

# Australia's climate policy and coal transition

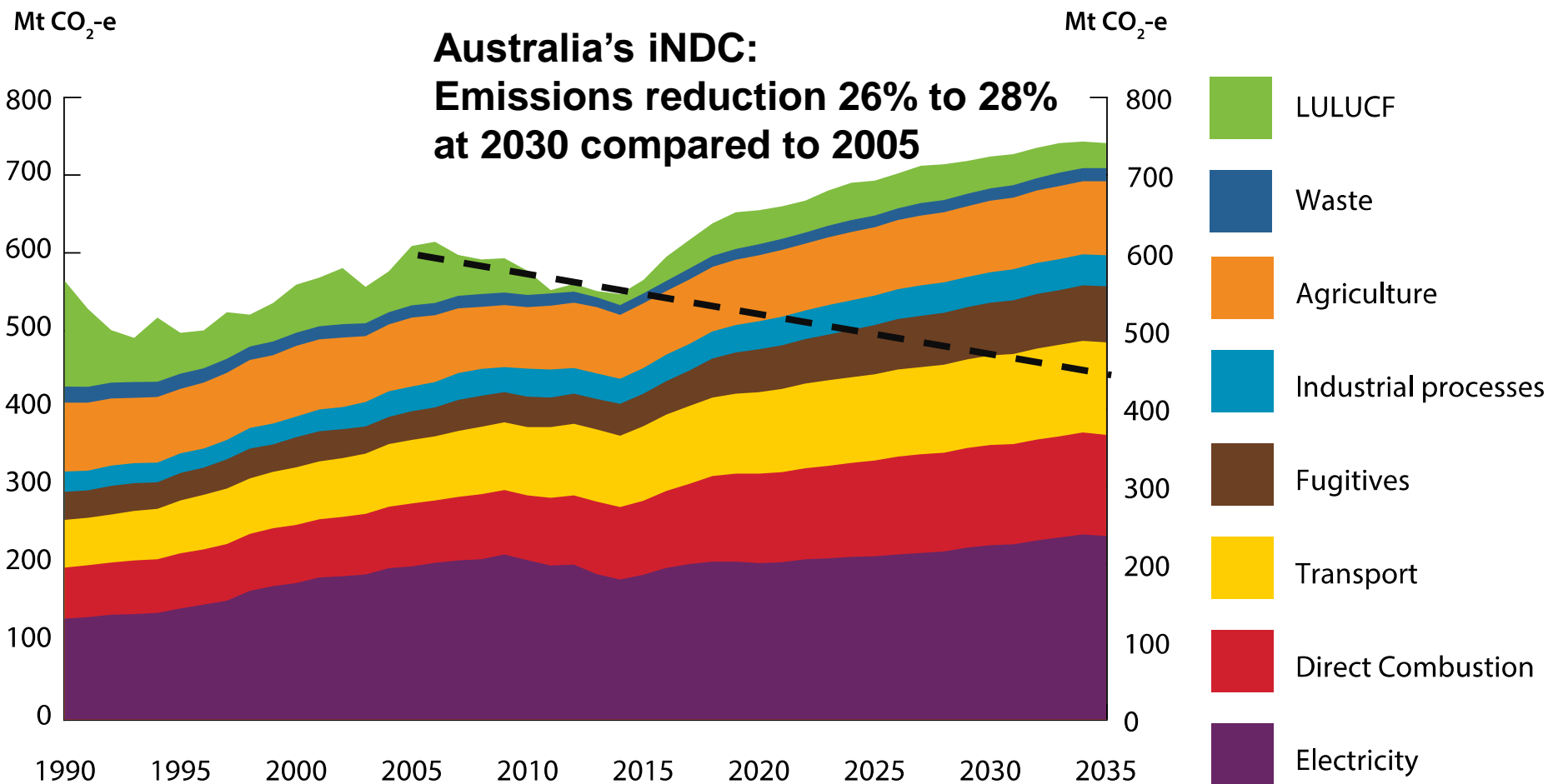
Motu public policy seminar  
University of Auckland  
10 Oct 2016

Frank Jotzo

Centre for Climate Economics and Policy, Crawford School of Public Policy  
Australian National University



# Australia's GHG emissions: historical, government's BAU projection and 2030 target



# No coldies

**84% of NSW power  
comes from coal.**

**Keeping fridges  
running across the state.**



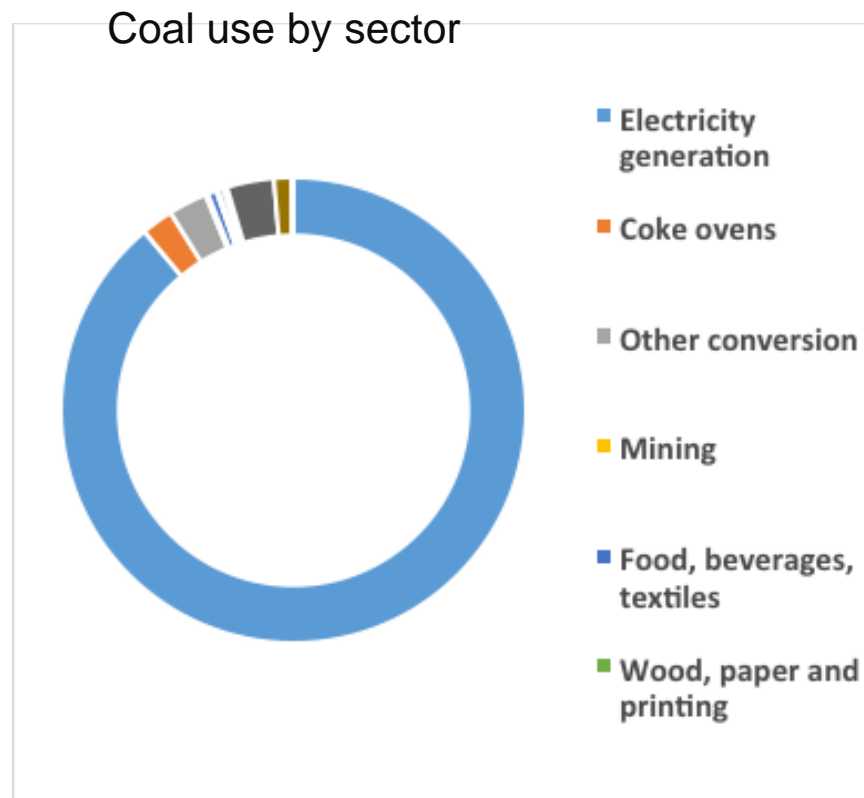
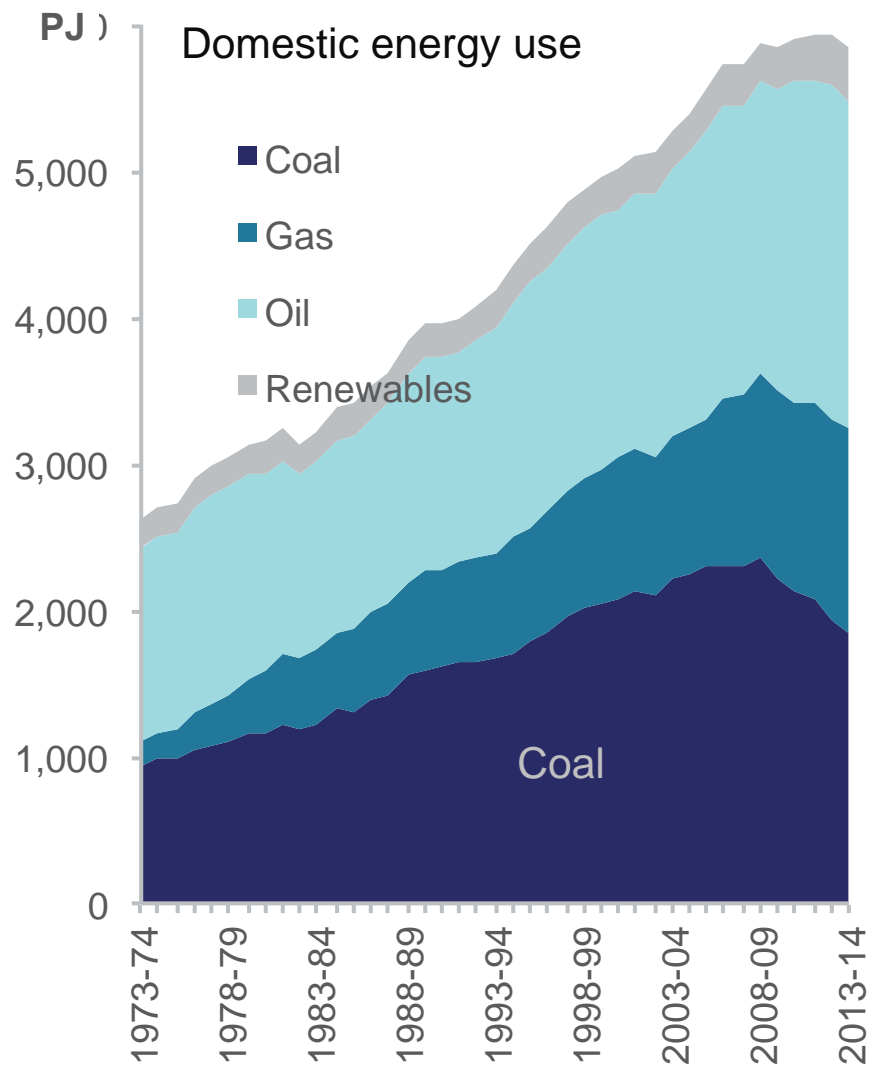
Drink  
Responsibly



