Metallurgical Coal
Resources and Energy Quarterly March 2019

Australia is the largest exporter of metallurgical coal

Every tonne of steel produced needs about 800kg of metallurgical coal.

Metallurgical coal is a non-substitutable raw material in the production of steel from iron ore.

It takes more than 200 tonnes of metallurgical coal to make every wind turbine.

Australia exported 178 million tonnes in 2018, valued at $41 billion

Australia accounted for around 17% of world production in 2017.

Major Australian coal deposits (Mt)
- <500
- 500-1,000
- 1,001-2,000
- 2,001-4,000
- >4,000

Deposit
Operating mine

Australia’s metallurgical coal export earnings by destination, 2018

India 25%
China 22%
Japan 20%
South Korea 10%
Taiwan 6%
Rest of the world 17%

Global share of metallurgical coal exports in 2017

Australia 54%
USA 15%
Canada 9%
Mongolia 8%
Russia 7%
Rest of the world 7%

Global share of metallurgical coal imports in 2017

China 24%
India 16%
Japan 16%
EU 15%
South Korea 12%
Rest of the world 17%
5.1 Summary

- Supply growth and softening demand are expected to reduce the premium HCC spot price from an average of US$212 a tonne in 2018 to US$150 in 2021, in real terms. The price is then projected to bottom out and recover modestly to US$159 a tonne in 2024, as a tightening market provides some price support.
- Australia’s export volumes are forecast to grow from 179 million tonnes in 2017–18 to reach 203 million tonnes in 2022–23, before receding back to 198 million tonnes in 2023–24. This reflects an expected recovery from supply disruptions and modest production growth, before the impact of several mine depletions take effect.
- Australia’s metallurgical coal export earnings are forecast to increase in real terms from $39 billion in 2017–18 to a new record of $43 billion in 2018–19. A forecast decline in the price is expected to drive export earnings down to $30 billion in 2023–24.

5.2 Prices

Metallurgical coal markets have remained tight

The seaborne metallurgical coal market was relatively tight in 2018, with ongoing supply disruptions and changes to Chinese import demand resulting in price fluctuations throughout the year. In January 2019, the premium Australian hard coking coal (HCC) spot price declined to below US$200 a tonne, before increasing in February, driven by firm demand, and despite ongoing uncertainty about China’s import restrictions.

Vale’s tailings dam collapse and the resulting loss of high grade iron ore from the seaborne market (see the iron ore chapter) have also contributed to the recent price strength: the use of lower grade iron ore in steel making requires more metallurgical coal. However, if steel margins remain low (due to high iron ore prices), this could drive an overall decrease in steel output in the future, resulting in lower overall metallurgical coal demand.

Demand is expected to remain relatively strong in 2019, driven by the rapid expansion of India’s steel sector, and stimulatory measures in China to counter slowing economic growth and trade concerns.

The metallurgical coal price is forecast to drift lower to average US$190 a tonne in 2019 (Figure 5.1). Supply growth, primarily from Australia, is expected to outpace demand growth, but the market is still expected to remain relatively tight, and provide some ongoing price support.

Over the medium term, the price is projected to steadily decline in real terms, and bottom out at US$150 a tonne in 2021. The price decline is expected to be primarily driven by growing supply and declining Chinese demand, as economic growth moderates and steel output declines. Partially offsetting the impact of these trends, India’s imports of metallurgical coal are expected to grow over the outlook period. A modest lift in the real price to US$159 a tonne by 2024 is projected, as supply growth slows relative to demand.

China remains the key risk to the outlook for metallurgical coal prices, due to the sheer size of its domestic coal market and ongoing uncertainty over its import policy (see Box 6.1). Larger-than-expected falls in Chinese imports could potentially push prices even lower. Countering this, with supply concentrated in Australia, weather, infrastructure and other disruptions in Queensland have the potential to drive periodic price spikes.

