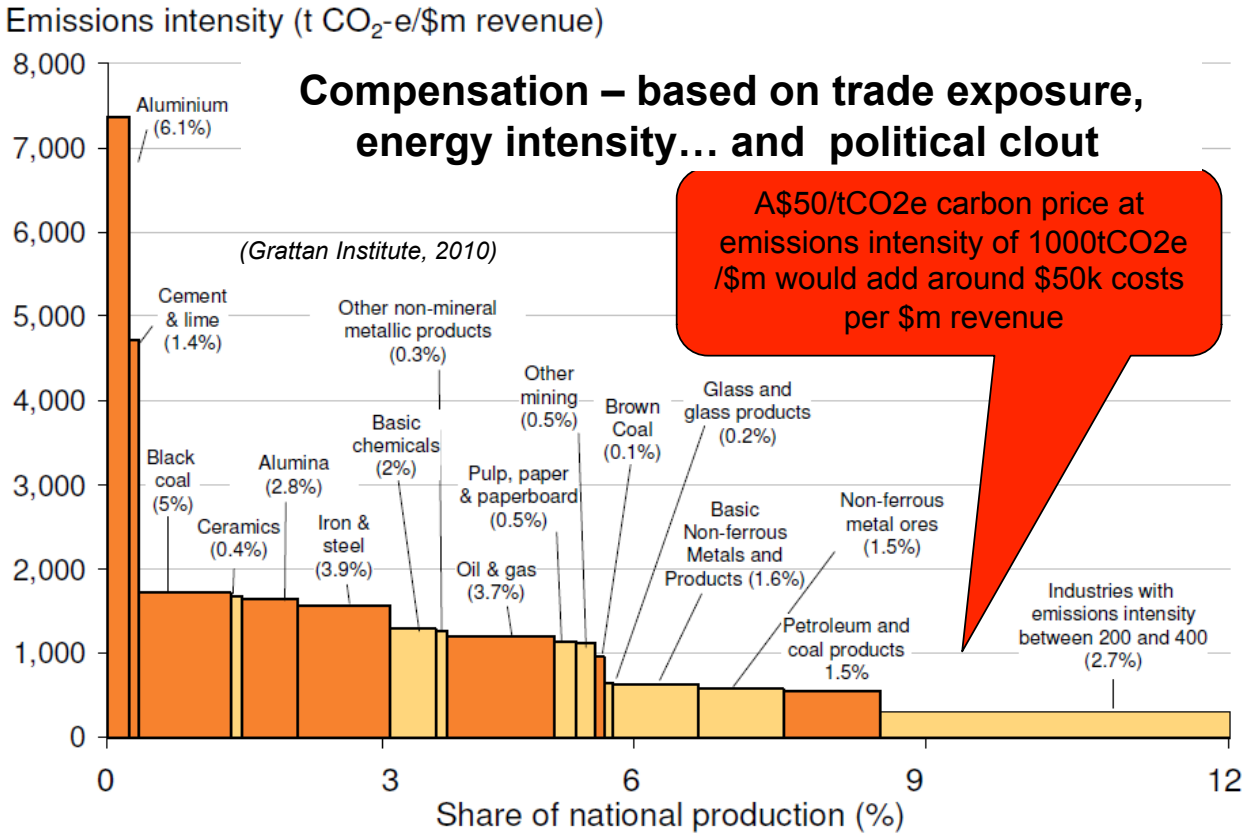
im will provide significant support
emissions-intensive trade-exposed
y, local communities and workers
and that these industries have a strong

sure there is a smooth transition
rity Fund comprises two elements:
nents to strongly affected coal-fired
conditional on electricity generators
lean Energy Investment Plans,
, and by meeting power system

ure of around 2,000 megawatts (MW)
Closing down some of our highest
room for investment in lower pollution
ur energy industry in a managed way.

cuts and increased payments, to help
introduction of a carbon price.

