



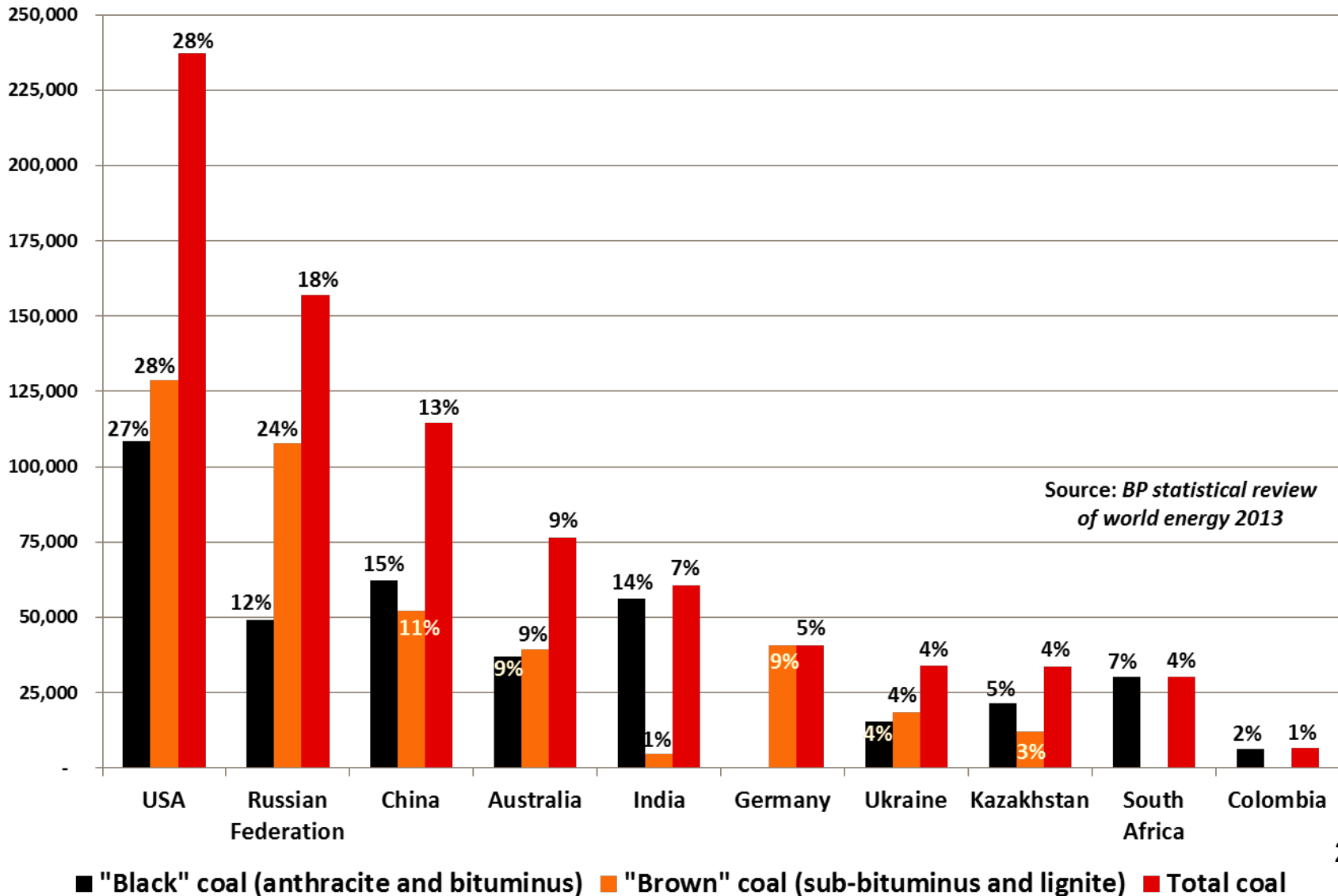
SIEW Roundtable
“The Resurgence of Coal: Trends and Challenges”

*Australia’s Coal Industry: Short-term challenges,
long-term opportunities*

Dr John Kunkel
Deputy CEO
Minerals Council of Australia

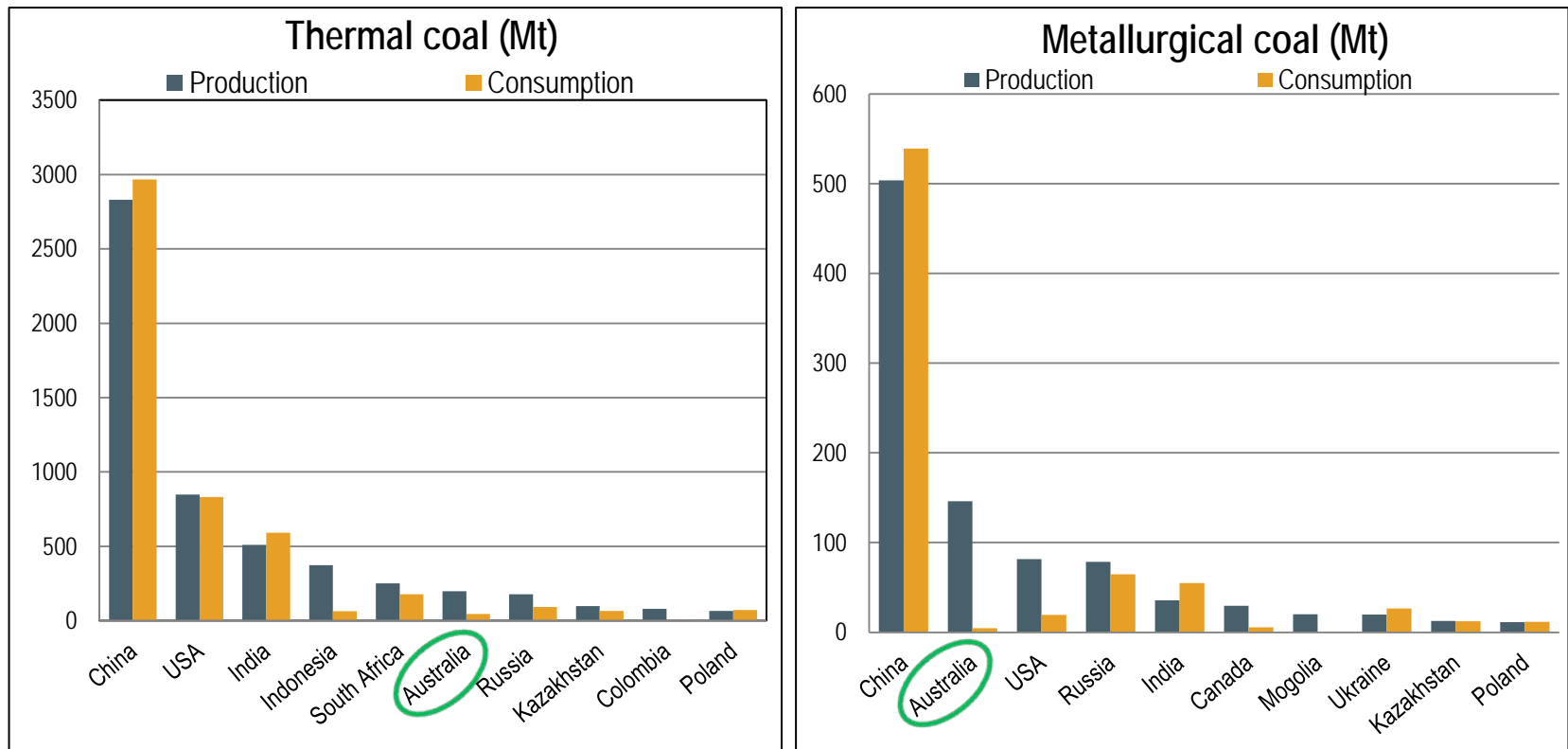
Australia has significant coal reserves

Top ten national shares of proven world coal reserves as at December 2012 (Mt & %)