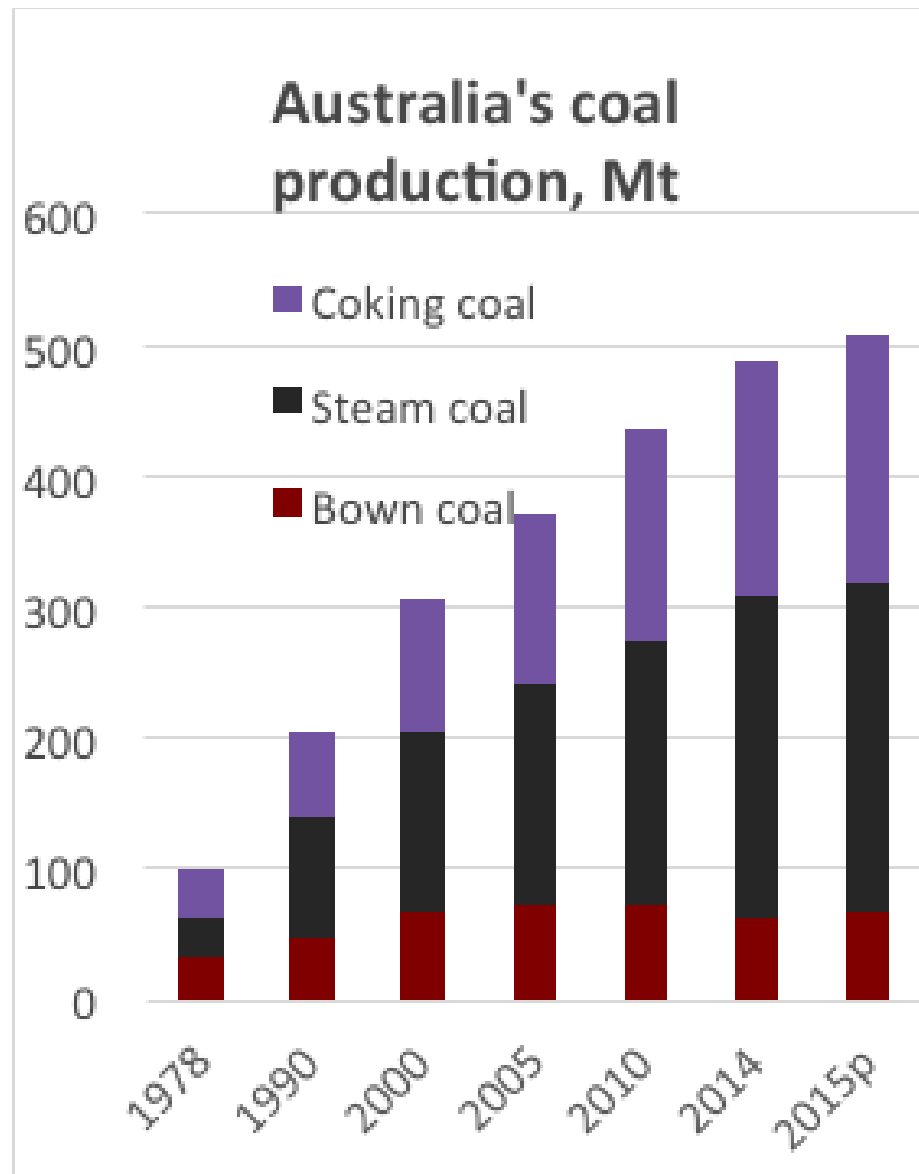
# Without coal



# Australia's domestic coal use

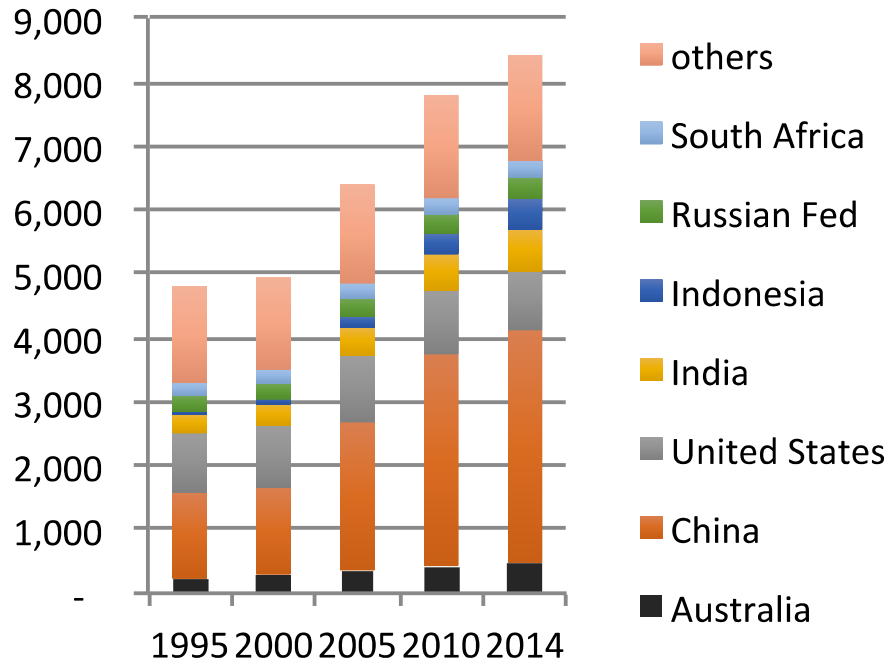


# Australia's coal production and exports

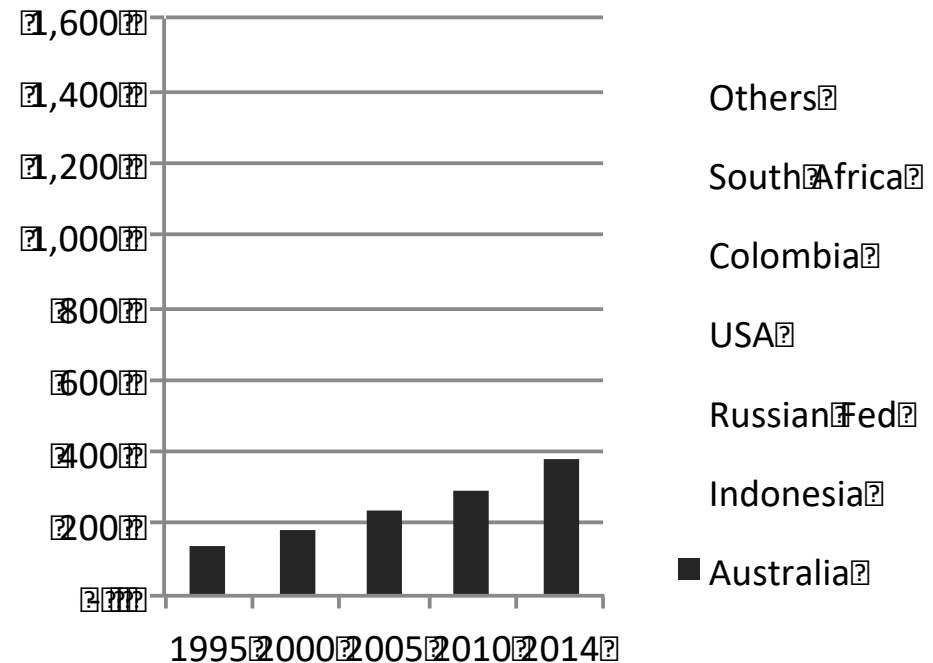