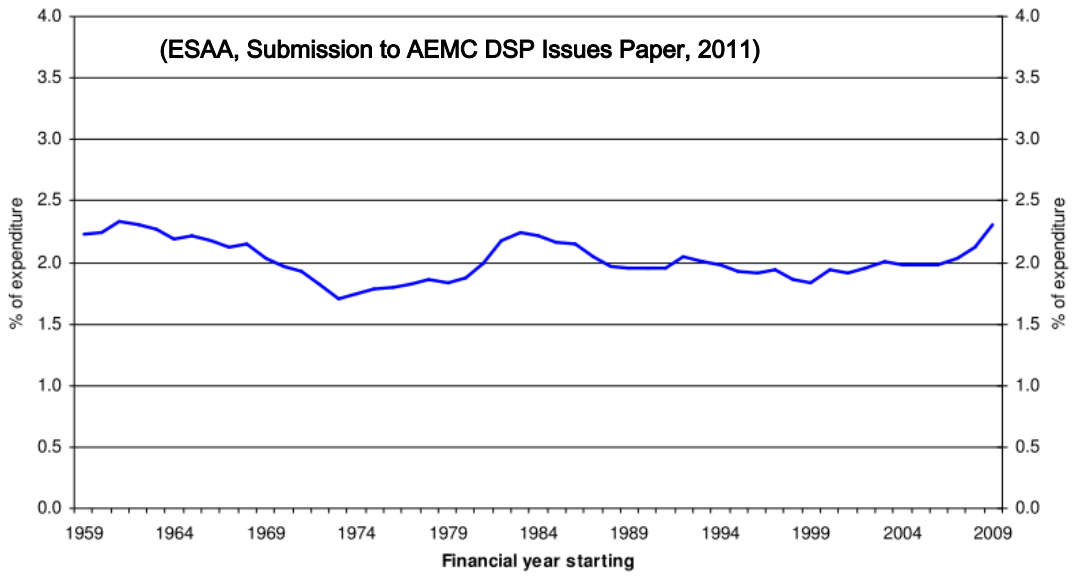
Industry assistance	The $9.2 billion **Jobs and Competitiveness Program** will provide significant support for jobs and protects the competitiveness of these emissions-intensive trade-exposed industries. The Program also ensures that industry, local communities and workers have a smooth transition to a clean energy future and that these industries have a strong incentive to reduce their carbon pollution.
Energy Security	An **Energy Security Fund** will be established to ensure there is a smooth transition which preserves energy security. The Energy Security Fund comprises two elements: 1. An allocation of free carbon units and cash payments to strongly affected coal-fired electricity generators. These allocations will be conditional on electricity generators strongly affected by a carbon price publishing **Clean Energy Investment Plans**, which show how they will reduce their pollution, and by meeting power system reliability standards. 2. The Government will seek to negotiate the closure of around 2,000 megawatts (MW) of highly polluting generation capacity by 2020. Closing down some of our highest polluting coal-fired generation capacity makes room for investment in lower pollution plants—and kick starts the transformation of our energy industry in a managed way.
Household Assistance	Assistance for Australian households, through tax cuts and increased payments, to help them with increased living costs as a result of the introduction of a carbon price.



Centre for Energy and Environmental Markets
UNSW THE UNIVERSITY OF NEW SOUTH WALES SYDNEY • AUSTRALIA

Compliance only an option for many

Chart 3: Share of Household Final Consumption Expenditure on Electricity, Gas and Other Fuels, 1959-2009 (per cent)



