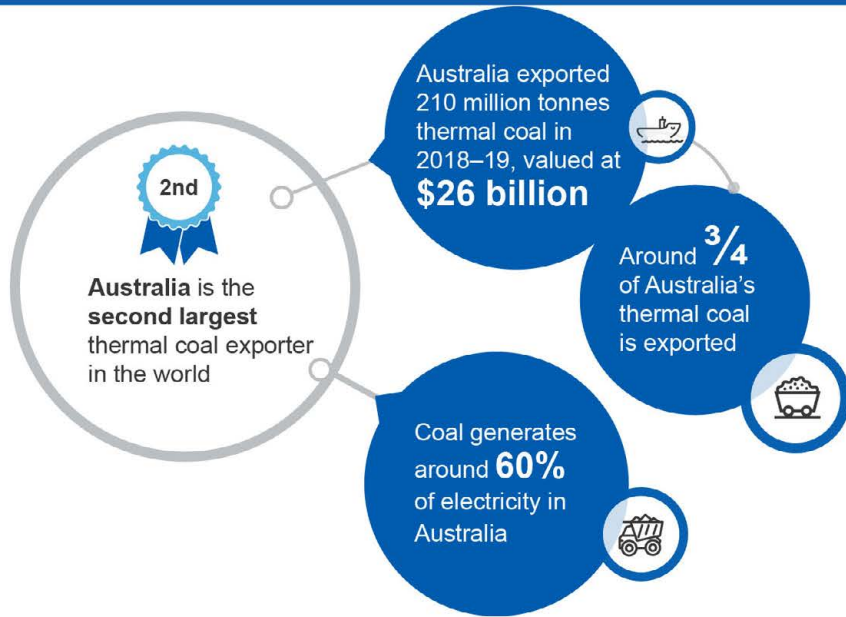


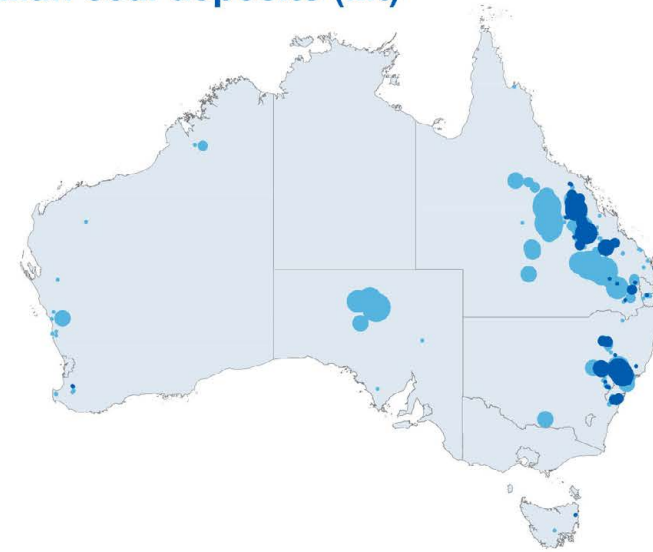
Thermal Coal

Resources and Energy Quarterly September 2019

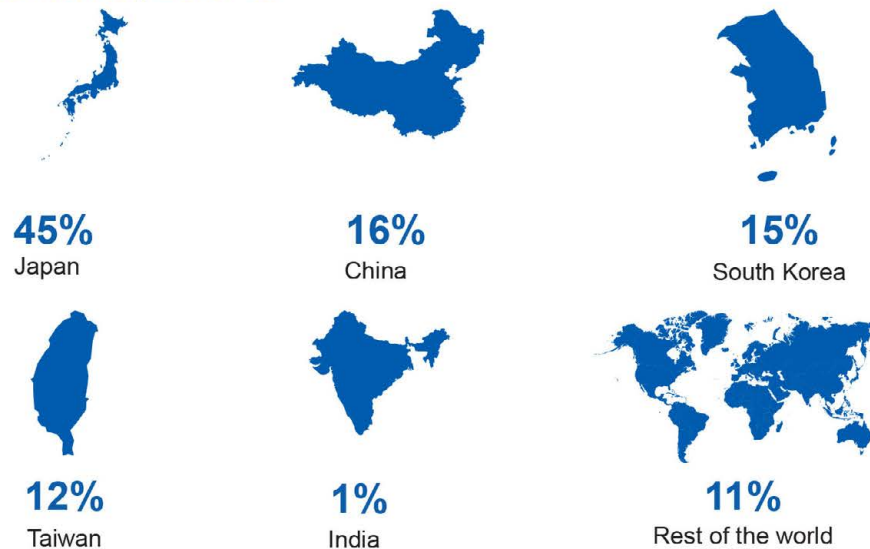


Major Australian coal deposits (Mt)

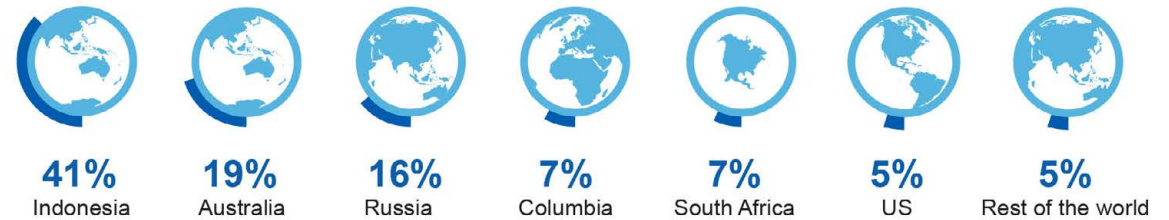
- <500
- 500-1,000
- 1,001-2,000
- 2,001-4,000
- >4,000
- Deposit
- Operating mine



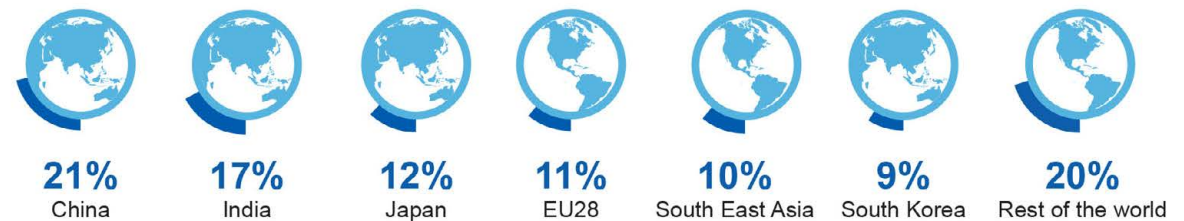
Australia's thermal coal export earnings by destination, 2018–19



Share of global thermal coal exports in 2018



Share of global thermal coal imports in 2018



6.1 Summary

- The Newcastle benchmark thermal coal spot price is forecast to decline from an average of US\$105 a tonne in 2018 to US\$72 a tonne in 2021, as demand softens relative to supply.
- Australia's export volumes are forecast to grow from 210 million tonnes in 2018–19 to 214 million tonnes in 2020–21, reflecting modest production growth from new capacity and expansions, a recovery from recent disruptions, and productivity improvements.
- Australia's thermal coal export earnings reached a record \$26 billion in 2018–19. Strong growth in export earnings has primarily been driven by high prices in 2018 and a high contract price settled for 2019–20. Export earnings are forecast to decline to \$18 billion in 2020–21, as the impact of lower prices offsets higher export volumes.