Figure 5.1: Australian premium HCC spot price, quarterly

![Figure 5.1: Australian premium HCC spot price, quarterly](Source: Platts (2019); Department of Industry, Innovation and Science (2019))
5.3 World trade

World trade in metallurgical coal grew to an estimated 325 million tonnes in 2018. Robust demand for metallurgical coal was supported by strong world industrial production growth, and thus strong steel output, which grew by 4.9 per cent to 1.8 billion tonnes (see the steel chapter).

World metallurgical coal trade is projected to continue to grow over the outlook period at an average annual rate of 1.0 per cent, to reach 345 million tonnes in 2024. The pace of growth, however, is projected to be at a slower pace than in the last two years, with the world industrial production cycle likely to have peaked in 2018 (see the macroeconomic outlook chapter).

India is expected to be the key source of import demand growth, and overtake China as the world’s largest metallurgical coal importer during the outlook period, driven by the ongoing expansion of its domestic steel sector. In contrast, China’s import demand is expected to decline, as steel production falls due to moderating economic growth, and as the growing use of scrap steel displaces metallurgical coal. Demand is projected to remain subdued or marginally decline among most other major importers (Figure 5.3).

Metallurgical coal production was very profitable in 2018 due to high prices (Figure 5.2). These persistently strong market conditions have encouraged the restart of idled operations and the development of new mines, which is expected to support supply growth over the first half of the outlook period.

Australia is expected to comfortably remain the dominant exporter of metallurgical coal, accounting for a projected 55 per cent of world exports in 2024. However, this represents a decline from Australia’s market share in the pre-Cyclone Debbie period (60 per cent in 2016), with Canada, Russia and Mozambique all expected to increase their exports as new projects come online (Figure 5.4). Exports from the US are projected to decline — some US producers sit to the right of the cost curve, and will be vulnerable to price declines.

Figure 5.2: Metallurgical (including hard coking, PCI and semi-soft) coal FOB cost curve and average annual prices, 2018

Notes: FOB is Free on Board; LVPCI is the price for low volatile pulverised coal injection (PCI) coal; Premium HCC is the price for premium Australian hard coking coal.
Source: AME Group (2019); Platts (2019)
World imports

China’s metallurgical coal imports projected to drift lower

Despite strong production growth, China’s metallurgical coal imports decreased by 7.0 per cent to 65 million tonnes in 2018. While steel production grew by 7.6 per cent over the same period, pig iron production grew at a much slower rate (Figure 5.5). Pig iron is an intermediary product in steel production, produced from coke (which is transformed from metallurgical coal) and iron ore. The divergence reflects an increase in scrap utilisation in the steel production process, with every tonne of recycled steel used replacing around 740 kilograms of metallurgical coal.

Metallurgical coal imports were also impacted by weaker steel margins (see the steel chapter), an increase in domestic production of metallurgical coal and import restrictions (see Box 6.1).

In the short-term, stimulatory measures to offset the impact of trade tariffs, including infrastructure investment are expected to provide some support for China’s steel sector, and thus metallurgical coal imports. Over the medium-term, China’s metallurgical coal imports are projected to decline, to reach 56 million tonnes in 2024. This is primarily driven by an expected
fall in steel production as economic growth moderates, and also due to the ongoing increase in the use of scrap steel.

The downward trajectory of China's metallurgical coal imports is expected to be less severe than that of its thermal coal imports (see the thermal coal chapter). China's metallurgical coal mines were more affected by industry reforms in recent years, and its reserves of metallurgical coal are relatively smaller than its thermal coal reserves. Steel producers are expected to continue to import metallurgical coal, particularly high quality grades that are more difficult to source domestically.

China represents the biggest risk to the outlook for metallurgical coal as a result of ongoing uncertainty surrounding its import policies, the pace of its economic growth, and the pace at which scrap steel usage grows.

**India expected to become largest metallurgical coal importer by 2020**

India’s imports of metallurgical coal increased by a solid 14 per cent to 60 million tonnes in 2018, driven by the ongoing expansion of its domestic steel sector. India overtook Japan to become the world’s second largest steel producer in 2018, with crude steel production growing by 4.9 per cent to 106 million tonnes. Steel production has rapidly grown to match rising domestic consumption, which has in turn been driven by strong growth in the construction and manufacturing sectors and substantial government investment in infrastructure.

