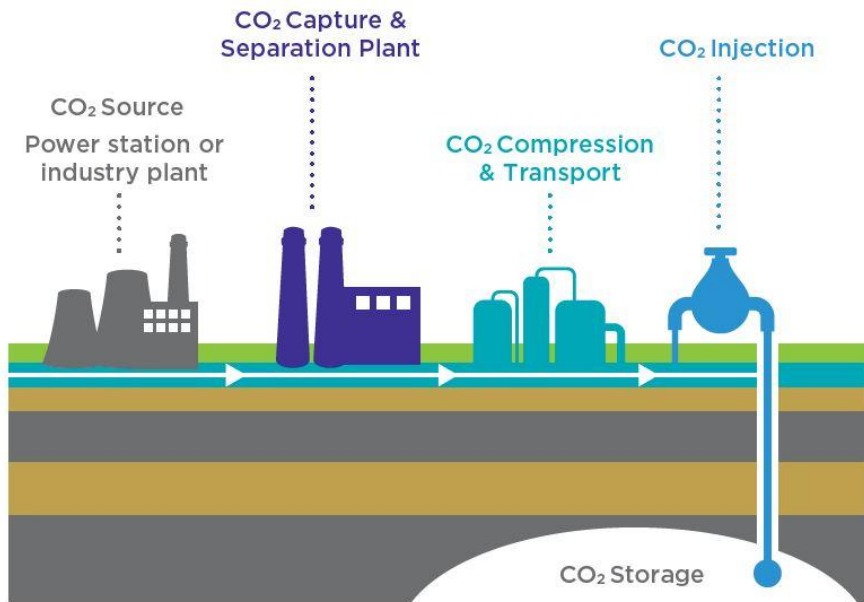




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中澳二氧化碳地质封存

Low Emission Technologies

An Australian Government perspective





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Overview

- Rationale for Low Emission Fossil Fuel Technologies
- Australian Government support
- Case study: China – Australia Post Combustion Capture feasibility work
- Challenges and Opportunities

Rationale and need for low emission technologies

Climate Change

Without clean and low emission technologies we will:

- overshoot emissions reduction targets;
- limit options for industrial emission reduction from steel, cement etc; &
- experience an overall increase in the cost of abatement



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Rationale and need for low emission technologies cont...

Importance of low emissions generation in a technology neutral market

- Affordable, reliable & sustainable energy

There is 'a need for an all of the above strategy which sees coal remain a critical part of Australia's energy mix for decades to come. Affordable and reliable power depends on it'

The Hon Josh Frydenberg, Australia's Minister for the Environment and Energy, 3 June 2018.