6.2 Prices

Thermal coal prices have declined on weaker fundamentals

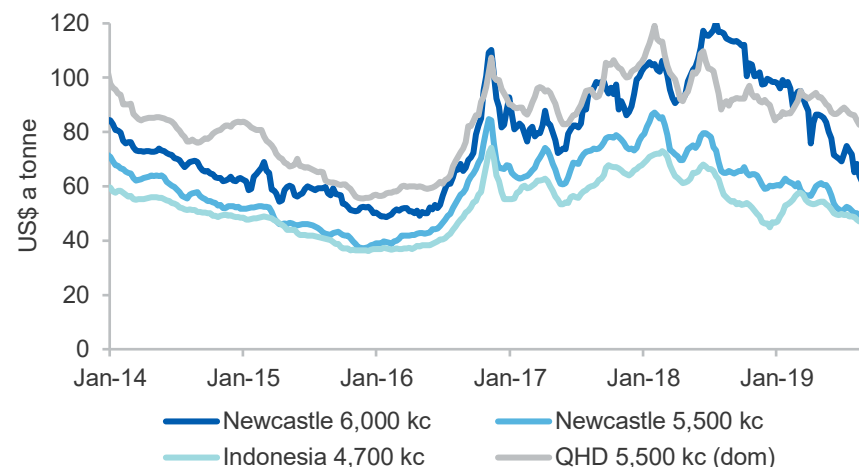
The thermal coal benchmark spot price (Newcastle 6,000 kcal/kg NAR) steadily declined in July and August, hitting a 39 month low of US\$61 a tonne in late August. The thermal coal spot price averaged an estimated US\$67 a tonne in the September quarter of 2019, 13 per cent lower than the previous quarter and 40 per cent lower year-on-year (Figure 6.1).

Weak demand has placed downward pressure on the thermal coal price. In the first half of 2019, imports from Japan, South Korea and the EU were all lower on a year-on-year basis. While Chinese imports have been resilient, the prospect of tighter import controls have weighed on buying sentiment. Persistently low spot LNG prices have also encouraged some coal-to-gas switching — predominantly in Europe — further dampening import demand for thermal coal. Concurrently, large volumes of thermal coal have entered the seaborne market since 2018, resulting in an oversupplied market.

Thermal coal price forecast to remain subdued over the outlook period

The price slide appears to have bottomed, due to the emergence of supply

Figure 6.1: Thermal coal prices



Source: IHS (2019)

cuts from the US, Colombia and Indonesia. Nevertheless, the benchmark thermal coal spot price is forecast to remain weak over the rest of 2019. With a number of Chinese ports reaching their assigned annual quotas for coal imports, an expected sharp drop in China's thermal coal imports towards the end of 2019 is expected maintain pressure on prices. Strong short-term demand from Japan is expected to provide an offsetting effect, as nuclear reactors are closed for planned maintenance until early 2020.

In the longer term, weak overall demand is expected to keep prices subdued over the outlook period. The price is forecast to average in the low to mid US\$70s a tonne range over the outlook period, down from an average of US\$105 a tonne in 2018. Towards the end of the outlook period, a gentle recovery in the price is expected, as supply growth slows.

There are several risks to the price outlook for thermal coal. Developments in China's import policies and domestic coal markets are likely to drive ongoing volatility in thermal coal imports and prices. Supply from marginal producers in the US and Indonesia could also take longer than expected to contract, requiring lower prices to bring the market back to balance.

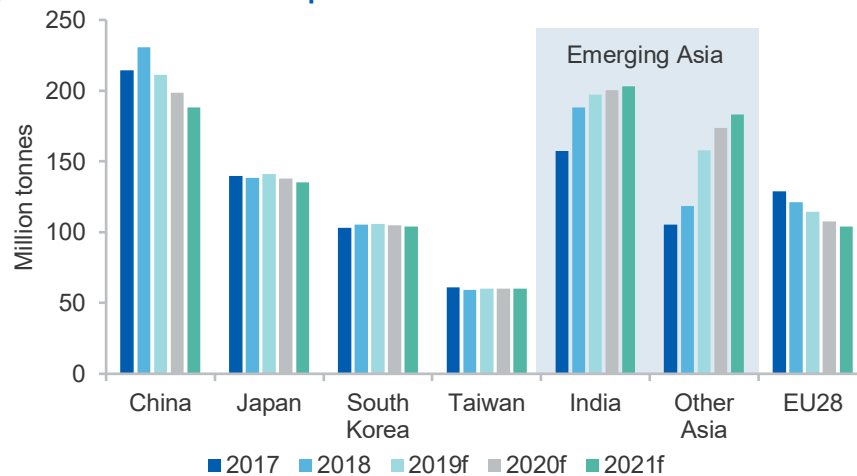
World trade

Strong demand and high prices drove growth in thermal coal trade between 2016 and 2018. This growth is forecast to reverse over the outlook period to 2021, with weaker import demand expected to drive a slight contraction in thermal coal trade.

