



### Asia drives demand for Australian coal

Australia's coal exports will grow by 37 per cent to 2040, according to the International Energy Agency (IEA), boosting Australia's share of the global coal trade to 33 per cent.

No where is demand for Australian coal stronger than in Asia.

Reliable, low cost, base load electricity generation underpins unprecedented urbanisation in India, Southeast Asia and China over the next 30 years.

More than 361 million people in the region have no electricity, according to the IEA. A further 1,567 million have no access to clean cooking facilities. Australia's coal exports will play a central role in helping lift people out of poverty.

Australia's world-class coal is also in demand for its high energy content, which makes it the

preferred fuel for high efficiency, low emission (HELE) technologies. Across the region, two-thirds of coal-fired power plants under construction or planned are HELE. HELE technology reduces CO<sub>2</sub> emissions by up to 50 per cent.

With global consumption of electricity to grow by more than 70 per cent to 2040, and coal-fired electricity generation to increase by 24 per cent in the same period, demand for quality coal globally is also on the rise.

The opportunities for Australia's coal producers, and investors, are significant.



# What makes Australia's coal world-class?

Australia's high energy coal burns hotter, faster and releases fewer impurities than coal from many other mining nations. This makes Australian coal ideal for use in high efficiency, low emission (HELE) coal-fired power generation – the technology at the forefront of a rapidly modernising global coal fleet.

Energy content

77%▲

Australian coal leads the world in calorific content, with 77 per cent more energy than coal mined in India.

Source: Department of Industry, Innovation and Science

Low sulphur

34%▼

Less sulphur than China's coal. It also has lower levels of ash, mercury and selenium than many other coal exporting countries.

Source: Department of Industry, Innovation and Science; PEW Centre on Climate Change

CO<sub>2</sub> reductions

40-50%

Fewer emissions per watt of electricity generated by high-efficiency, low emission (HELE) technology.

Source: Clean Coal Centre

Fossil fuel replacement

1.36m km<sup>2</sup>

Area needed for turbines to replace global fossil fuel use in 2040. That is about one-third of the European Union or France, Spain and Germany combined.

Source: Chris Greig; MCA calculations

Coal powered

257 days

Days powered by coal-generated electricity in 2013. Wind and solar generated just 9 days worth of electricity.

Source: IEA



*This little black rock is powering Asia*

For more information visit [littleblackrock.com.au](http://littleblackrock.com.au)

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Information accurate as of April 2016



*'Nobody is under any illusions at these international meetings that coal is going away'*

The Hon. Josh Frydenberg MP  
Minister for Resources, Energy and Northern Australia

# India

India's coal imports are forecast to grow by 185 per cent between 2012 and 2040.

Energy demand

146%▲

Increase in primary energy demand to 2040. India becomes the most populous nation with 1.6 billion people.

Source: IEA

Future imports

185%▲

Increase in India's coal imports to 2040. Australian coal will play a key role in firing India's fast growing coal fleet.

Source: IEA

Power generation

4124 Twh

Electricity generation in India in 2040. That is a 246 per cent increase on electricity generated in 2013 (1193 Twh).

Source: IEA



Coal's share Power generation 2040

Coal	57%
Gas	10%
Hydro	8%
Renewables	14%
Other	11%

Source: IEA

Current coal fleet

2149

Coal powered units in operation in India today, requiring more than 223 Mtoe of coal every year.

Source: Platts

Australian coal, combined with new technology, will reduce India's emissions and lift millions from poverty.

Under construction

683▲

New coal-fired units under construction or planned, boosting capacity by 361 GW.

Source: Platts

New technology

83%

New and planned coal-fired power plants that are high-efficiency, low emission (HELE) technology.

Source: Platts

Fossil fuel replacement

149,348 km<sup>2</sup>

Area needed for turbines to replace fossil fuels in India in 2040. That is the size of Greece and Israel combined.

Source: Chris Greig; MCA calculations

Energy poverty

240 m

Indians live without electricity – that is 1 in 6 people in India, around 10 times Australia's population.

Source: IEA

Clean cooking

841 m

People without clean cooking facilities. They burn hazardous biomass in polluting stoves instead.

Source: IEA; WHO

# South-East Asia

SE Asia is the world's fastest growing coal consumer.

Energy demand

80%▲

Increase in primary energy demand to 2040. Coal overtakes oil and gas to become the region's largest energy source.

Source: IEA

Power generation

2212 Twh

Electricity generation across SE Asia in 2040. That is a 180 per cent increase on electricity generated in 2013 (789 Twh).

Source: IEA

Coal demand

5.6%▲

Increase in demand for coal every year to 2040. The SE Asia region is the fastest growing coal consumer in the world.

Source: IEA



Coal's share Power generation 2040

Coal	50%
Gas	26%
Hydro	12%
Renewables	4%
Other	8%

Source: IEA

Current coal fleet

340

Coal powered units in operation across SE Asia today, requiring 66 Mtoe of coal every year.

Source: Platts

Coal accounts for 55 per cent of electricity capacity under construction and 52 per cent of planned capacity.

Under construction

412▲

New coal-fired units under construction or planned, boosting capacity by 133 GW.

Source: Platts

New technology

66%

New and planned coal-fired power plants that are high-efficiency, low emission (HELE) technology.

Source: Platts

Fossil fuel replacement

97,661 km<sup>2</sup>

Area needed for turbines to replace fossil fuels in SE Asia in 2040. An area the size of South Korea would need to be acquired.

Source: Chris Greig; MCA calculations

Energy poverty

120 m

People across SE Asia have no electricity – that is more than five times Australia's population.

Source: IEA

Clean cooking

276 m

People without clean cooking facilities. More than 1.67 million deaths were linked to household air pollution in SE Asia in 2012.

Source: IEA; WHO

# China

China consumes more than half of the world's coal.

Energy demand

32%▲

Increase in primary energy demand to 2040. China's demand for energy in 2040 is almost double that of the United States.

Source: IEA

Power generation

10,626 Twh

Electricity generation in China in 2040. That is a 95 per cent increase on electricity generated in 2013 (5462 Twh).

Source: IEA



Coal's share Power generation 2040

Coal	49%
Gas	8%
Hydro	15%
Renewables	13%
Other	15%

Source: IEA

Current coal fleet

3043

Coal powered units in operation in China today, requiring 1047 Mtoe of coal every year.

Source: Platts

Under construction

771▲

New coal-fired units under construction or planned, boosting capacity by 460 GW.

Source: Platts

Coal is the single biggest contributor to a doubling of China's electricity generation between 2013 and 2040.

New technology

87%

New and planned coal-fired power plants that are high-efficiency, low emission (HELE) technology.

Source: Platts

HELE capacity

403 GW

Capacity of China's new and planned HELE units – almost seven times Australia's total power capacity across all fuels.

Source: Platts

Fossil fuel replacement

360,774 km<sup>2</sup>

Area needed for turbines to replace fossil fuels in China in 2040. 1.2 million turbines would require land mass the size of Germany.

Source: Chris Greig; MCA calculations

Energy access

650 m

Chinese with access to electricity today who had none in 1990, due to coal-generated electricity.

Source: IEA

Clean cooking

450 m

People without clean cooking facilities. That is more than the population of the US, Canada and Germany combined.

Source: IEA; WHO