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National Energy Guarantee

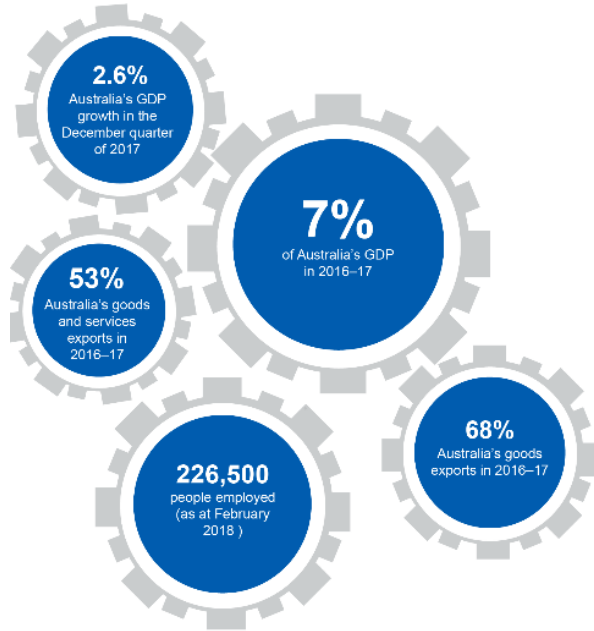
Draft Detailed Design for Consultation

Commonwealth Elements

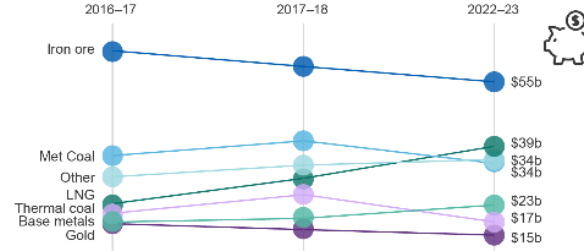
June 2018



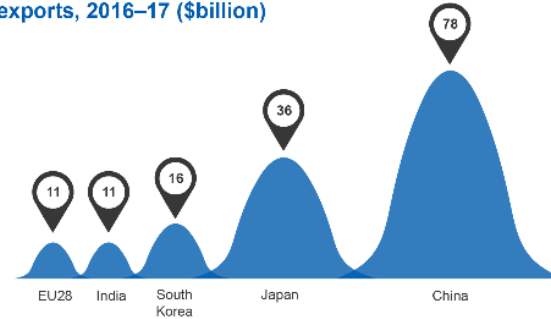
Australia's resources sector



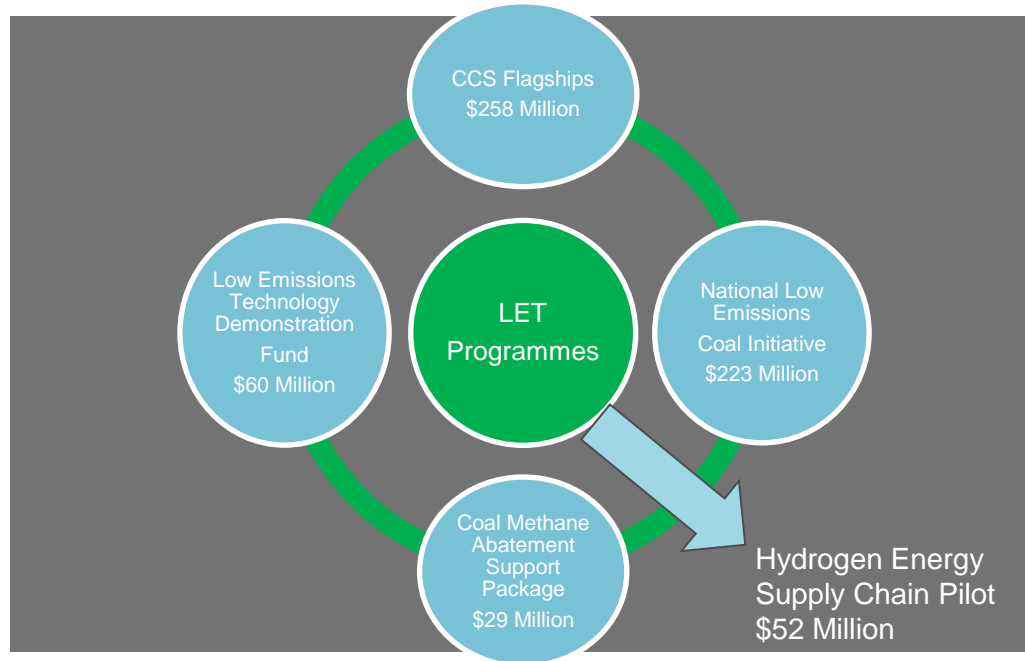
Australia's resources and energy exports, A\$billions, 2017-18 dollars



Major markets for Australia's resources and energy exports, 2016-17 (\$billion)



Program support – AUD \$ 570 million



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CCS Flagships

\$258 million program which commenced in 2009, with the objective of supporting CCS demonstration.

- CO2CRC
- South West Hub
- CarbonNet



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Low Emissions Technology Demonstration Fund (LETDF)



\$60 million program aimed at demonstrating the commercial potential of new technologies or processes with the potential to deliver long term large scale greenhouse emissions reductions.

- Gorgon CO2 Injection Project: Injection commences early 2019; 3-4 mtpa,



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Photo courtesy of Chevron Australia

Coal Mining Abatement Technology Support Package (CMATSP)

CMATSP

established to provide transitional assistance to the coal industry to facilitate the commercialisation of fugitive methane abatement technologies.

- Coal mining accounts for around 6% of Australia's direct GHG emissions
- Methane is approximately x25 more emissions intensive than CO₂.



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Coal Mining Abatement Technology Support Package (CMATSP)

- Project example: Ventilation Air Methane (VAM) Abatement Safety Project, University of Newcastle



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Photo courtesy of University of Newcastle

National Low Emissions Coal Initiative (NLECI):

“\$223 million program designed to accelerate the development and deployment of low emissions coal technologies and CO2 transport and storage infrastructure to facilitate major cuts in GHG emissions from coal usage, while maintaining the contribution of coal to Australia’s economic growth.”

Example initiatives:

- Australian National Low Emissions Coal R&D
- Mineral Carbonation International Pty Ltd (MCI),



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Case Study: Australia-China Post Combustion Capture (PCC) feasibility studies.

Scope and objectives:

Phase 1: Assess the feasibility for 1 mtpa retrofit PCC capture facility at Changchun Thermal Power Station for EOR.

Phase 2: using learnings from Phase One, develop a concept and pre-feasibility study of 120,000 tpa PCC capture plant at Millmerran with transport to Wandoan, Queensland



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Australia-China PCC feasibility studies cont....



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Photos courtesy CERI and Worley Parson

Australia-China PCC feasibility studies cont....

Phase 1 outcomes:

The Capex estimate is approximately 3 or 4 times less than the cost of the Boundary Dam PCC plant

A good opportunity for deployment of PCC technology in China & globally

CERI forecast domestic demand for industrial & food grade CO₂ at CNY 7.6 billion (AUD 1.6 billion approx) by 2020

- potential opportunity to help finance the Project and support local Chinese industry



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Australia-China PCC feasibility studies cont....

Phase 2 outcomes:

Technically feasible with modifications to CERI's PCC facility in Shanghai

Account for reasonable differences in water supply, climate, cooling, safety, environment between Shanghai & Millmerran

No significant technical, social, environmental constraints

PCC plant Capex AUD \$86.7M and annual Opex of AUD \$8.3M



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Low emission technologies: Challenges and Opportunities in Australia

Challenges

- Cost
- Geography – distance between source and storage sites
- Limited ‘utilisation’ analysis

Opportunities

- Hydrogen economy – low carbon products
- Clean Energy Finance Corporation
- Enhanced Oil Recovery



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Thank You

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MELBOURNE

Host city for the International
Conference on Greenhouse Gas
Control Technologies GHGT14
21 October - 25 October 2018
More info: www.ghgt.info