World imports

In 2018, thermal coal imports grew by 4.6 per cent, to 1.12 billion tonnes. The trend for world imports over the outlook period is expected to be slightly downwards. Imports from most developed countries are in decline, as governments phase out coal-fired power generation. China's thermal coal imports are forecast to moderate, as domestic production continues to grow, and as the impacts of various government policies take effect. Countering these trends, emerging Asian nations are expanding their coal-fired power generation and have seen stronger-than-expected import growth. The overall net result of these divergent trends is a marginal decline in imports out to 2021 (Figure 6.2).

Figure 6.2: Thermal coal imports



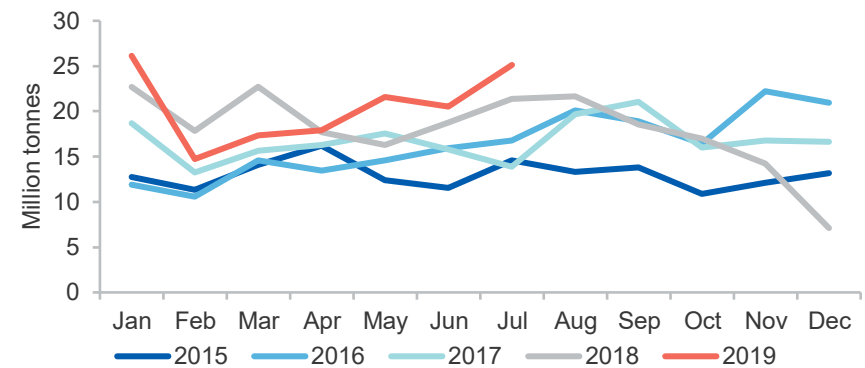
Notes: f Forecast

Source: IHS (2019); IEA (2018) Coal Market Report; Department of Industry, Innovation and Science (2019)

China's thermal coal imports forecast to moderate

Thermal coal imports into China — the world's largest importer of thermal coal — have been surprisingly resilient. In the first seven months of 2019, imports stood at an estimated 143 million tonnes, 4.4 per cent higher year-on-year. On a monthly basis, imports have been volatile, reflecting seasonal factors (with lunar new year affecting two months this year instead of the usual one) and the impact of government import policies (Figure 6.3).

Figure 6.3: China's monthly thermal coal imports



Source: Bloomberg (2019) National Bureau of Statistics of China

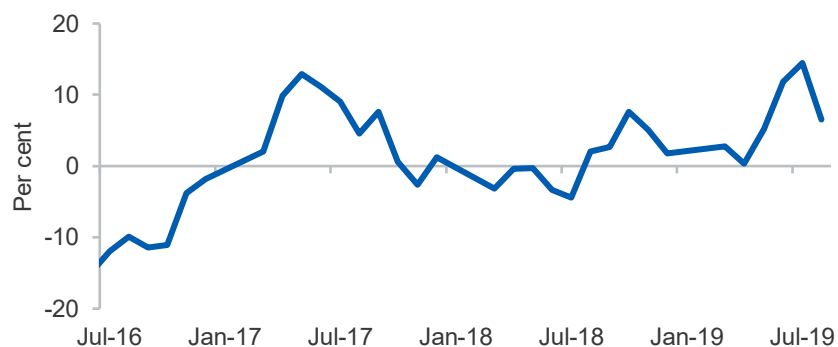
In recent months, imports have been supported by a tighter domestic coal market in China. Domestic production growth has reportedly slowed, after strong growth of 6.9 per cent year-on-year in the first seven months of 2019. Output has been impacted by heavy rainfall, heatwaves and a national safety campaign at mines (which is expected to continue until October in the lead up to the National Day celebrations). Higher domestic prices relative to import prices have supported import demand.