# Australia's role in global coal

## Coal production, Mt



## Coal exports, Mt



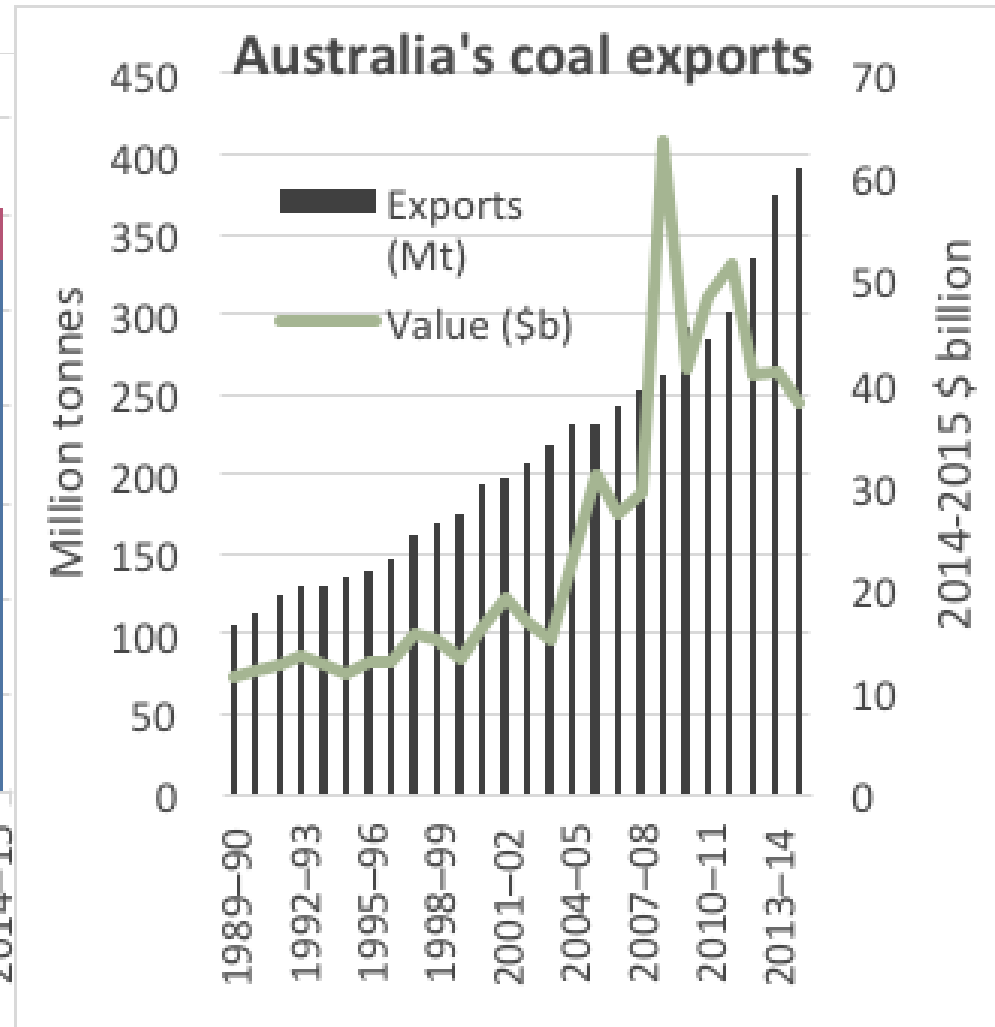
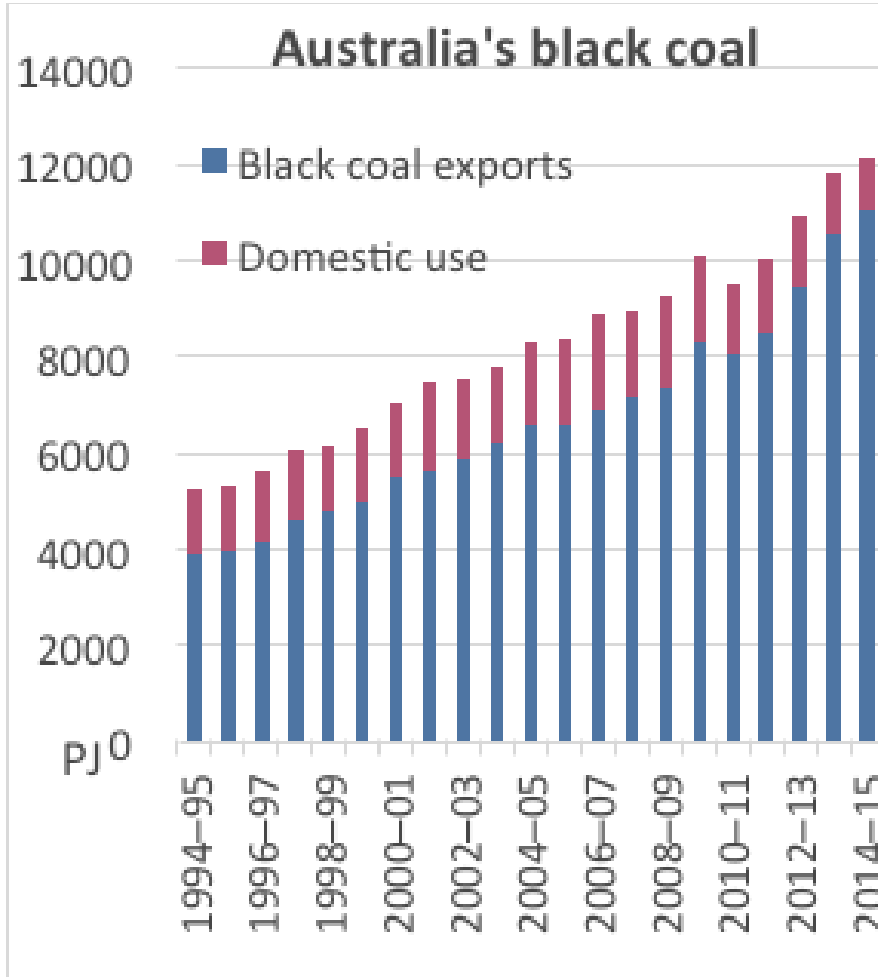
Australia's share in global coal, 2014:

Production 7%

Exports 27%



# Australia's coal production and exports





# Low-carbon scenarios



# PATHWAYS TO DEEP DECARBONISATION IN 2050

HOW AUSTRALIA CAN PROSPER IN A LOW CARBON WORLD



INITIAL PROJECT REPORT

SEPTEMBER 2014

## PATHWAYS TO DEEP DECARBONISATION IN 2050:

How Australia can prosper in a low carbon world

TECHNICAL REPORT



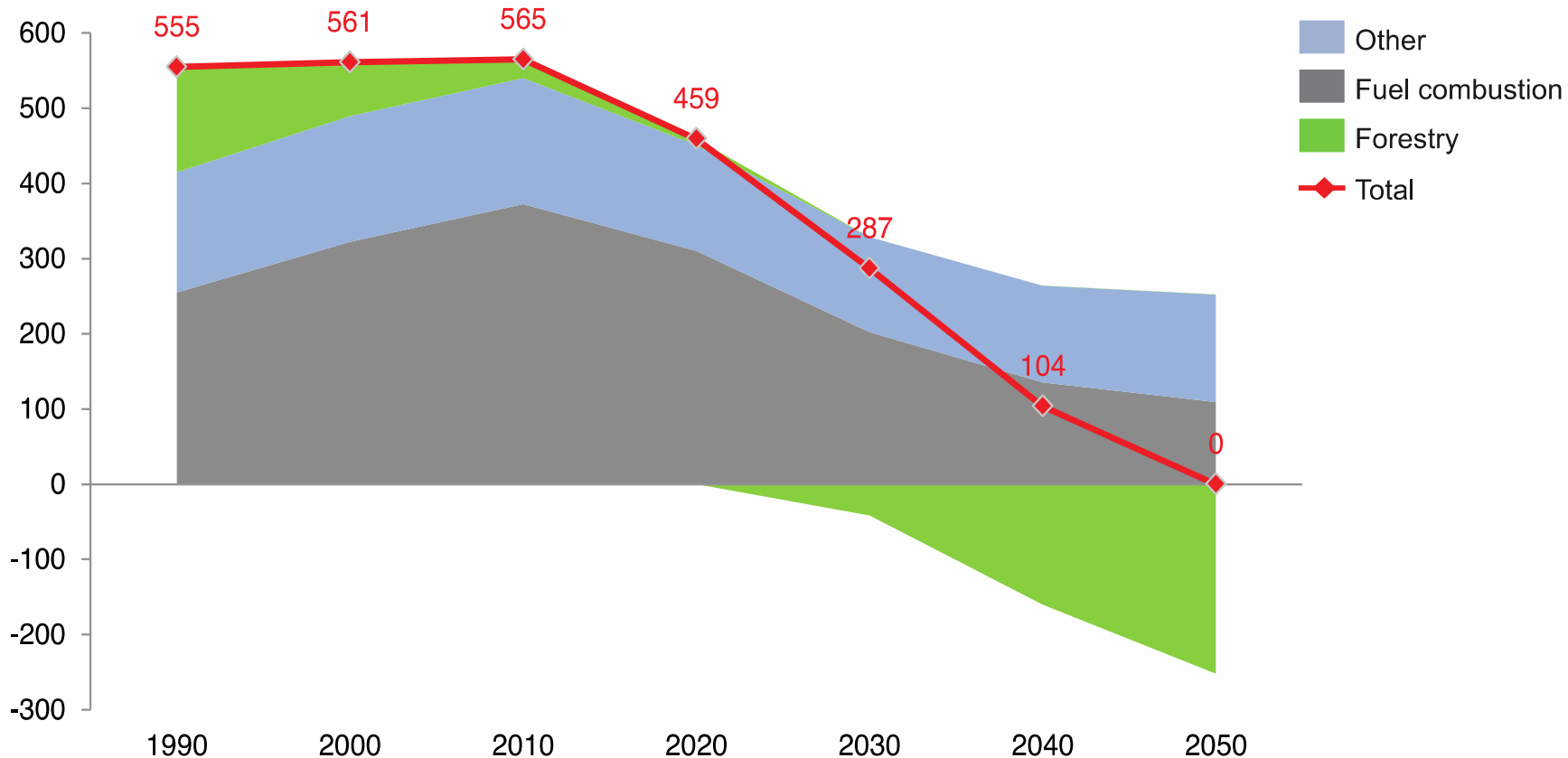
September 2014





# A zero net emissions scenario for Australia

Figure 12 - Greenhouse gas emissions trajectory, MtCO<sub>2</sub>e, 1990-2050 (DOE 2014)



# Four pillars of decarbonisation

## Ambitious Energy Efficiency

in all sectors leads to a halving of the energy intensity of the economy.



## Low Carbon Electricity

Low carbon electricity is supplied by renewable energy or a mix of renewable energy and either CCS or nuclear power at similar costs.



## Electrification and Fuel Switching

from fossil fuels to bioenergy, and from coal and oil to gas reduces emissions from transport, industry and buildings.



## Non-Energy Emissions

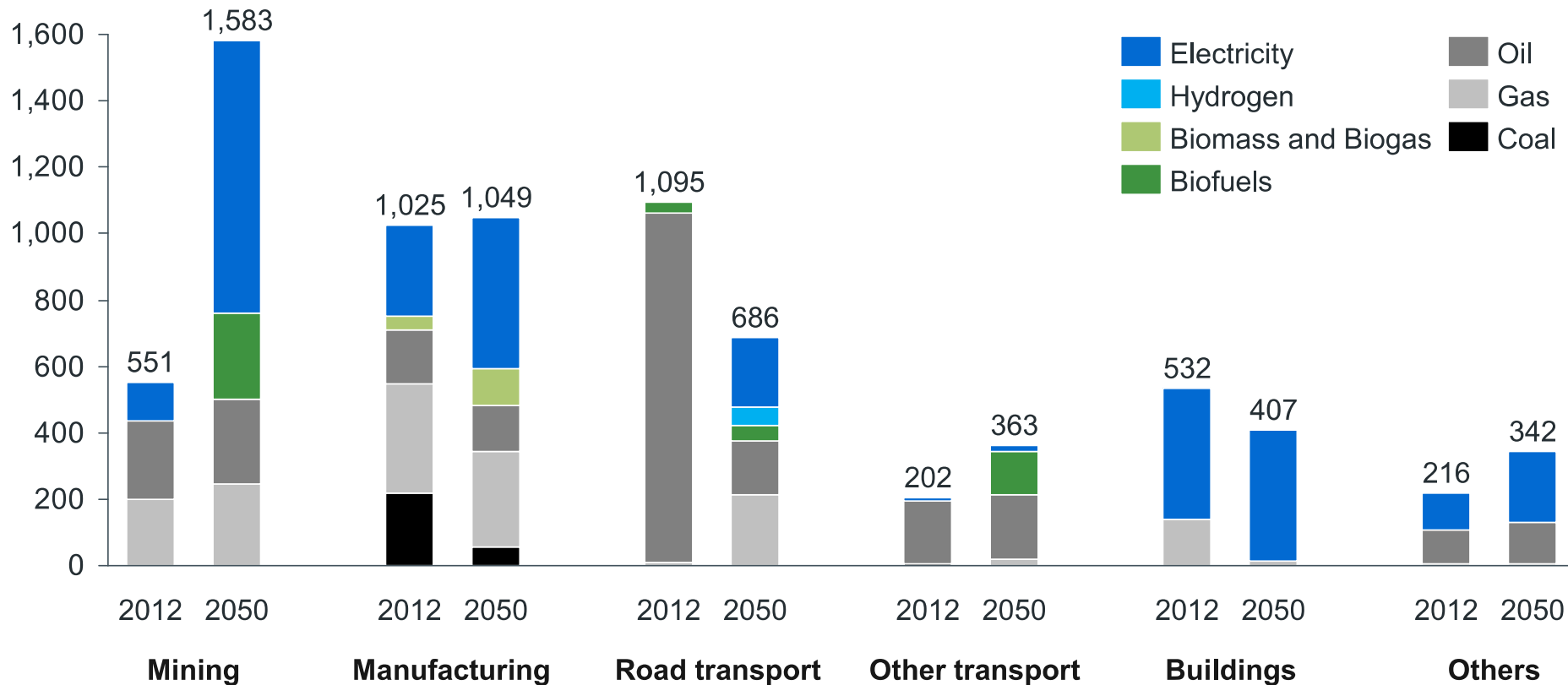
are reduced through process improvements and CCS in industry, while a profitable shift from livestock grazing to carbon forestry offsets any remaining emissions.

CCS



# Fuel switching

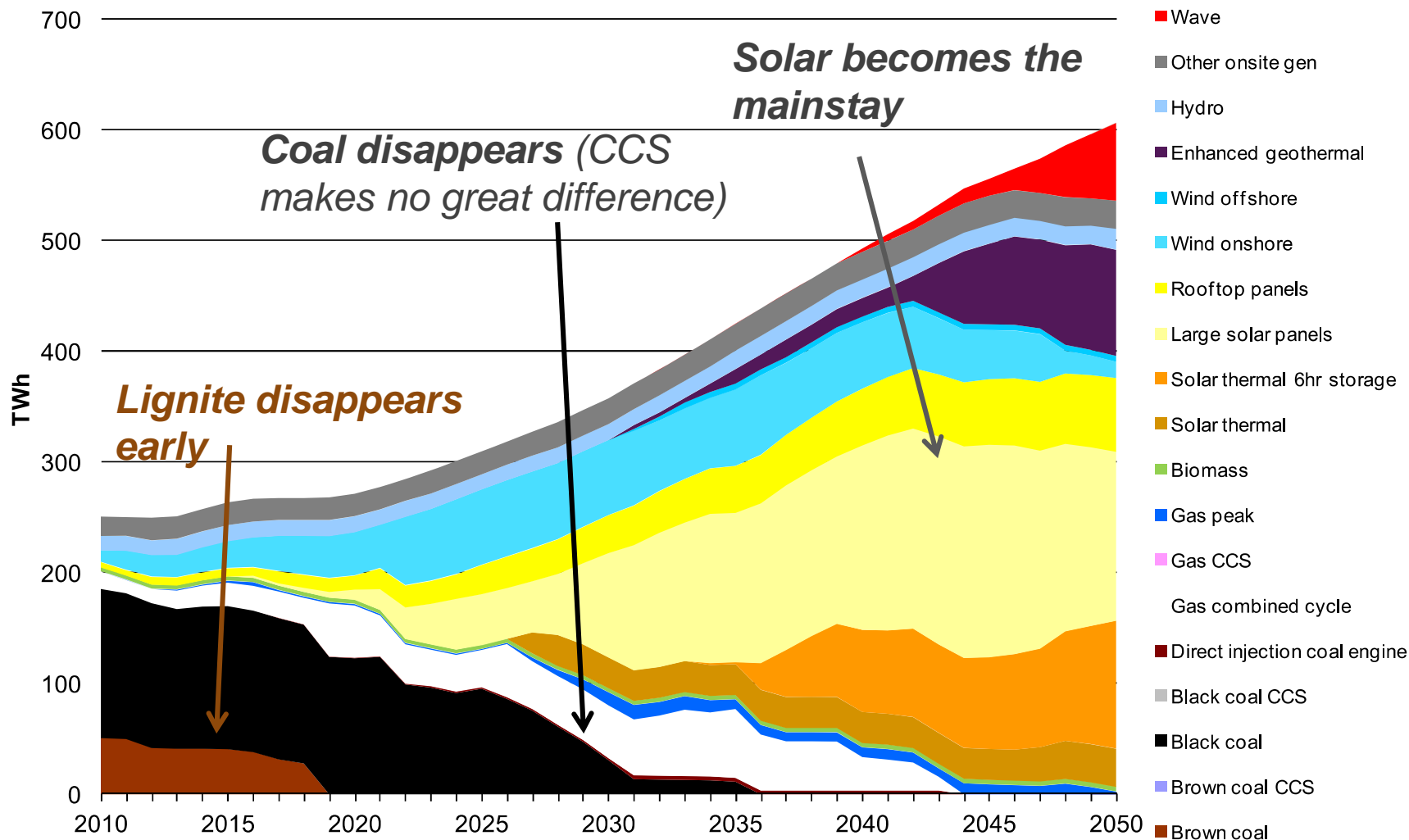
Figure 1.11 – Final energy use by fuel type and by sector, PJ<sup>3</sup>