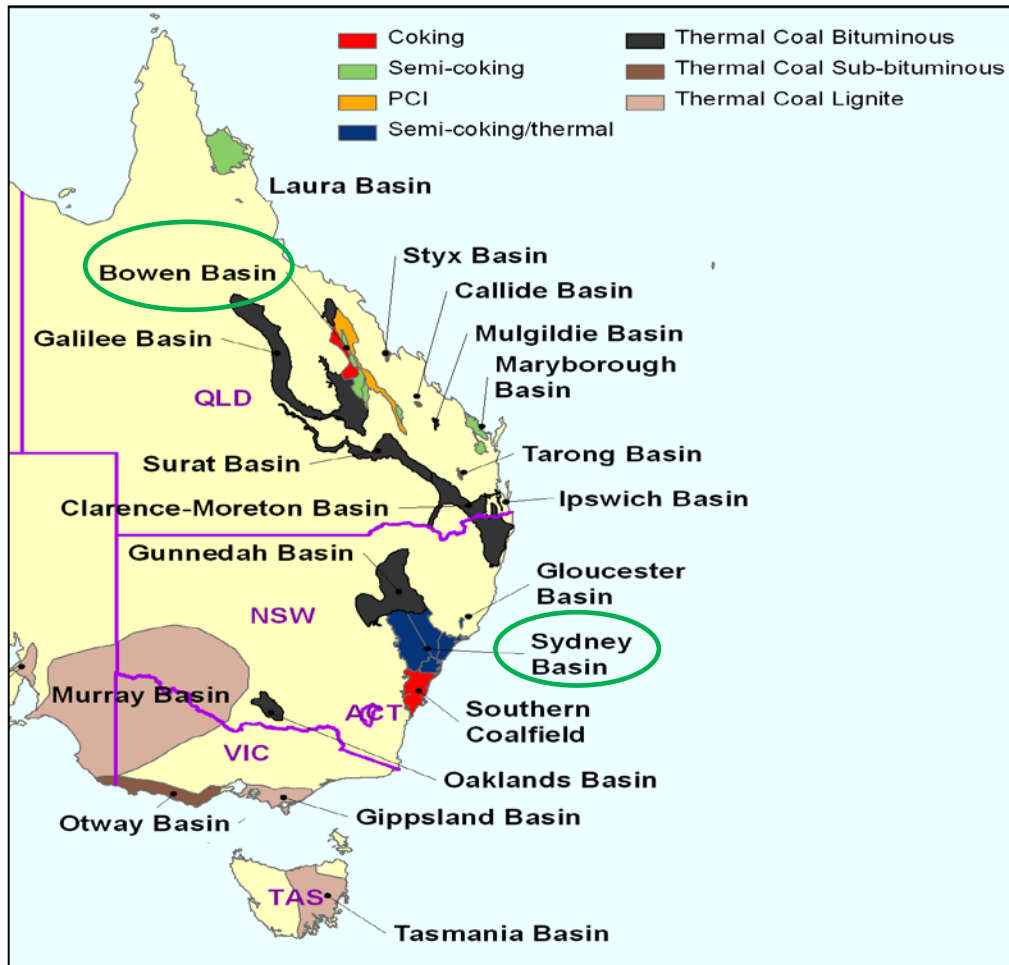
Coal production and consumption

Top 10 producing countries, 2011

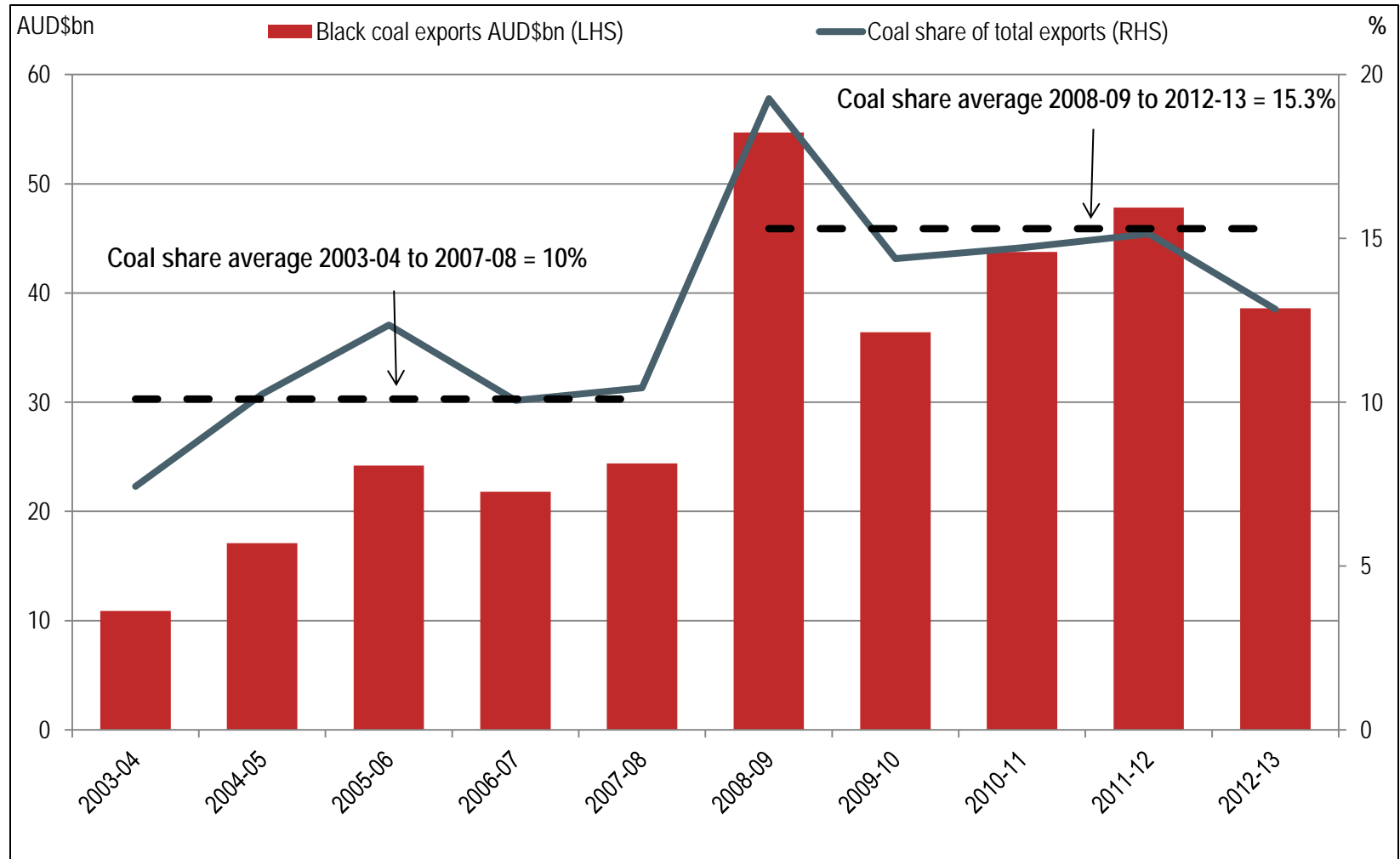


Source: IEA Coal Information 2012