The recent strength in imports has occurred despite several headwinds. Overall thermal coal demand has softened, due to weak industrial power demand and coal-fired power generation. Coal-fired power generation has been displaced by a pick-up in hydro and nuclear power generation, which

rose by 11 and 22 per cent year-on-year, respectively, in the year to July. Imports have also been affected by a range of policy drivers, including enhanced quality testing, which has led to customs clearance delays. The Chinese government is expected to continue implementation of current import policies, with total coal imports expected to be around 280 million tonnes in 2019. With imports already higher on a year-on-year basis, this would result in a sharp drop in thermal coal imports over the remainder of 2019.

In the longer term, Chinese coal production is expected to grow at a faster pace, further reducing imports. After three years of supply-side reforms, the bulk of capacity closures have largely concluded, and new, more efficient, additions to capacity have and will continue to boost production (Figure 6.4). China's railway networks have also been enhanced since 2018, improving the connections between the nation's coal producing regions and its main demand centres.

Figure 6.4: China's raw coal production, year-on-year growth



Source: Bloomberg (2019) National Bureau of Statistics of China

Policy uncertainty has been — and is expected to continue to be — a key risk to the outlook. The government is expected to continue to manage overall import levels to achieve various goals, including balancing domestic consumption and production, stabilising domestic coal prices, and supporting domestic industries.

Japanese thermal coal imports forecast to gradually decline

Japan was the world's third largest importer of thermal coal in 2018, with imports declining by 0.9 per cent to 138 million tonnes over the year. In the first half of 2019, imports declined by a further 2.0 per cent year-on-year, weighed down by a warmer than usual winter at the start of the year.

Japan has continued to diversify its sources of thermal coal imports, with power generators seeking to reduce costs and purchase more cargoes from the spot market after electricity sector reforms. Australia's share of Japan's thermal coal imports has declined from 64 per cent in 2015 to 60 per cent in the first half of 2019. Both Australia and Indonesia — the two largest sources of thermal coal imports to Japan — lost market share to Canada, Russia and the United States in the first half of 2019.

Japan's thermal coal imports are expected to experience a temporary boost through to early 2020. Imports rebounded by 4.2 per cent year-on-year in July, and are likely to remain strong over the northern hemisphere summer with above average temperatures expected to drive up power demand. Coal-fired power generation has also increased, due to a temporary fall in nuclear generation, with two nuclear reactors taken offline for planned maintenance in July. More maintenance is scheduled for the end of 2019.

Despite the short-term gains, the longer-term trend for Japan's thermal coal imports is expected to trend slightly downwards, driven by ongoing nuclear restarts.

At the time of writing, seven of Japan's fleet of 42 reactors are in operation (with another two offline for planned maintenance). Further nuclear restarts appear likely over the next five years. Eighteen reactors have applications to restart with the Nuclear Regulation Authority, and at least three are likely to restart before the end of 2021. However, the outcomes of safety reviews, potential delays in implementing counterterrorism measures, and ongoing community opposition could lead to delays in reactor restarts.

Japan is expected to gradually pivot away from coal. Construction of a 1.3 gigawatt coal-fired power project — originally due to commence in August 2019 — has been delayed, and may not proceed at all. The delay brings the total number of cancelled or delayed coal-fired power projects to three in 2019 alone.

[South Korea's coal imports to decline as energy transition accelerates](#)

South Korea was the world's fourth largest importer of thermal coal in 2018. Despite the South Korean government's push to move away from coal, imports grew by 2.4 per cent to a record 106 million tonnes in 2018, due to a fall in nuclear power generation — for scheduled maintenance and unexpected downtime.

In the first seven months of 2019, South Korea's thermal coal imports declined by 10 per cent year-on-year. Imports were weighed down by a range of factors, including the return of nuclear power generation, and the temporary closure of several coal-fired power plants. The temporary closures occurred due to several factors, including planned maintenance, as a means to improve air quality, and in response to a fatal accident at a power plant. South Korea's thermal coal rebounded on a year-on-year basis in July as several coal-fired power plants reopened and the peak summer period commenced.

Overall, South Korea's thermal coal imports are forecast to decline modestly over the outlook period to 2021. Since the change in government in 2017, South Korea has implemented a range of measures and regulations to reduce the country's reliance on coal-fired power generation. These include a change in taxes (from 1 April 2019) to encourage a move away from coal and towards gas, temporarily closing older plants when the air quality is poor, the cancellation of new coal-fired power plant capacity, and plans to close several aging power plants.