# 2d scenario: Australia's electricity supply

Figure 2.10 – Projected national electricity generation by technology, 100 percent renewable grid, 2010–2050

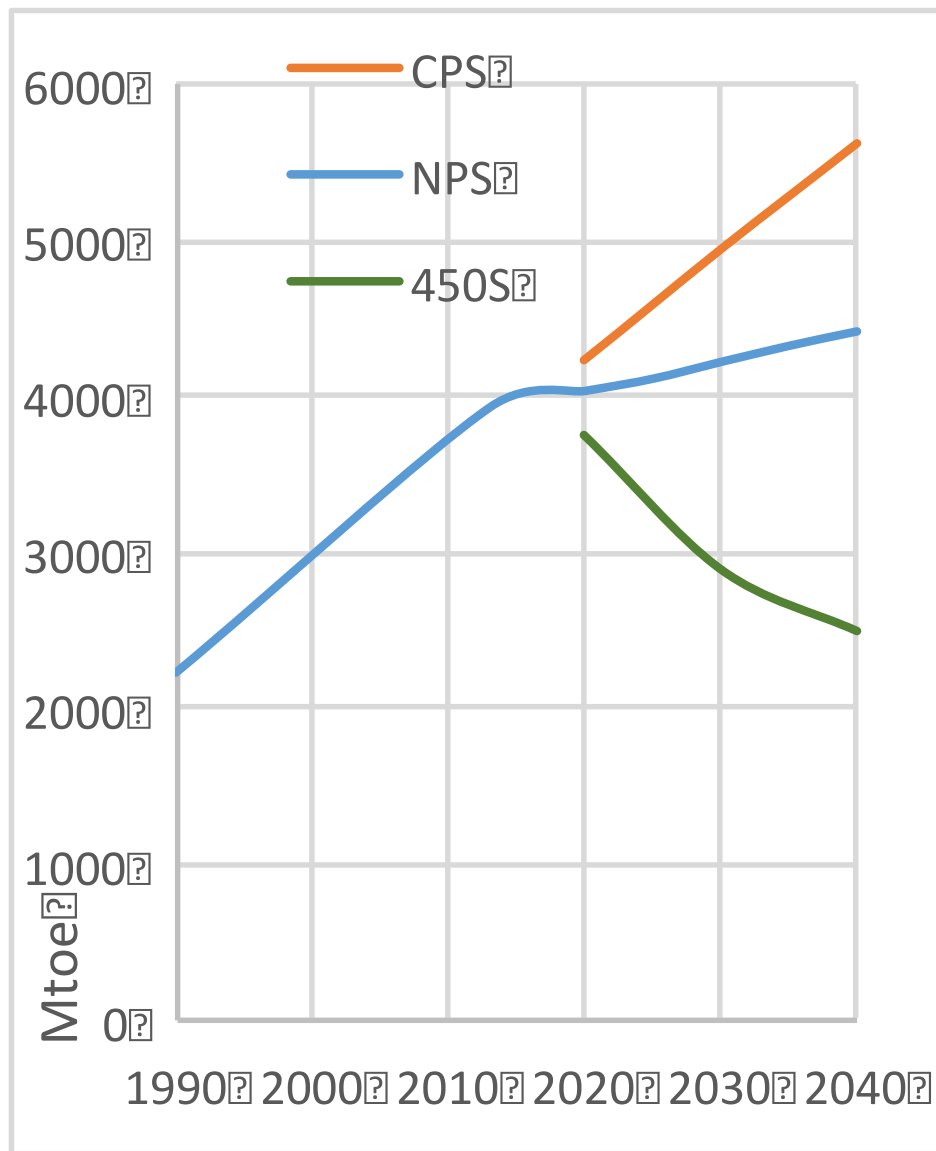




# Global coal use and Australian exports



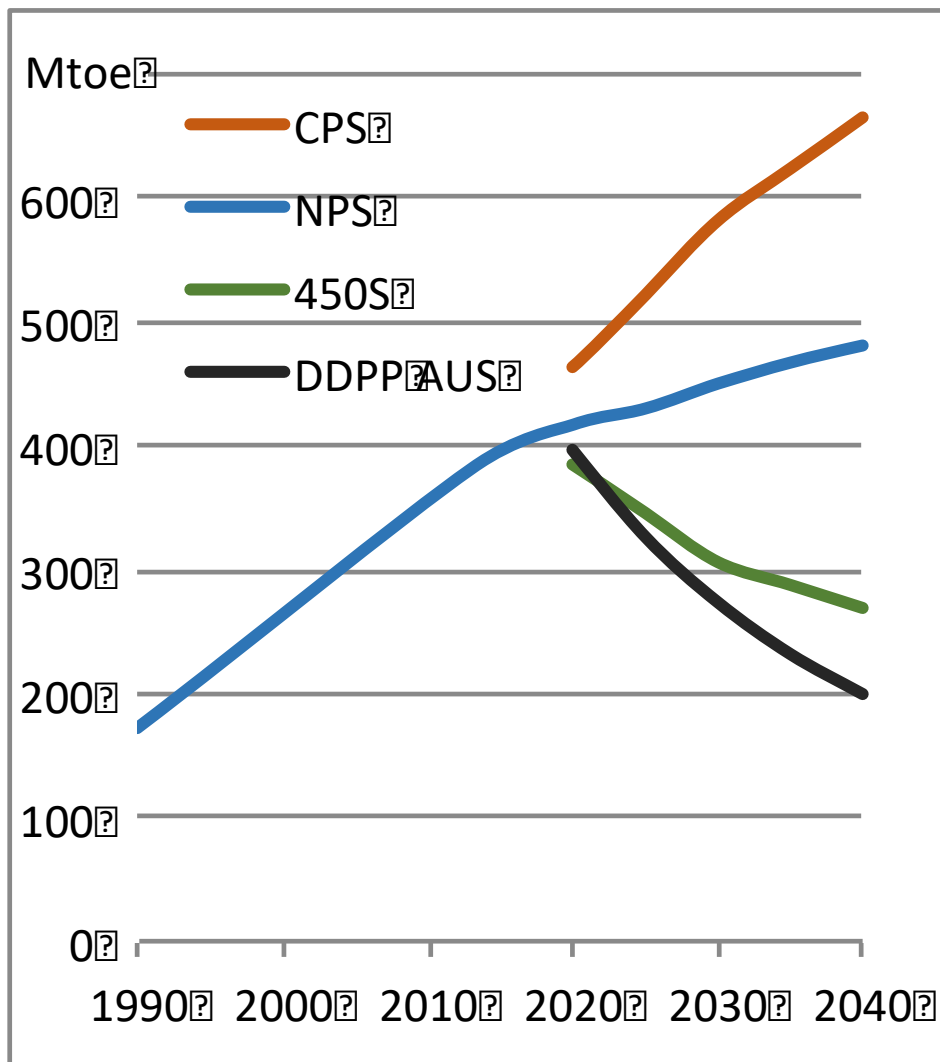
# IEA global coal production scenarios





# IEA and DDPP coal production scenarios for Australia

IEA OECD Asia-Oceania (**Australia**) and DDPP Australia



Great uncertainty over national impact on coal production

Publicly available analysis is not as deeply researched as required

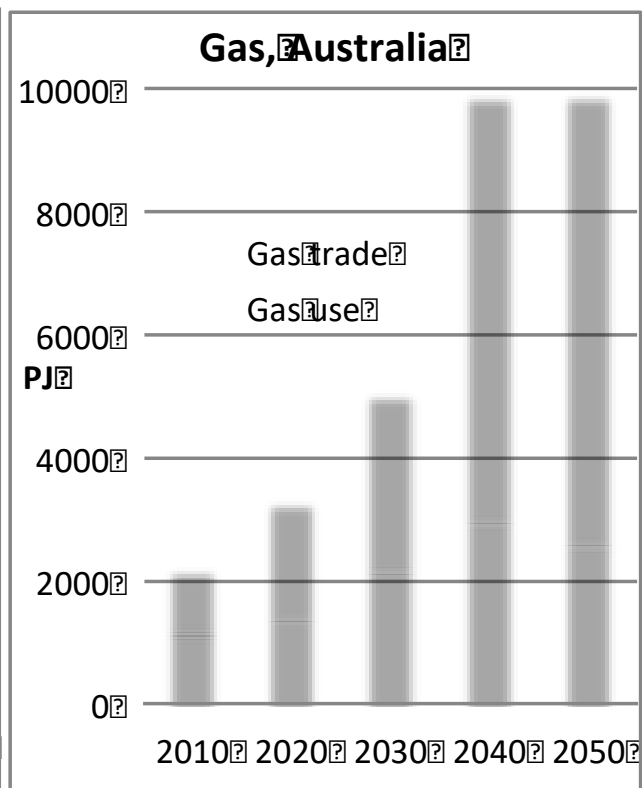
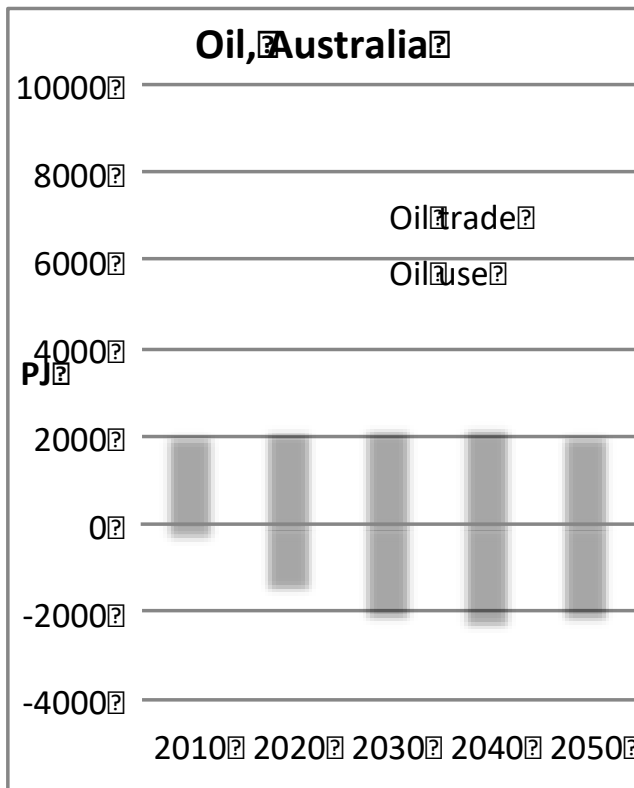
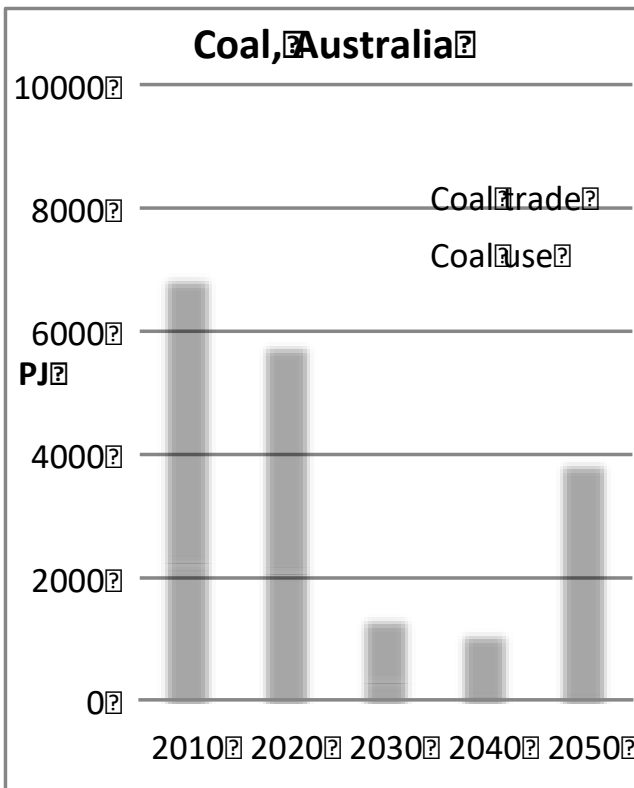




# A deep decarbonisation scenario: Australian fuel production, use and trade

UCL TIAM scenario for deep decarbonisation

Data: Steve Pye, UCL (As per Pye et al, *Climate Policy* 2016)



*Future coal exports highly uncertain*

## Global CO2 trajectories

- Climate policy

## Technology

- Other fuels, CCS, and many other factors. Coking coal different from thermal coal.