Major Australian Coal Basins

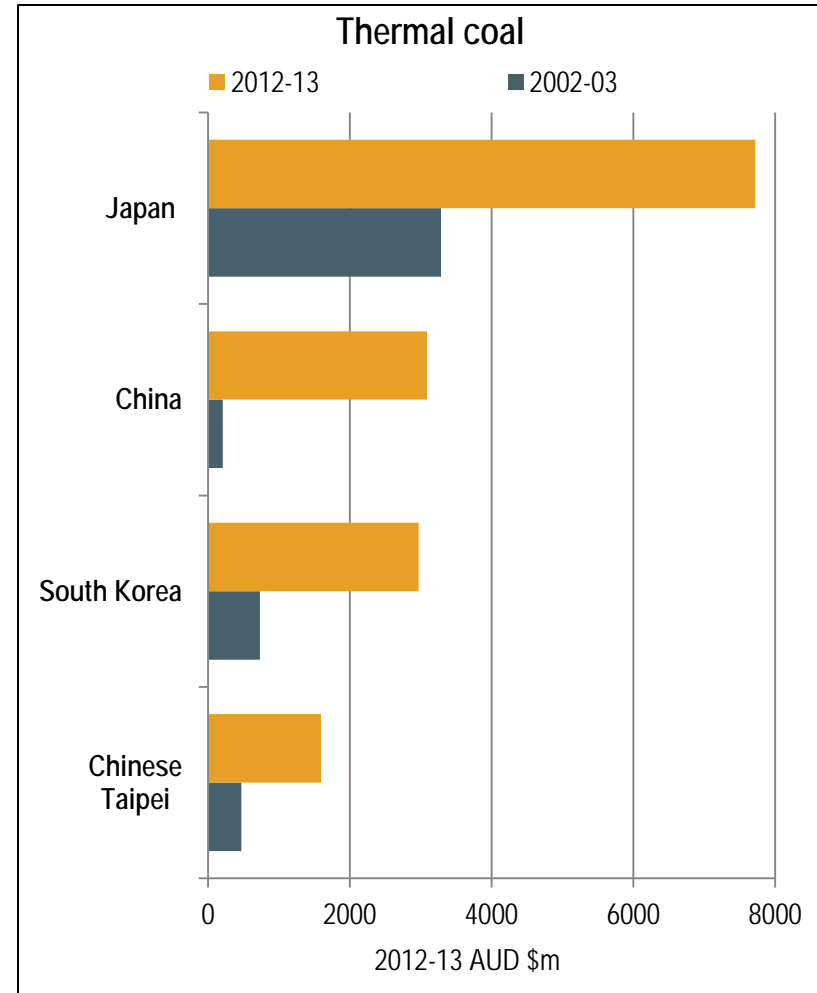
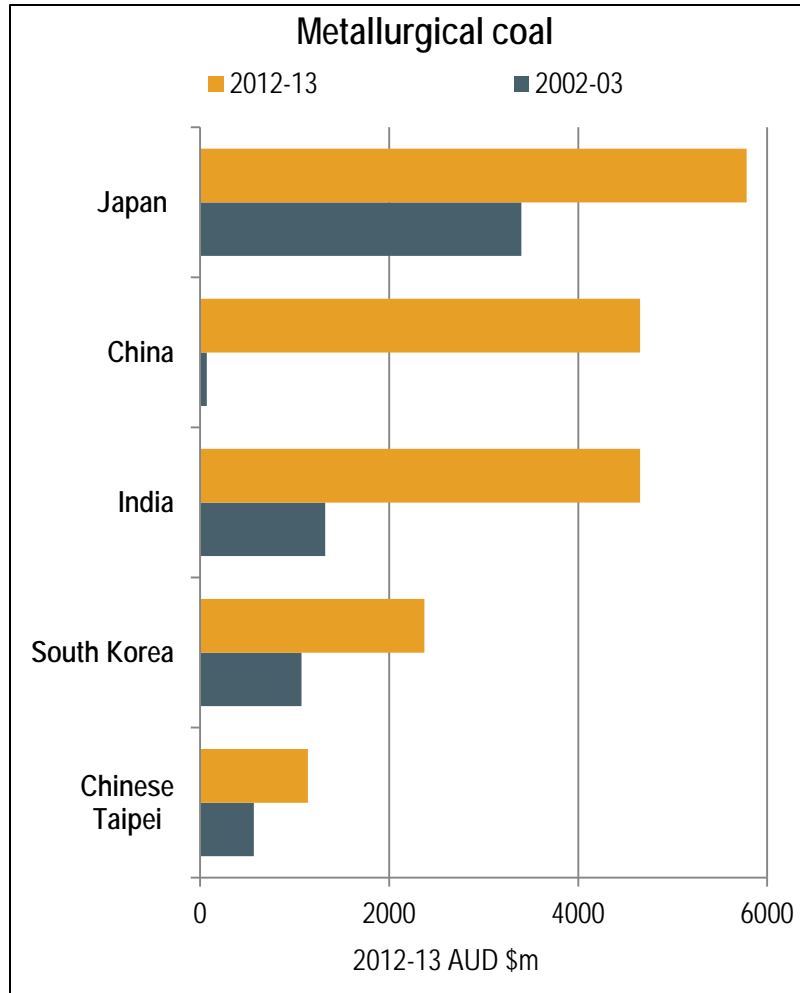


Australia's coal exports



Source: Bureau of Resources and Energy Economics, Australian Government.