[Taiwan's coal imports are forecast to remain steady](#)

Taiwan's thermal coal imports have remained broadly steady in the year to date, with this trend forecast to continue. While Taiwan's government is seeking to increase electricity generation from gas and renewables, coal imports are expected to remain resilient in the short-term, hovering at around 60 million tonnes a year over the outlook period.

[India's thermal coal consumption is set to outpace production](#)

India — the world's second largest thermal coal importer — imported 188 million tonnes of thermal coal in 2018, an increase of 20 per cent from 2017. Imports accelerated in the first half of 2019, growing by 25 per cent year-on-year.

Domestic production of thermal coal has not kept pace with rapid growth in thermal coal consumption. After strong year-on-year growth of 7.4 per cent in the March quarter, production declined by 1.0 per cent in the subsequent four months to July. Output has been hampered by the monsoon season, which has impacted on production and transport.

At the same time, strong growth in coal-fired power generation has been driven by growth in power demand and government efforts to maintain the reliability of electricity in the lead up to the May general election. Imports of thermal coal have surged to meet demand.

While the government has a long-term goal for self-sufficiency in thermal coal, imports are forecast to remain at high levels in the short-term, reaching 194 million tonnes in 2021. Domestic production is also expected to continue to grow, but at a slower pace than consumption. Coal India Limited — the state-owned coal company, and world's largest coal producer — is targeting production of 1 billion tonnes for 2025–26.

Box 6.1 discusses the key factors that will likely influence the direction and scale of India's future thermal coal imports in the longer term.

Box 6.1: Coal in India

The Office of the Chief Economist recently released the *Coal in India 2019* report. The report updates the latest statistics and developments in India's energy, electricity and mining policies and regulatory settings, and examines how these could impact on the future of thermal coal in India. This box summarises the key findings.

Coal is expected to remain a major part of India's energy mix for decades to come, although its share in the energy mix is expected to decline. In absolute terms, India's thermal coal consumption is likely to grow over the next decade to meet India's growing energy requirements from its rapidly growing population and economy. In the longer term, the outlook for coal in India depends on the prospects for renewable power and storage.

While the Indian government is aiming for self-sufficiency in thermal coal, there are considerable barriers to achieving this goal. The pace of India's domestic output growth will be the key driver of its future import needs. India's coal production — which is dominated by state-owned Coal India — is expected to grow, but at a slower pace than targets set by the Indian government.

India's coal sector continues to face substantial challenges. Long approval and land acquisition processes are the key barriers to growth, with other issues — productivity, competition, investment, transport and domestic pricing — further compounding the challenges. Although reforms have moved in a positive direction, the pace of change has been slow, due to India's complex bureaucracy and financially-strained power sector.

The outlook for India's thermal coal imports is thus finely balanced. With around 80 per cent of India's thermal coal requirements satisfied domestically, the outlook for imports depends on the trajectory and balance of India's future coal consumption and production. While imports are forecast to remain high in the short-term, there are more uncertainties in the longer term.

Source: Department of Industry, Innovation and Science (2019) *Coal in India*, <https://www.industry.gov.au/data-and-publications/coal-in-india-2019-report>

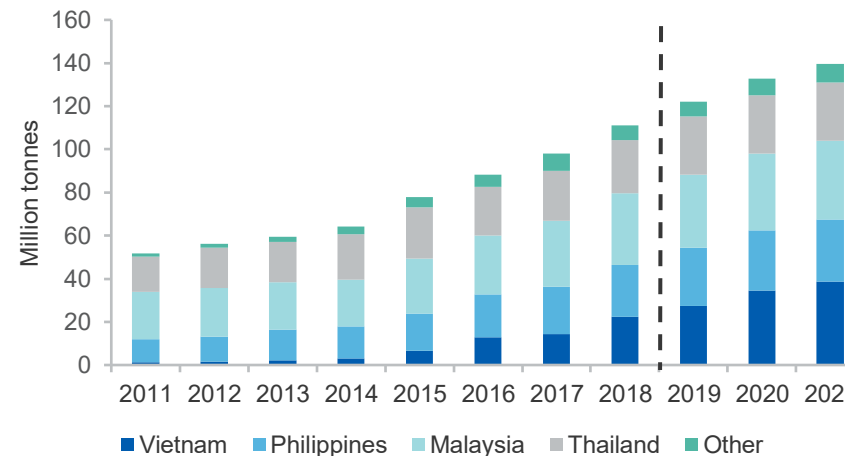
South East Asia to be a key source of import growth