## How coal producing countries fulfill their coal demand

- Eg China could be net importer or exporter

## Reactions by other coal exporting countries

- ... eg mining subsidies could increase

## The destination of Australian coal exports

- ...regional patterns of coal demand changes;

## The relative cost and quality of Australian coal

- ...policies about local air pollution in coal using countries;

## The remaining life of existing Australian mines

- ...esp if declining global demand precludes new mines.

# New mines?



- Proposed Carmichael mine, in Galilee Basin,
- Would produce >2 billion tonnes of thermal coal over 60 years
- Most approvals given
- Financing??





# Policy

## Carbon pricing mechanism (RIP)

2012-2014, A\$23-24/tCO<sub>2</sub>

Abolished, difficult politics persist

## Emissions Reductions Fund

2012-, \$3b public funds for emissions reductions projects

Future: ? Possible transition to baseline-and credit scheme?

## Renewable Energy Target

To 2020: targeting ~23% renewables. Tradable certificates.

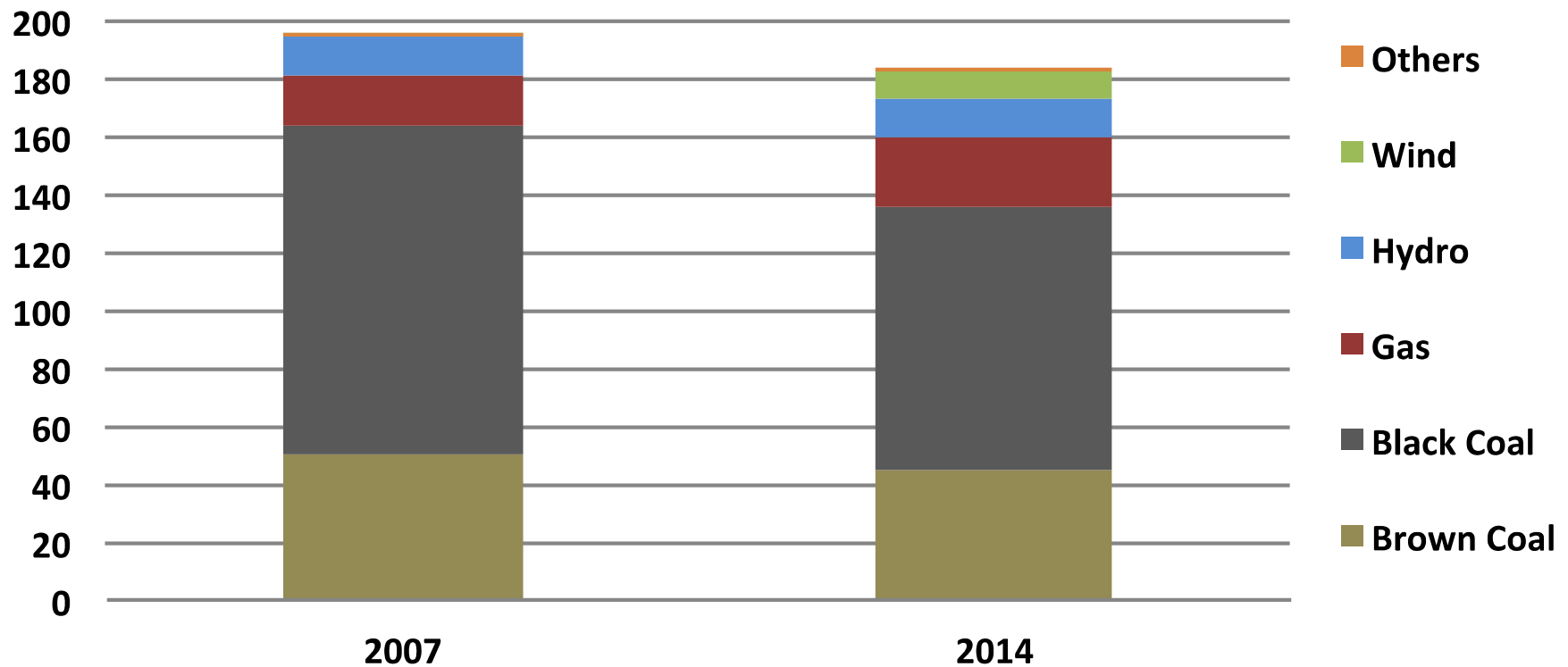
Future: Low-emissions target? Contracts for difference? Nothing?