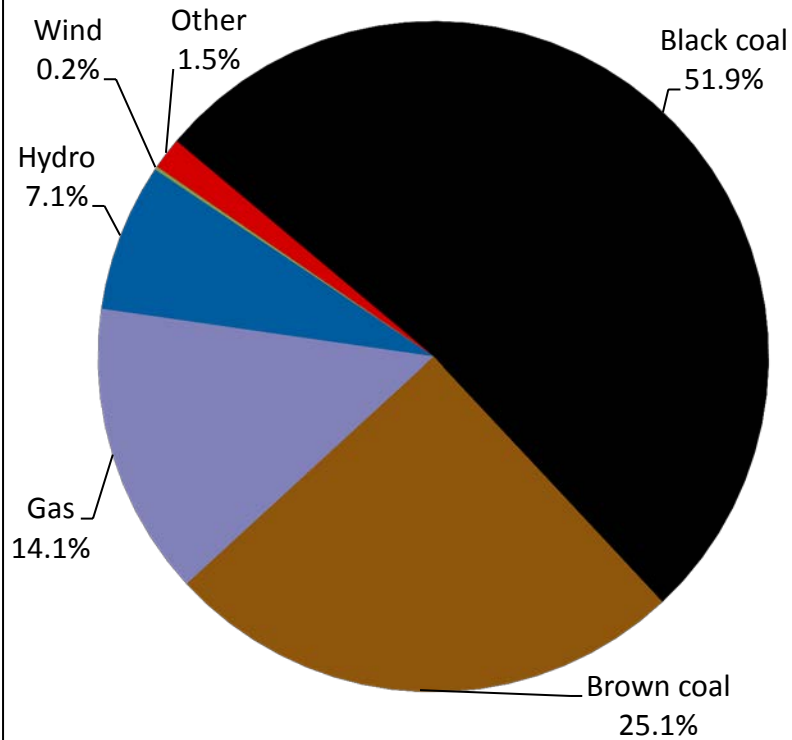
Key export markets for Australian coal



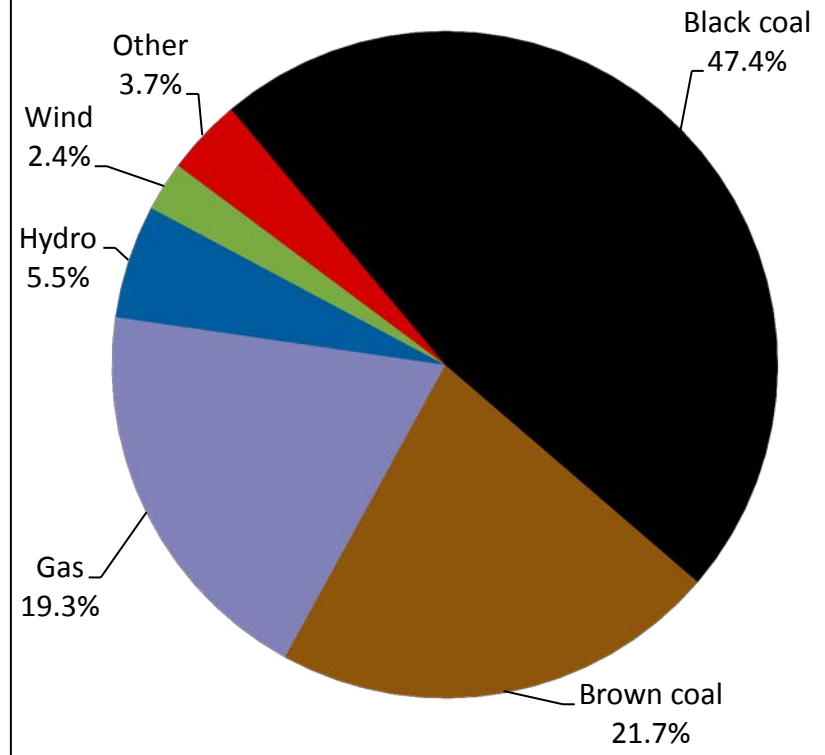
Source: Bureau of Resources and Energy Economics, Australian Government.

Australia's electricity generation fuel mix

2001-02, Coal = 77%



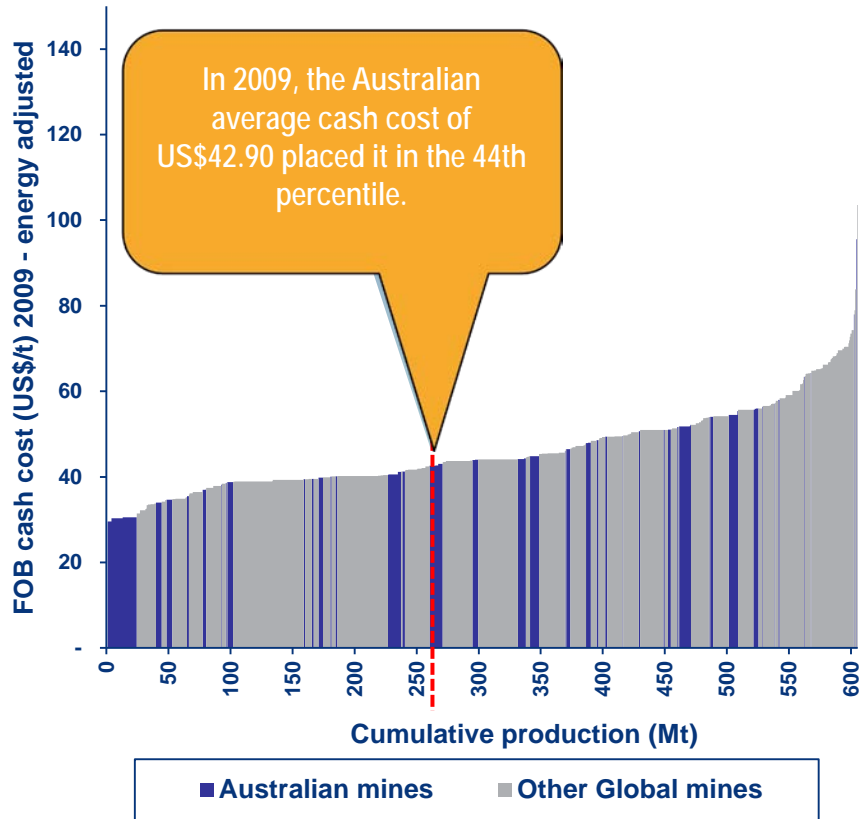
2011-12, Coal = 69%



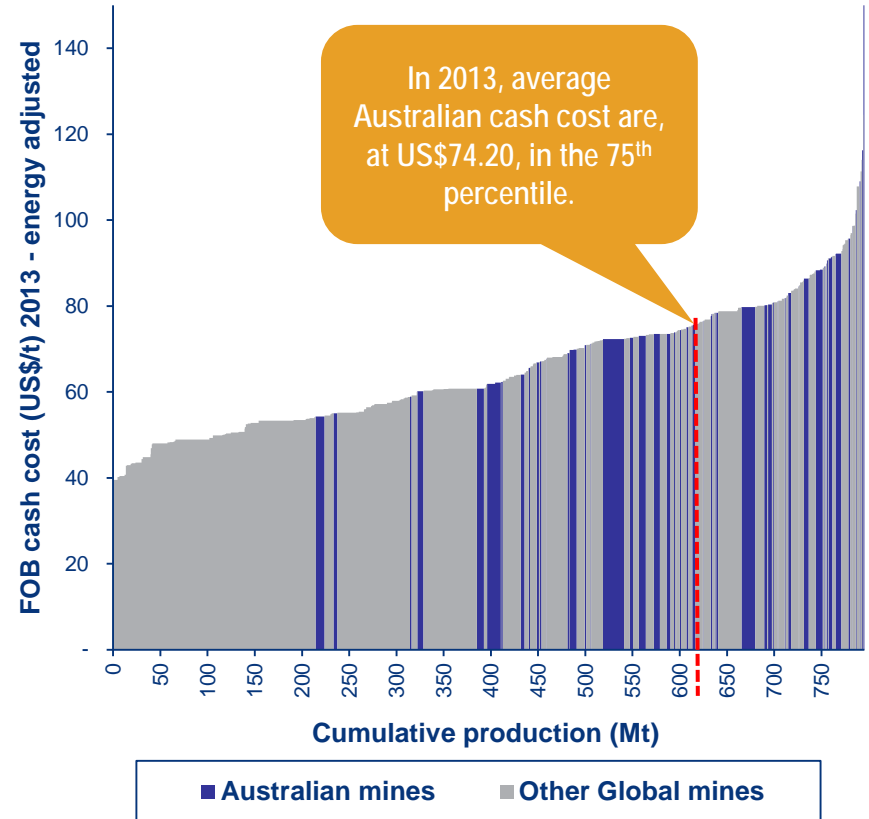
Source: Bureau of Resources and Energy Economics, Australian Government.