South East Asia was the only region in the world in which coal's share of power generation grew in 2018. While South East Asian countries are relatively small importers individually, collectively, the region is expected to play a substantial role in thermal coal markets.

Thermal coal imports rose by 15 per cent in 2018 to 108 million tonnes, making the region the fourth largest importer in the world. South East Asia is expected to be an ongoing source of import demand growth — and one of the few — for thermal coal markets, driven by new and planned coal-fired power plants (Figure 6.5).

Of particular note, Vietnam has experienced substantial growth in its thermal coal imports, with coal playing a key role in the country's Power Development Plan. Vietnam's imports of thermal coal are set to grow by over 10 million tonnes between 2018 and 2021, as new coal-fired power plants come online.

Figure 6.5: South East Asia thermal coal imports

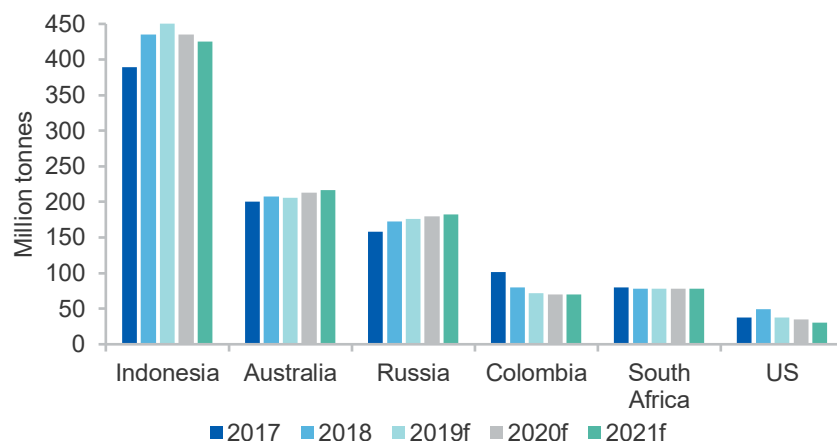


Source: IEA (2019) *Coal Information*, Department of Industry, Innovation and Science (2019)

World exports

World exports of thermal coal grew by 4.1 per cent to 1.07 billion tonnes in 2018. High prices incentivised export growth, particularly from Indonesia, the US and Russia. Lower prices and demand in 2019 are expected to drive a decline in supply from the more marginal producers. While supply has declined in the first half of 2019, this was more than offset by export growth elsewhere. Australia and Russia are expected to be the key sources of export growth, with growth slowing towards the end of the outlook period (Figure 6.6).

Figure 6.6: Thermal coal exports



Notes: f Forecast

Source: IHS (2019); ABS (2019) International Trade, Australia 5454.0; Department of Industry, Innovation and Science (2019)

Indonesia's thermal coal exports to soften, but from a high base

Thermal coal exports from Indonesia — the world's largest thermal coal exporter — grew by 12 per cent year-on-year in 2018, to a record high of 435 million tonnes. The strong pace of growth has continued this year, with exports rising by 9.3 per cent year-on-year in the first half of 2019.

The growth comes despite restrictive government policies, which include annual production quotas to protect Indonesia's depleting coal reserves and a domestic market obligation (DMO). The DMO requires Indonesian

producers to sell 25 per cent of output into the domestic market at capped prices.

The Indonesian government has repeatedly strayed from production caps, due to strong market conditions. Thermal coal production in the first half of 2019 totalled 290 million tonnes. Annualised to 580 million tonnes, this substantially exceeds the 2019 production target of 489 million tonnes set earlier this year. The government has also reportedly approved requests from coal producers that could increase production volumes to 600 million tonnes in 2019. With a quarter of output to be set aside for the domestic market, these figures suggest that exports could remain at record levels in 2019.