Centre for Energy and Environmental Markets

UNSW THE UNIVERSITY OF NEW SOUTH WALES SYDNEY • AUSTRALIA

Another industry option – *engagement and innovation*

Now with some significant policy assistance on offer

..and some major opportunities for leadership

RELATED CLEAN ENERGY FUTURE PROGRAMS	
Assisting manufacturing and energy efficiency	A range of new and existing measures to encourage energy efficiency are targeted at households, businesses, communities, Government, buildings and transport. The Government is delivering the $1.2 billion **Clean Technology Program**, over and above the Jobs and Competitiveness Program, to help directly improve energy efficiency and reduce carbon pollution in manufacturing industries and support research and development in low pollution technologies. The $300 million **Steel Transformation Plan** will support and assist the industry transition to a clean energy future, and recognises the pressures currently facing this industry. The $1.3 billion **Coal Sector Jobs Package** will provide transitional assistance to help the coal industry to implement carbon abatement technologies for the mines that produce the most carbon pollution. The amount of carbon pollution produced by coal mines varies greatly, so the fairest way to deliver assistance is to target assistance at those mines that are most impacted by the introduction of the carbon price.
Renewable energy	Over $13 billion will be invested in clean energy projects, including through the Clean Energy Finance Corporation. In combination with the carbon price and Renewable Energy Target, this investment will drive the biggest expansion in the clean energy sector in Australia's history. **Clean Energy Finance Corporation**—will invest in the commercialisation and deployment of renewable and clean energy projects. **Australian Renewable Energy Agency**—will improve the competitiveness of renewable energy and related technologies through supporting renewable energy technology innovation.
Land use	Incentives for the farming, forestry and land sectors to reduce carbon pollution and increase the amount of carbon stored on the land. Includes a range of measures such as funding for biodiverse carbon stores and policies to help farmers and land managers make the most of carbon farming opportunities. These measures will complement the **Carbon Farming Initiative**.