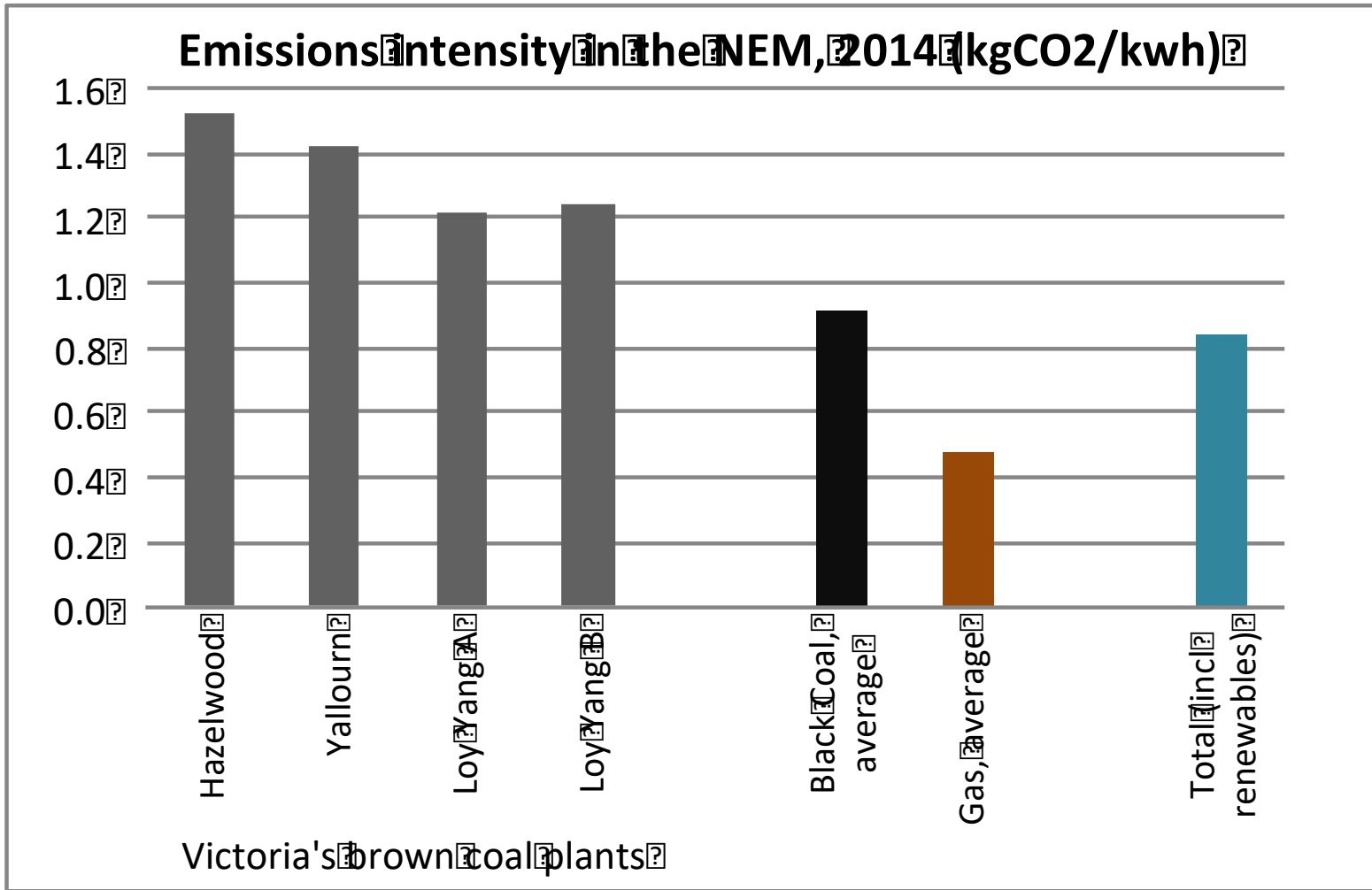
## Renewable energy support

ARENA grants – winding down

Clean Energy Finance Corporation: \$10b govt co-finance for clean energy

## Generation in Australia's national electricity market, Twh







## Farewell to brown coal without tears: how to shut high-emitting power stations

November 19, 2015 6:11am AEDT

Loy Yang power station in Victoria's Latrobe Valley. Takver/Flickr, CC BY-SA

### Policy proposal: An industry-funded, competitive mechanism for power station closure

1. Plants bid over the payment they require for closure

- Including site remediation and structural assistance to communities

2. Regulator chooses the most cost effective bid

- \$/tCO<sub>2</sub> expected to be saved (modelled)

3. Remaining plants pay transfers to the plant that exits

- In line with their future CO<sub>2</sub> emissions, or some other basis





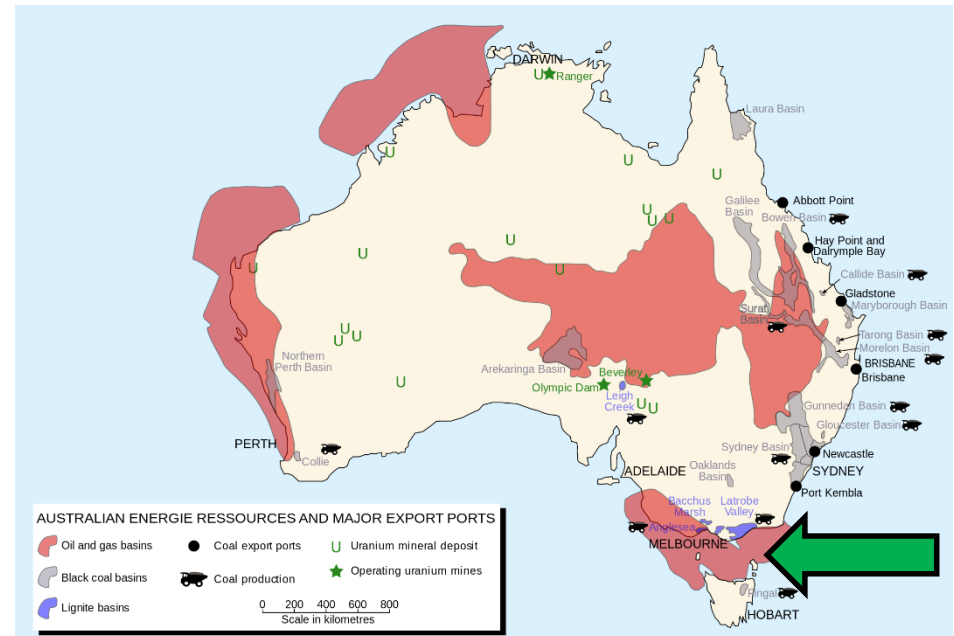
## Regional and social transitions away from coal

Structural adjustment

New infrastructure, industries  
vs retraining/resettling

Fiscal policy

Industry compacts



## 2017 policy review

Integration of climate and energy policy (Department of Environment and Energy)

Politics of climate change also within government

Minister Josh Frydenberg, 10 Oct 2016:

It's clear that the Coalition and our international counterparts on the centre right care deeply about the environment and the impacts of climate change. But what we will not do is pursue policies that hurt households, weaken our commercial competitiveness and undermine the stability and security of the electricity system.

## Energy security

South Australia's recent outage

Linked politically to high renewables share  
(~40%, mostly wind)

## Carbon

What will replace the coal fired generators?