India’s metallurgical coal imports are projected to grow at an average annual rate of 4.7 per cent over the outlook period, overtaking China as the world’s largest importer of metallurgical coal by 2020, and reaching 79 million tonnes of imports by 2024. Unlike China, India has very limited domestic reserves of metallurgical coal, and will need to increase imports to support the rapid growth of its domestic steel sector.

The pace at which India’s steel sector is able to expand remains uncertain, and presents a risk to the outlook for India’s metallurgical coal imports, with the sector facing ongoing financial, regulatory and other challenges.

**Japan, South Korea and Taiwan’s imports expected to remain subdued**

Japan’s imports of metallurgical coal grew by 1 million tonnes to an estimated 48 million tonnes in 2018. Strong demand from the auto and construction sectors were largely offset by a slowdown in residential construction. Metallurgical coal imports are expected to remain flat in the short-term, and then decline marginally over the medium-term in line with steel production, to 47 million tonnes in 2024. Subdued economic growth is expected to weigh on spending and investment.

South Korea’s imports of metallurgical coal declined by 1.9 per cent to 35 million tonnes in 2018, despite steel production increasing by 2.0 per cent to 72 million tonnes over the same period. Demand for metallurgical coal may have been dampened by high prices. South Korea’s metallurgical coal imports are projected to be broadly flat over the outlook period, at around 35 million tonnes.

Taiwan’s imports of metallurgical coal were steady at 7 million tonnes in 2018, and are projected to remain flat over the outlook period.

**Metallurgical coal imports projected to rise in emerging economies**

Metallurgical coal imports are projected to grow in emerging economies, although from a low base. Many countries, including Vietnam, have several blast furnace steel plants coming online over the outlook period, leading to a modest increase in imports to the emerging Asia region.

**World exports**

**Exports from the United States projected to decline**

Exports of metallurgical coal from the US grew by an estimated 5 million tonnes to 55 million tonnes in 2018. The growth was supported by strong prices and rising Asian demand, as steel producers sought to diversify their sources of supply. As a swing supplier of coal — due to both higher freight and production costs — the US is projected to reduce its metallurgical coal exports modestly over the outlook period, as prices ease and exports from other producing countries increase. Metallurgical coal exports are projected to decrease at an average annual rate of 5.1 per cent to reach 40 million tonnes by 2024.
Exports projected to grow from Mozambique, Russia and Canada

In 2018, Mozambique’s metallurgical coal exports grew by around 1 million tonnes to reach an estimated 8 million tonnes. While Mozambique was once flagged to be the next major exporter of metallurgical coal, there has been a range of challenges relating to logistics, coal quality and public opposition, which have impeded the ramp up of coal projects to date.

Over the medium term, some of these issues are expected to be addressed (including by the opening of the Nacala corridor rail line and port expansion), and Mozambique’s metallurgical coal exports are projected to reach 13 million tonnes by 2024. The most notable project is Vale’s Moatize coal mine, which is expected to be the key source of export growth over the outlook period. Vale increased its production guidance for the Moatize mine to 14 million tonnes in 2019, and is targeting a ramp up to 20 million tonnes by 2021, with metallurgical coal accounting for around 55 to 65 per cent of those volumes.

Russia’s metallurgical coal exports grew by 14 per cent to 26 million tonnes in 2018, supported by increased sales to the Asian market. Russia’s metallurgical coal exports are projected to grow at an annual average rate of 2.8 per cent to reach 31 million tonnes by 2024, driven by new additions to mining capacity, and rail and port expansions.

Canada’s metallurgical coal exports increased by around a million tonnes to an estimated 30 million tonnes in 2018. High prices have driven renewed interest in Canada’s metallurgical coal projects, with plans to bring idled projects back online. Metallurgical exports from Canada are projected to increase at an average annual rate of 2.1 per cent to reach 34 million tonnes by 2024.