Australian thermal coal on the global cost curve

Seaborne thermal coal cost curve (2009)



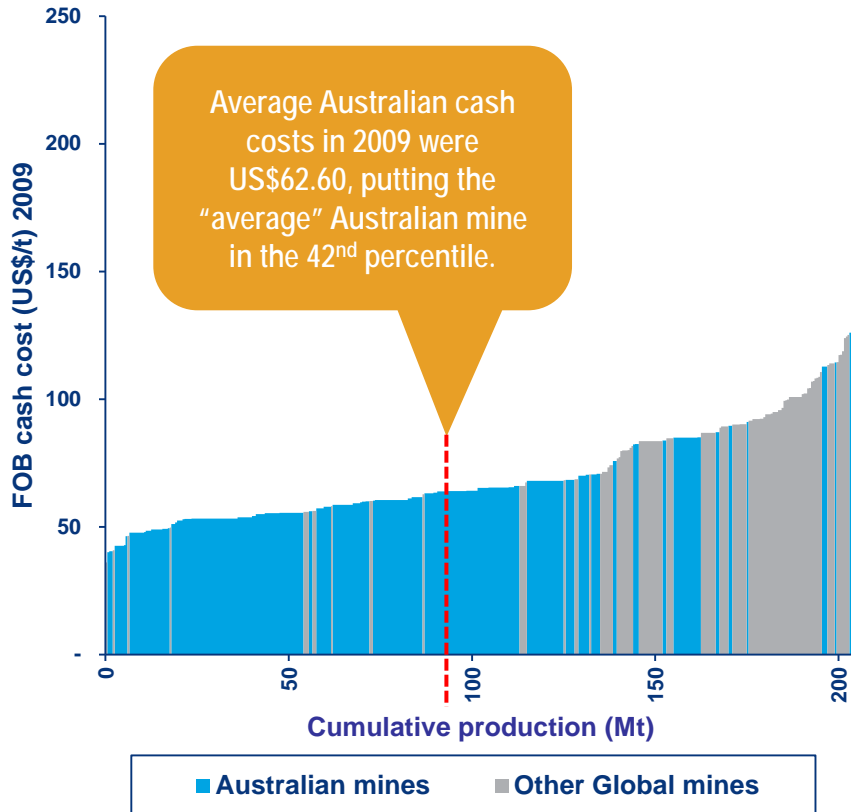
Seaborne thermal coal cost curve (2013)



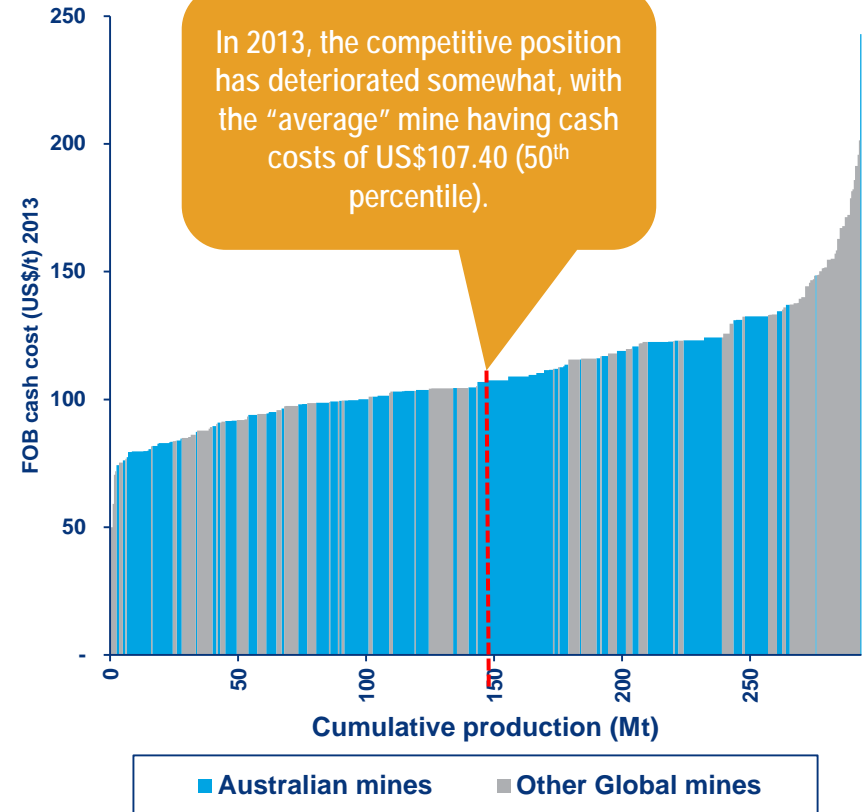
Source: Wood Mackenzie, 7 May 2013

Australian metallurgical coal on the global cost curve

Seaborne metallurgical coal cost curve (2009)