Federal policy vs States based policy

## Grid

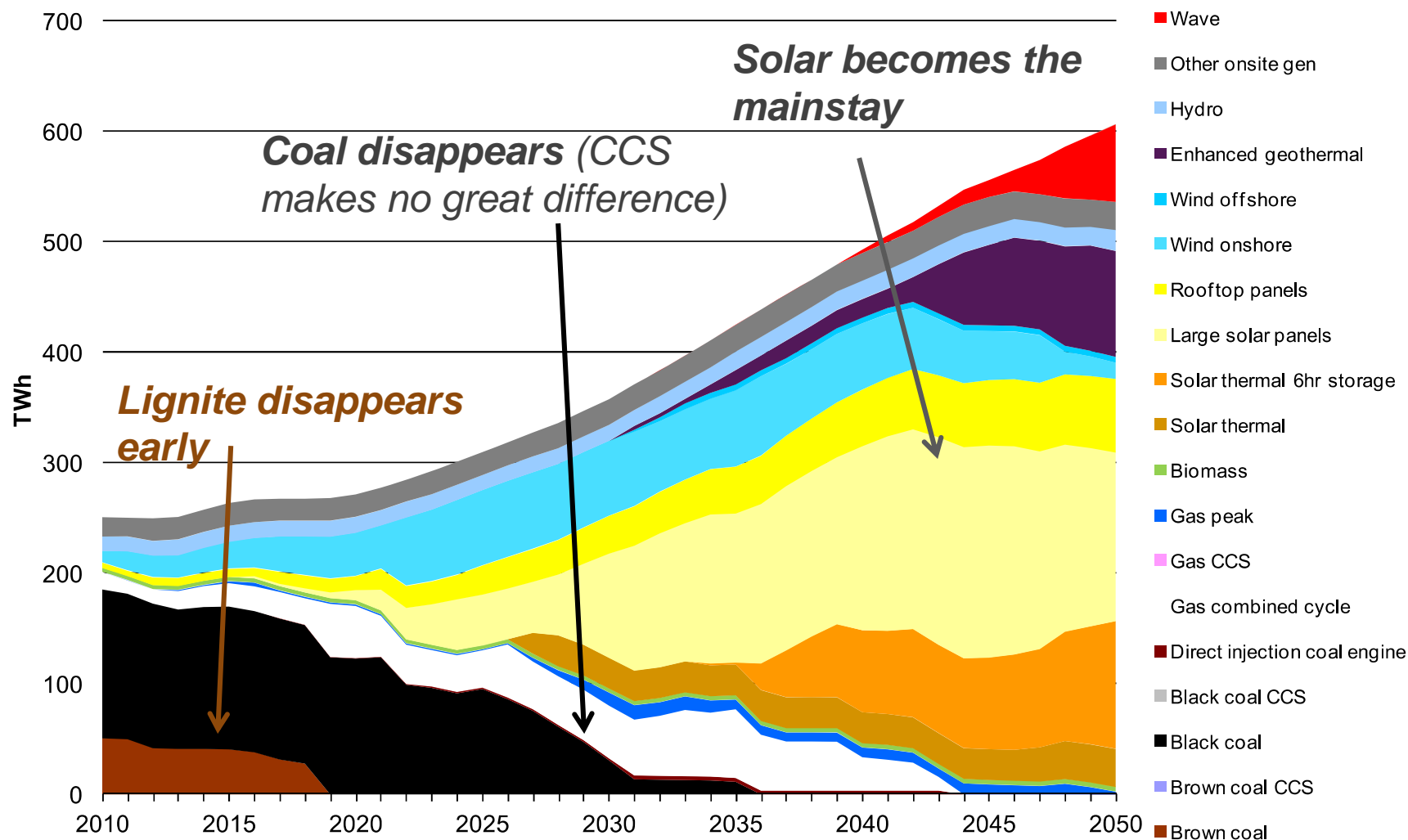
Market design for a grid dominated by wind and solar?

Regulatory settings to enable decentralized renewables generation and storage?



# 2d scenario: Australia's electricity supply

Figure 2.10 – Projected national electricity generation by technology, 100 percent renewable grid, 2010–2050



Climate policy: traditional emphasis on demand side

ETS, carbon tax, standards, regulations

Supply-side policy as a complement?

Constraining coal supply

“no new mines”

Coal tax

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## Low-carbon transition means...

Lower coal prices, production and export volumes

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Less economic activity in coal industries

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Lower economic rents from coal production:

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...less fiscal revenue and/or lower profits

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## Fossil fuel producing/exporting countries can facilitate transition ...to their advantage

**Fiscal policy: tax on fossil fuel (coal) production (exports)**

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Rents shifted from consuming countries to producing countries

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Rents shifted from companies to governments

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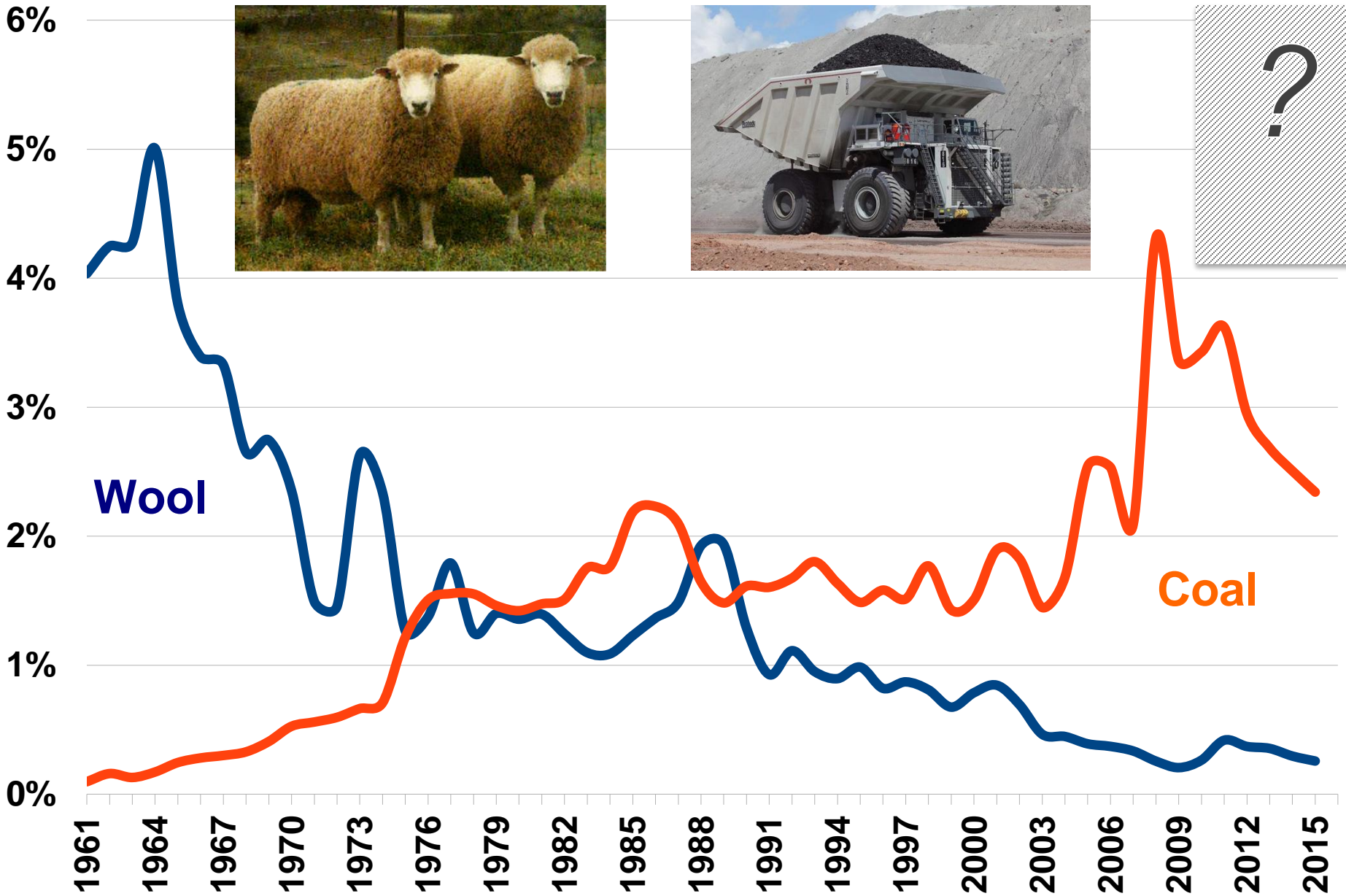
Extra fiscal revenue can be used to support transition:

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... R&D, infrastructure, tax reform, social support

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# Coal transition: Exports as share of GDP, Australia



Wool

Coal



Australian  
National  
University

**Centre for Climate Economics and Policy**

**Crawford School of Public Policy**

**Australian National University**

**[ccep.anu.edu.au](http://ccep.anu.edu.au)**

**[frank.jotzo@anu.edu.au](mailto:frank.jotzo@anu.edu.au)**

