

Minerals and Energy Resources: outlook profile for Queensland's priority commodities

Metallurgical coal

As at 27 February 2017

Introduction

Metallurgical coal, also commonly referred to as coking coal, is a unique and valuable mineral, essential to the steel-making process.

Steel-making begins with separating iron from iron ore in blast furnaces. Metallurgical coal is mixed with iron ore in a blast furnace, where it provides the required heat, chemical and physical conditions to allow the iron to be released. There is no viable substitute for metallurgical coal in this process.

Queensland's metallurgical coal is highly sought after in steel mills around the world due to its favourable qualities, which pays benefit in terms of improved steel quality, blast furnace efficiency, and pollution reduction. Queensland is the largest global exporter of metallurgical coal, shipping more than 162 million tonnes in 2015-16, at an estimated value of \$AU17 billion.

Queensland's reserves and resources

Queensland has a large endowment of coal by global standards. Queensland has approximately 12 billion tonnes of proved and probable coal reserves (most economic) and over 33 billion tonnes of measured and indicated resources (source: AME Group, DNRM). Metallurgical coal accounts for approximately 45% of the state's coal reserves and 25% of measured and indicated resources. At current production rates of approximately 162 million tonnes a year, Queensland has approximately 34 years of production left.

Figure 1: Queensland's major coal basins



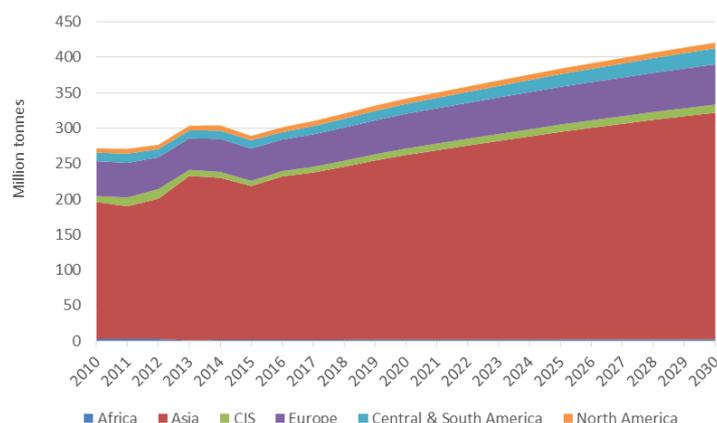
Source: Queensland Exploration Council, 2015

- These reserves and resources are primarily located in six geological basins throughout Queensland, with the Bowen Basin the only producing region of metallurgical coal.

Long-term demand fundamentals

The global demand story over the next decade for metallurgical coal is expected to be a different story to what unfolded over the preceding decade where China shifted from being a net exporter of coal to a net importer in 2009. Demand still remains high with China still consuming over 600 million tonnes of metallurgical coal a year. Over the medium term, a maturing Chinese economy will see metallurgical coal demand growth driven more by other emerging economies, notably India.

Figure 2: Global long term metallurgical coal export demand forecast



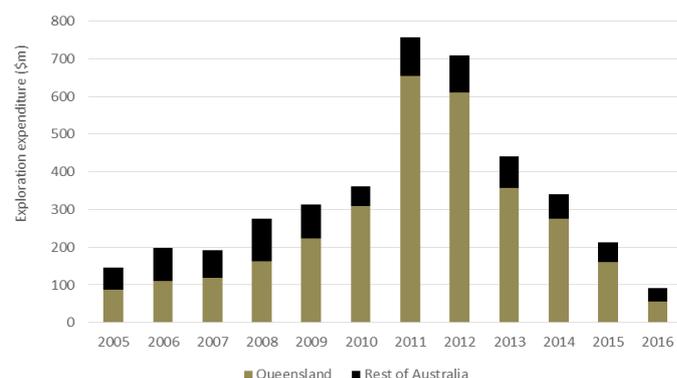
Source: AME Group, 2016

- Global export demand for metallurgical coal is expected to increase at a steady rate of 2.1% per year out to 2030.
- Over the medium term China and India will remain the largest importers of metallurgical coal.
- From the mid-2020s, India and Brazil are expected to become the main growth centres for coal as steel production increases as their economies grow, while China's demand moderates as its economy matures.
- Asia as a region will still represent the largest market for metallurgical coal with 75% of forecasted global demand destined for Asian steel mills.