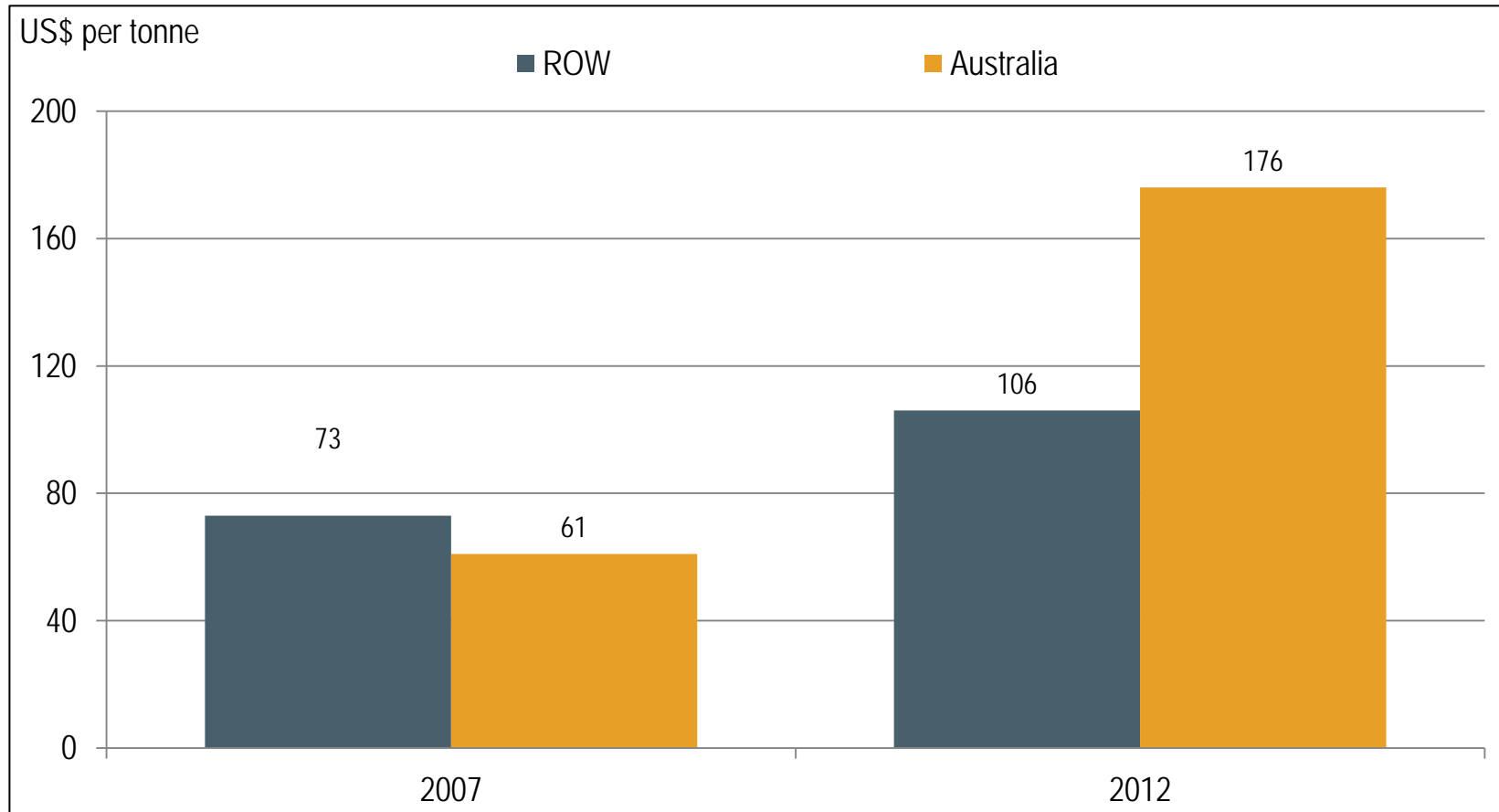
Seaborne metallurgical coal cost curve (2013)



Source: Wood Mackenzie, 7 May 2013

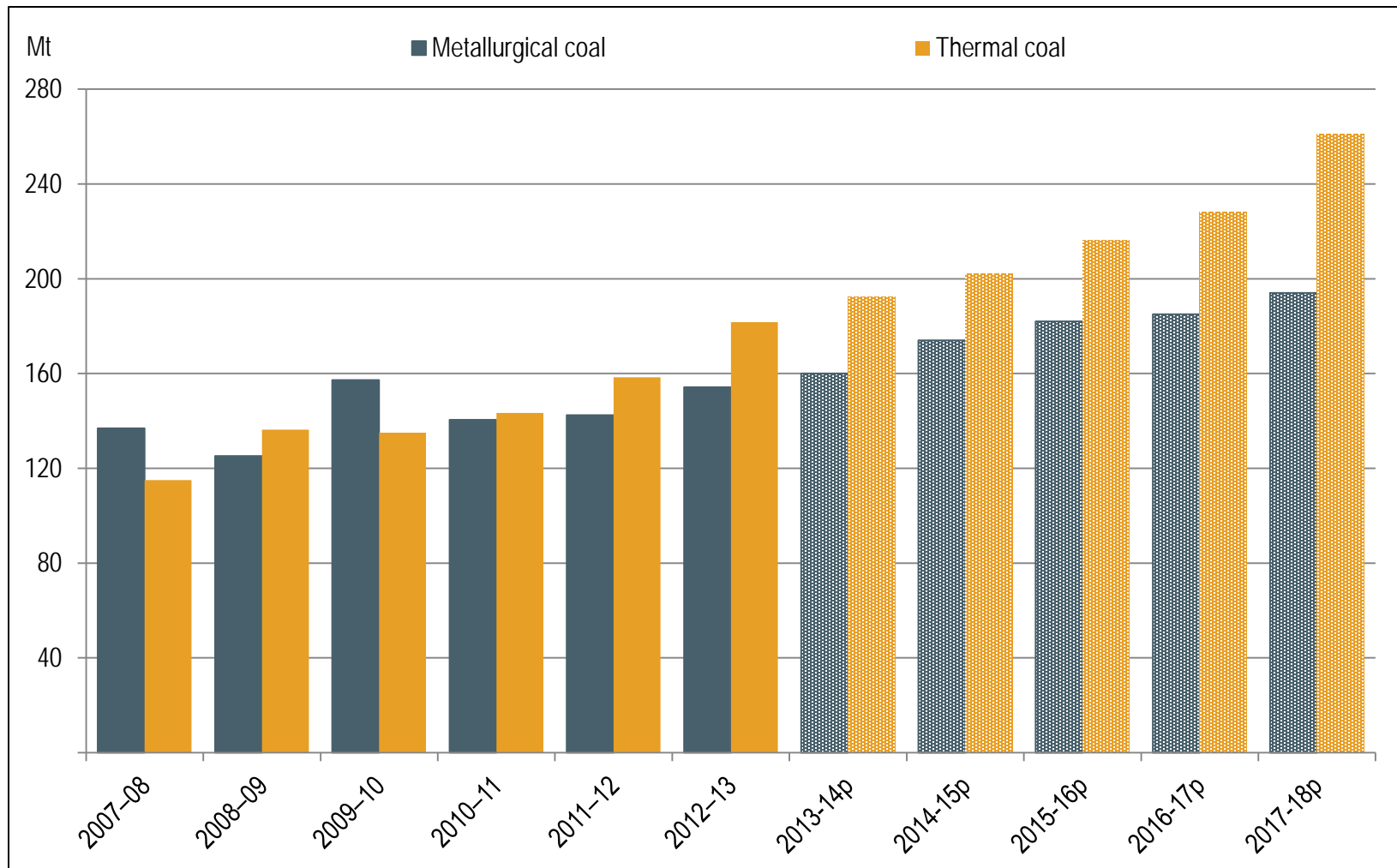
Projects threatened by high capital costs

Thermal coal - Capital spend to build a tonne of new capacity



Source: Port Jackson Partners, "Opportunity at risk", 2012.