Mongolia’s exports constrained by transportation bottlenecks

In late 2017, Mongolia’s coal exports to China were impacted by a change in inspection policies at the border, leading to truck queues of over 100 kilometres. This issue appears to have partly resolved over the course of 2018, with Mongolia’s metallurgical coal exports to China increasing by 4.9 per cent in 2018, to reach 26 million tonnes.

Nevertheless, with ongoing transportation bottlenecks, substantial investment in road and rail infrastructure will be required for any sustained growth in export volumes, and Mongolia’s metallurgical coal exports are projected to increase only modestly over the outlook period.

Aspire Mining’s plans to develop the Ovoot project and a railway could facilitate greater exports to China and to the wider Asian market through Russia’s rail network and eastern ports. This has the potential to boost exports beyond what has been projected, although a final investment decision has not yet been undertaken.

5.4 Australia

Metallurgical coal export earnings forecast to reach record highs

Australia’s metallurgical coal export earnings are forecast to reach a new record high of $43 billion in 2018–19, up from an existing record of $39 billion in 2017–18. The strong results are primarily driven by high prices, and, to a lesser extent, growth in export volumes of 4.1 per cent — from 179 million tonnes in 2017–18 to 187 million tonnes in 2018–19 (Figure 5.6).

Figure 5.6: Australia’s metallurgical coal exports

Source: ABS (2019) International Trade, Australia 5454.0; Department of Industry, Innovation and Science (2019)
Beyond 2018–19, metallurgical coal export earnings are projected to decline in real terms to $30 billion in 2023–24, driven by lower prices. Export volumes are projected to peak at 203 million tonnes in 2022–23, before falling back to 198 million tonnes in 2023–24. The projected rise then fall in export volumes is expected to dampen the impacts of price changes over the outlook period (Figure 5.7).

The trajectory of Australia’s metallurgical coal export volumes reflects several factors, including:

- Recovery from weather, infrastructure, technical and other disruptions in 2017 and 2018.
- Ongoing productivity improvements and expansions across several operations, as announced in company reports.
- The ramp up of several new mines and restarts, including Cook, Balaraba, Byerwen, Meteor Downs and Gregory Crinum.
- A production hiatus at the North Goonyella mine (until at least 2020), following a fire in late 2018.
- The closure of several mines due to resource depletion.

There are several metallurgical coal projects in Queensland that have not been included in the projections (see the Major Projects chapter in the December 2018 Resources and Energy Quarterly). Final investment decisions have not yet been undertaken for these projects, so it is uncertain whether or not they will proceed. If market conditions are supportive, it is possible that some of these projects could come online towards the end of the outlook period, driving exports higher.

**Coal exploration expenditure rebounds**

Australia’s coal exploration expenditure reached a three year high of $50 million in the December quarter of 2018, and an increase of 28 per cent year-on-year. Coal exploration expenditure totaled $174 million in 2018, an increase of 40 per cent from 2017. The recovery of Australia’s coal exploration expenditure reflects an improvement in market conditions and firmer prospects for the sector, although exploration expenditure remains substantially lower than its peak in 2011 (Figure 5.8).
<table>
<thead>
<tr>
<th>Table 5.1: World trade in metallurgical coal</th>
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</thead>
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<td><strong>Unit</strong></td>
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**Metallurgical coal imports**

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**Metallurgical coal exports**

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Notes: s Estimate. f Forecast. z Projection.

Table 5.2: Metallurgical coal outlook

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Notes: <sup>d</sup> In 2019 US dollars. <sup>e</sup> Contract price assessment for high-quality hard coking coal. <sup>f</sup> Forecast. <sup>g</sup> Hard coking coal fob Australia east coast ports. <sup>i</sup> Estimate. <sup>z</sup> Projection.

Source: ABS (2019) International Trade in Goods and Services, Australia, 5368.0; Department of Industry, Innovation and Science (2019); Platts (2019)