Queensland's exploration performance

Coal is Queensland's largest export market and continued growth in the coal sector has been delivered through consistent discoveries of commercial grade coal deposits. Due to the quality of Queensland coal in global markets, the majority of Australia's coal exploration has occurred in Queensland.

Figure 3: Queensland coal exploration expenditure



Source: Australian Bureau of Statistics, 2016

- Australian coal exploration is still dominated by Queensland with the state accounting for 75% of exploration expenditure on coal over the last decade.
- The vast majority of coal exploration remains in the Bowen Basin with metallurgical coal as the main target.
- In 2016, 35 major coal exploration projects were in operation in Queensland with many smaller projects targeting smaller deposits.
- Despite lower coal prices in recent years, Queensland metallurgical coal exploration is expected to recover over the medium term primarily due to high demand for Queensland's premium quality coal.

Queensland coal investment

Metallurgical coal investment in Queensland remains robust with a healthy pipeline of projects in advanced stages of feasibility/exploration or currently in construction. As an indication of Queensland's competitiveness and significant endowment of high quality metallurgical coal, many of the projects in the pipeline are significant in size with three projects planned to produce in excess of 10 million tonnes each per annum.

Table 1: Queensland metallurgical coal project pipeline

Project	Status	Size (mtpa)	Owners
Byerwen	Construction	5	QCoal, JFE Steel
Eagle Downs	Construction	4	Aquila Resources
Belvedere	Feasibility/exploration	7	Aquila Resources
Bluff	Feasibility/exploration	1.2	Qinghai Kingho
Dingo West	Feasibility/exploration	1	Dingo West Coal
Ellensfield	Feasibility/exploration	2.3	AMCI ConsMin
Hillalong	Feasibility/exploration	2.3	Shandong Energy Group
Moranbah South	Feasibility/exploration	14	Anglo American, Exxaro Resources
New Lenton	Feasibility/exploration	4.5	Formosa Plastics Group, New Hope
Olive Downs North	Feasibility/exploration	1	Nippon Steel & Sumitomo Metal, Pembroke Resources, Marubeni, Sojitz, JFE Steel
Red Hill (BMA)	Feasibility/exploration	12	BMA
Talwood	Feasibility/exploration	2.8	Aquila Resources
Washpool	Feasibility/exploration	2.9	Aquila Resources
Belview	Feasibility/exploration	2.8	Stanmore Coal
Colton	Feasibility/exploration	0.5	New Hope
Denham	Feasibility/exploration	0.5	Peabody
Dingo	Feasibility/exploration	1	Cockatoo Coal Ltd, Aston Resources
Harrybrandt	Feasibility/exploration	2.4	Yanzhou Coal
Minyango	Feasibility/exploration	3.5	Guangdong Rising
Moorvale West	Feasibility/exploration	1	Peabody, CITIC
Olive Downs South	Feasibility/exploration	20	Pembroke Resources
Sarum Complex	Feasibility/exploration	1.5	Glencore
Vermont East / Willunga	Feasibility/exploration	3	Pembroke Resources
West/North Burton	Feasibility/exploration	3	Peabody, CITIC Group
Winchester South	Feasibility/exploration	2	Rio Tinto
Broughton	Feasibility/exploration	-	U&D Coal
Pentland	Feasibility/exploration	-	TerraCom
Rockwood	Feasibility/exploration	-	U&D Coal
Saraji East	Feasibility/exploration	-	BMA
Sierra	Feasibility/exploration	-	TerraCom
Springsure	Feasibility/exploration	-	TerraCom
Valeria	Feasibility/exploration	-	Rio Tinto
Wilpeena	Feasibility/exploration	-	Aquila Resources
Yamala	Feasibility/exploration	-	Sojitz, New Hope

Source: AME Group, December 2016. Note: Size of mine is an estimate of annual metallurgical coal production

- The long term demand fundamentals for metallurgical coal means a number of projects are in the pipeline.
- Byerwen and Eagle Downs are in construction/early stages of production adding 14 million tonnes of output together.
- Several other large projects are in the pipeline which include Anglo's Moranbah South mine and BMA's Red Hill which are planned to produce approximately 14 million tonnes per annum.

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