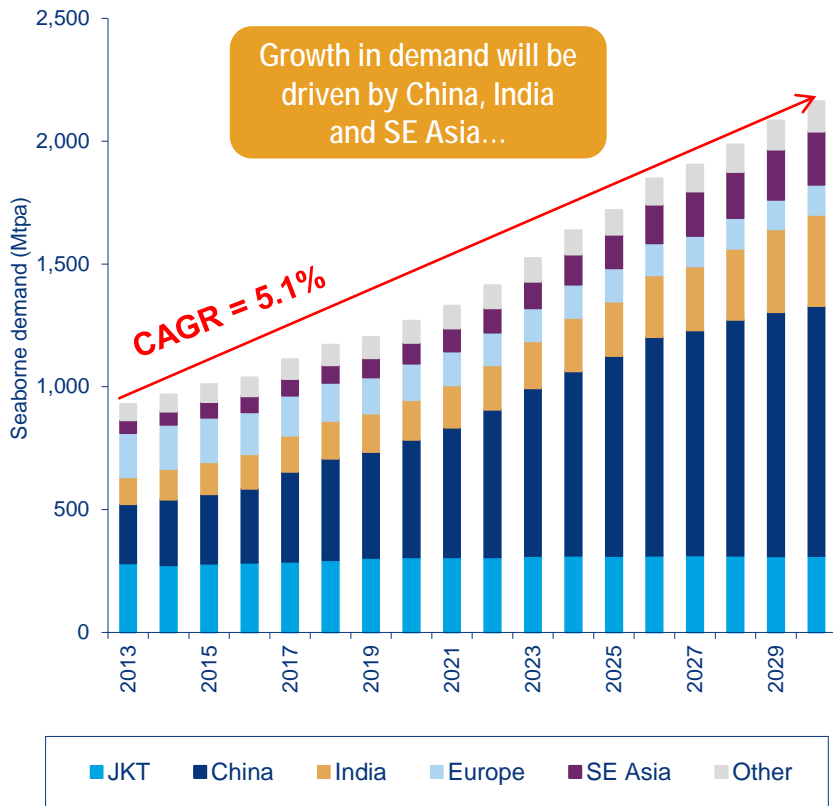
Australia's coal export growth (volumes, Mt)



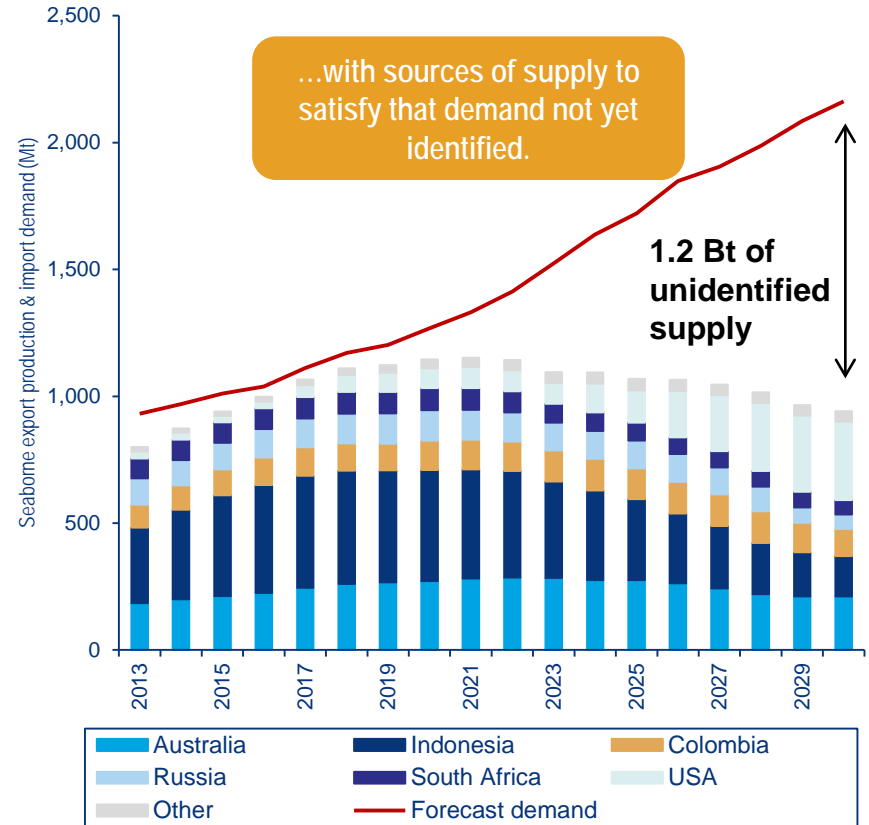
Source: Bureau of Resources and Energy Economics, Australian Government, p - projection

Long-term outlook – thermal coal

Seaborne import demand for thermal coal
(2013-2030)



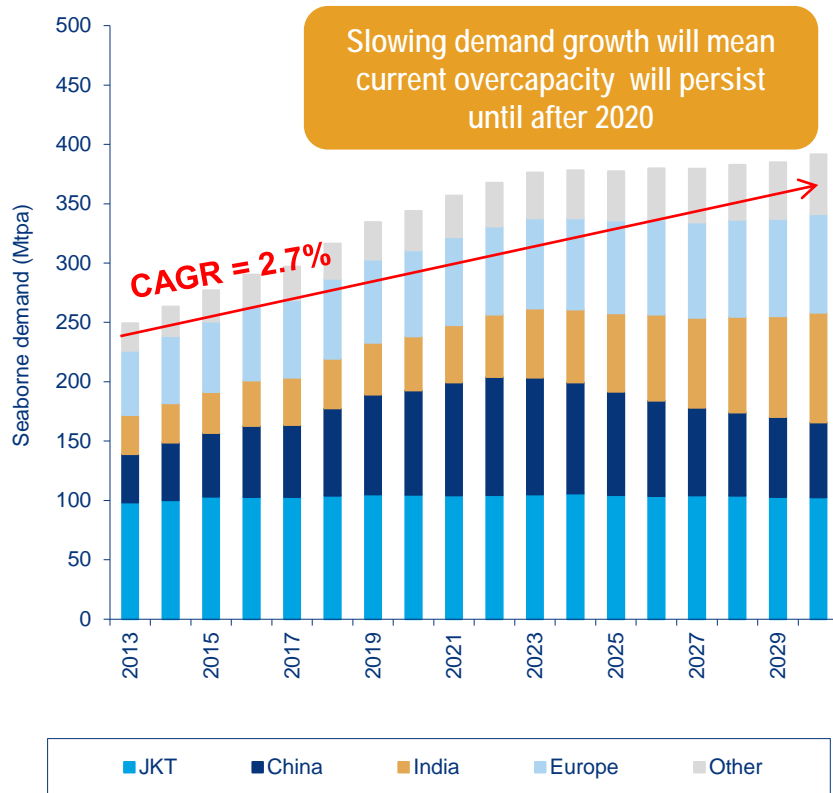
Seaborne export supply of thermal coal
(2013-2030)