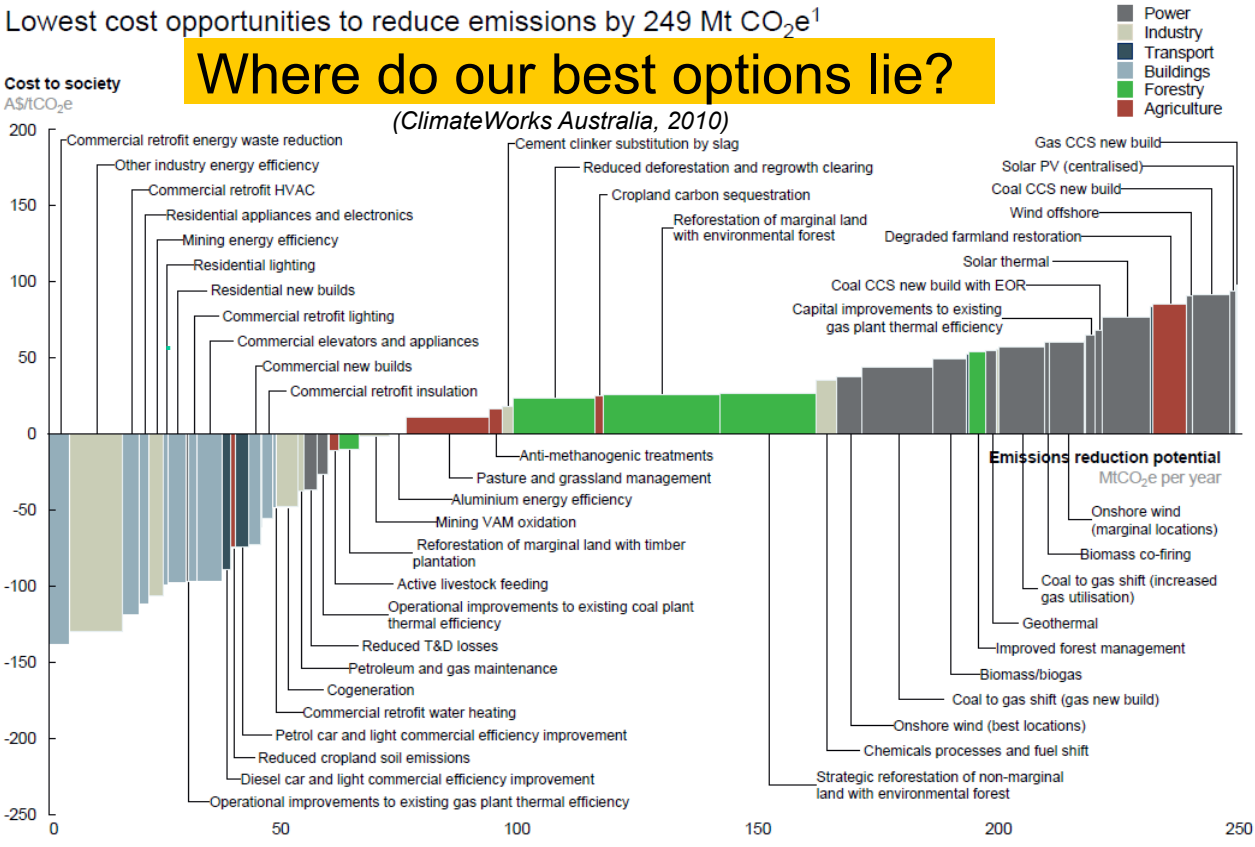
The impact of the carbon price or

2020 GHG emissions reduction *societal* cost curve

Lowest cost opportunities to reduce emissions by 249 Mt CO_2e[1]

Where do our best options lie?

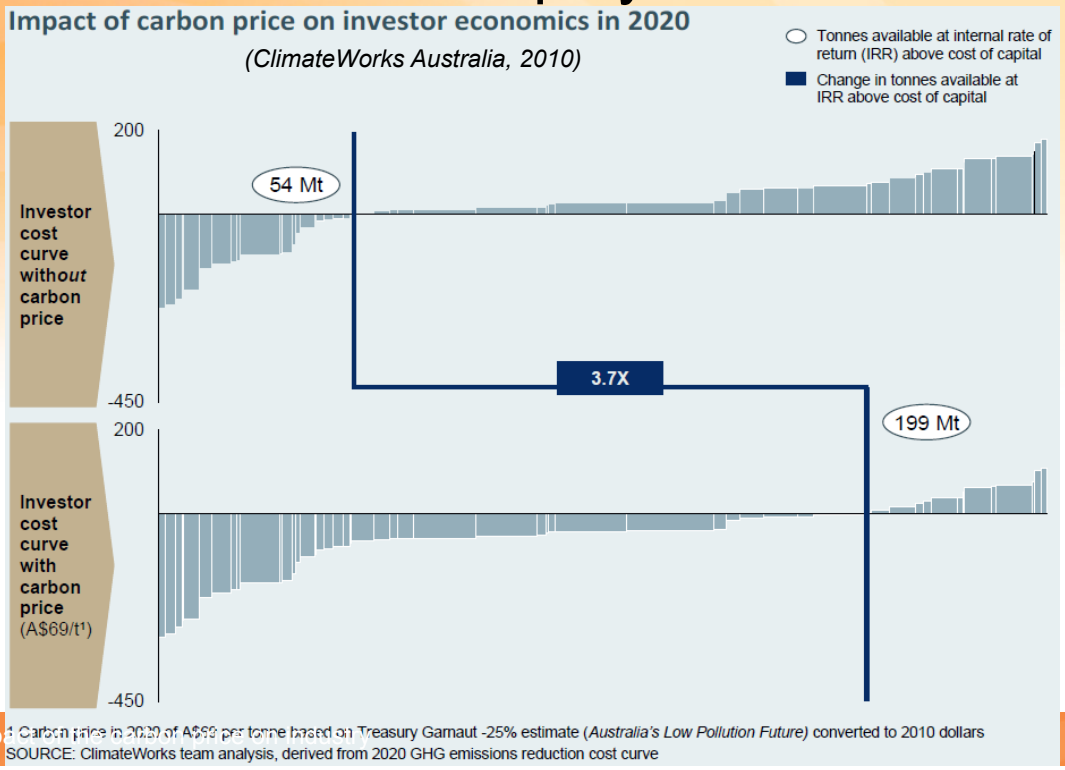
(ClimateWorks Australia, 2010)



1 Includes only opportunities required to reach emission reduction target of 249 Mtpa (25% reduction on 2000 emissions); excludes opportunities involving a significant lifestyle element or consumption decision, changes in business/activity mix, and opportunities with a high degree of speculation or technological uncertainty

SOURCE: ClimateWorks team analysis (refer to bibliography)

A price on carbon can play a valuable role...