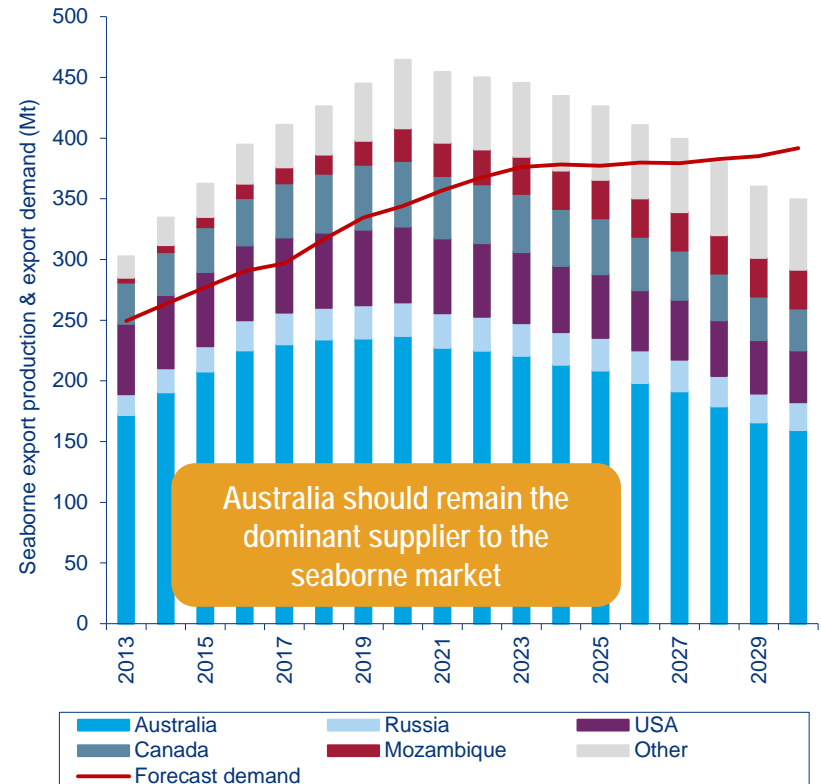
Source: Wood Mackenzie, 7 May 2013

Long-term outlook – metallurgical coal

Seaborne import demand for metallurgical coal (2013-2030)

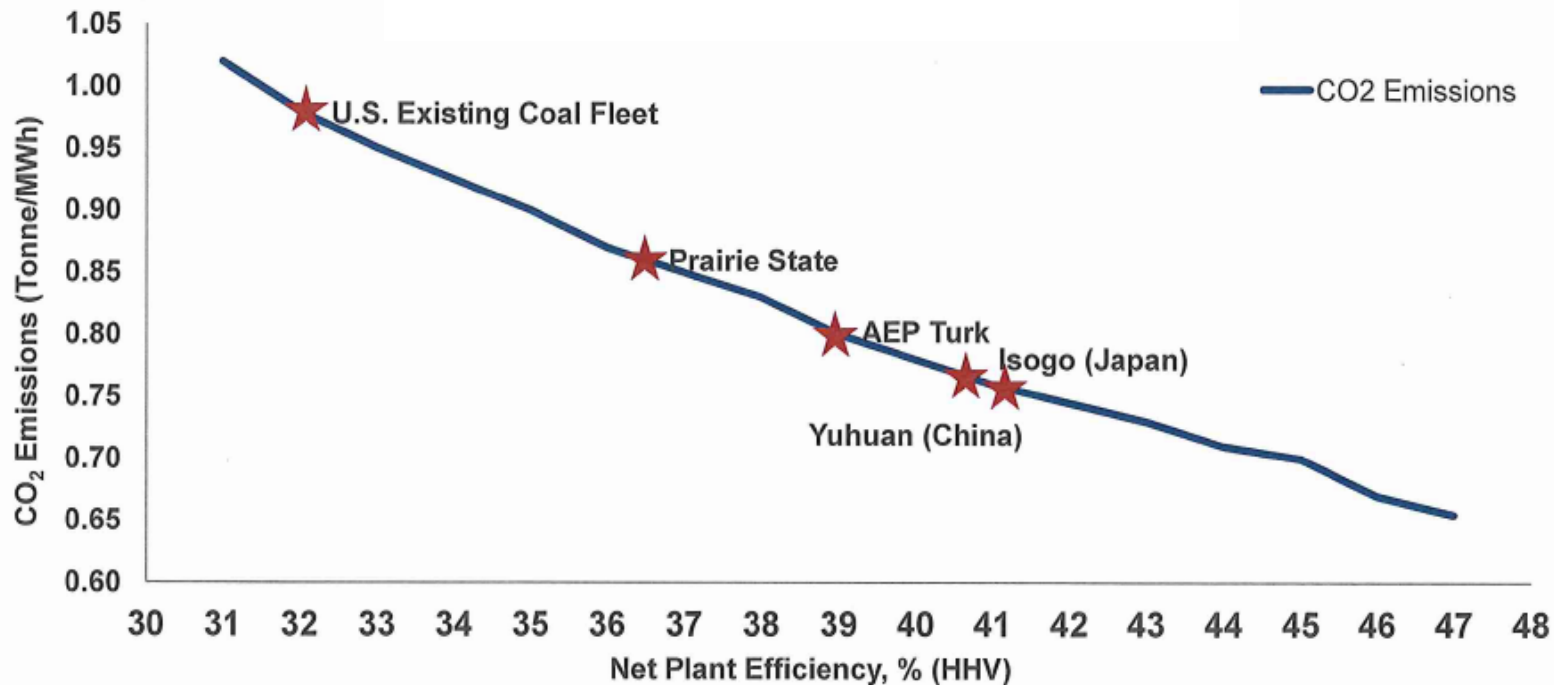


Seaborne export supply of metallurgical coal (2013-2030)



Source: Wood Mackenzie, 7 May 2013

CO₂ Emissions vs. Net Plant Efficiency



- Yuhuan CO₂ emissions are about 25% less than the typical U.S. coal plant
- Coal Utilization Research Council / Electric Power Research Institute R&D targets about 35% reduction in CO₂ emissions from coal combustion technologies

Source: Based on Booras and Holt, 2004.

The imperative for CCS deployment

- Coal and energy supply – no credible climate change solution without CCS.
- It's the only technology able to significantly reduce emissions from fossil fuels.

“Carbon capture and storage is not a substitute but a necessary addition to other low-carbon energy technologies and energy efficiency improvements.”

Mr. Juho Lipponen, head of CCS Technology Unit, IEA, 1/1/2013

Australian action through COAL21 fund

- COAL21 is financed by a voluntary levy on Australian black coal producers. A world first.
- Objective is to advance R,D&D of low emissions coal technologies, especially CCS.
- 10 projects underway or completed, with COAL21 funding of AUD\$260 million.
- ACALET manages COAL21 fund on behalf of the Australian black coal industry.

Examples of COAL21 fund projects

Demonstration projects

- CO₂ capture – Callide Oxyfuel Project
 - Total cost AUD\$216m, COAL21 share AUD\$77m
- Post combustion capture – Delta project
 - Total cost AUD\$28m, COAL21 share AUD\$9m

Storage projects

- Queensland Carbon Geostorage Initiative
 - Total cost AUD\$46m, COAL21 share AUD\$20m
- NSW Storage Assessment
 - Total cost AUD\$54m, COAL21 share AUD\$18m

R&D projects

- ANLEC R&D - AUD\$150m, COAL21 share AUD\$75m
- Support for Otway Basin - CO₂ injection