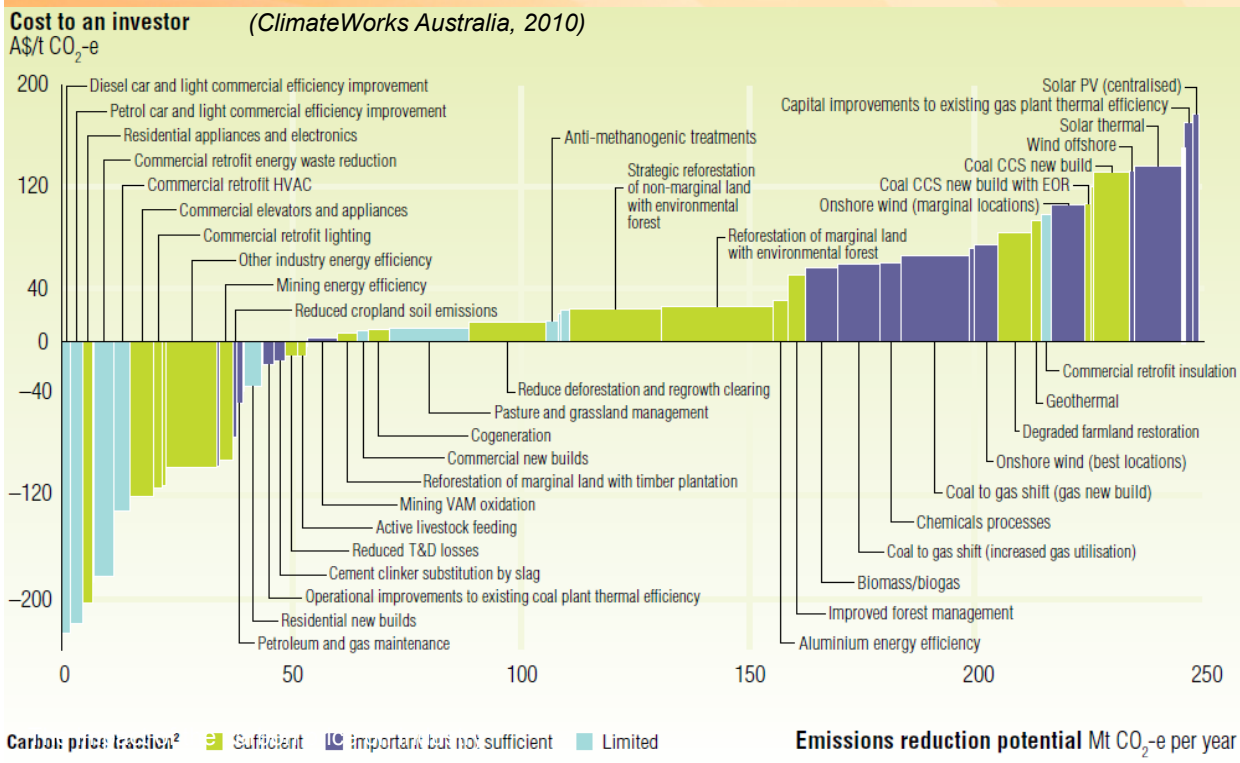


The imp[illegible]

¹ Carbon price in 2020 of A$69 per tonne based on Treasury Garnaut -25% estimate (*Australia's Low Pollution Future*) converted to 2010 dollars
SOURCE: ClimateWorks team analysis, derived from 2020 GHG emissions reduction cost curve

Centre for Energy and Environmental Markets
UNSW THE UNIVERSITY OF NEW SOUTH WALES SYDNEY • AUSTRALIA

… but has limitations



In conclusion

- The recently legislated Clean Energy Plan is a decade too late, clearly inadequate to the scale of the challenge and highly compromised…
- … and yet still a world leading opportunity for Australian industry to finally take serious action and seek international leadership in a global low carbon future
- The question is now
  - *Will the key Australian industries effectively engage and innovatively respond to this challenge, and opportunity?*
    - *or continue to demand subsidies, compensation, a 'low' C price*
  - *Will the political process continue to support them in doing so through ongoing coherent and comprehensive policy development and implementation?*

Centre for Energy and Environmental Markets
UNSW THE UNIVERSITY OF NEW SOUTH WALES SYDNEY • AUSTRALIA

Thank you… and *questions*

Many of our publications are available at:
www.ceem.unsw.edu.au