Beyond 2019, thermal coal exports are forecast to soften from current record levels. Some Indonesian coal producers are relatively high cost, and the decline of prices is expected to drive exports lower. In the longer term, rapidly growing domestic needs are also expected to increasingly weigh on Indonesian exports of thermal coal.

Russia's thermal coal exports forecast to grow

Russia is the world's third largest exporter of thermal coal, and exports grew by 9.1 per cent to 173 million tonnes in 2018. Russia's thermal coal exports have continued to grow in 2019, although at a slower pace — exports were 6.4 per cent higher year-on-year in the first half of the year. Rail and port developments in the east of the country, and the persistently weak ruble are expected to support ongoing growth in Russia's thermal coal exports over the outlook period.

Colombia's thermal coal exports to remain subdued

Colombia's thermal coal exports declined by 21 per cent to 80 million tonnes in 2018. The downwards trend has continued in 2019, with exports falling by 14 per cent year-on-year in the first half of the year. Colombia's traditional export markets — Europe and the Americas — are shrinking, and Colombian exports of thermal coal are not as competitive in Asian markets. As a result, exports are forecast to continue to decline over the outlook period.

South Africa's coal exports forecast to remain subdued

South Africa's thermal coal exports declined by 2.4 per cent to 78 million tonnes in 2018. Thermal coal exports were flat on a year-on-year basis in the first half of 2019, and are expected to trend slightly downwards over the outlook period. South African producers are expected to divert more output to the domestic market, with domestic buyers offering higher prices than those on the seaborne market. Eskom — South Africa's state-owned power utility, which consumes around half of the country's annual output — expects to pay 20 per cent more for coal this year. Tight domestic supply is forcing the utility to enter into short-term, more expensive supply contracts, drawing South African coal away from the seaborne market.

Low prices to drive down exports from the United States

Thermal coal exports from the US grew by 30 per cent to reach 49 million tonnes in 2018, driven by high prices. US producers have high production and freight costs, and are thus swing suppliers to the seaborne market.

Thermal coal exports from the US have subsequently declined in line with lower prices — falling by 11 per cent year-on-year in the first seven months of 2019 — and are set to fall further over the outlook period.

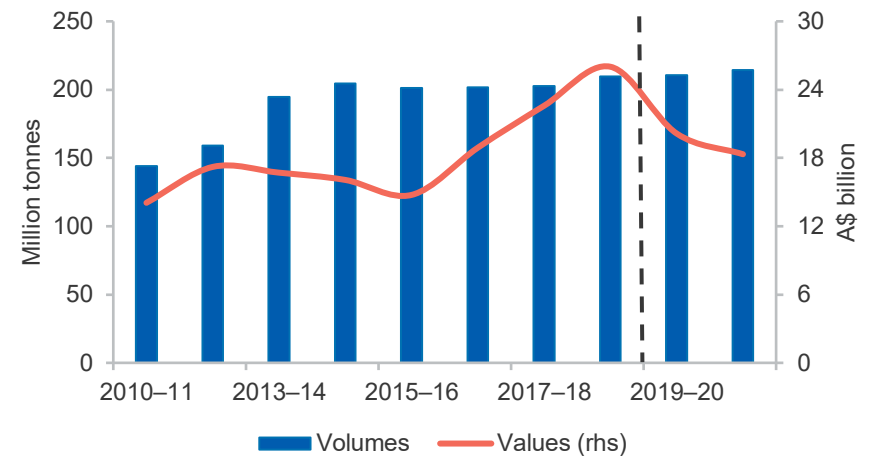
6.3 Australia

Australia's thermal coal exports reached a record high in 2018–19

Australia's thermal coal export earnings reached a record \$26 billion in 2018–19, up by 15 per cent from \$23 billion in 2017–18 (Figure 6.7). The growth was driven by high prices received by Australian thermal coal exporters, and by higher export volumes — which grew by 3.5 per cent to 210 million tonnes in 2018–19.

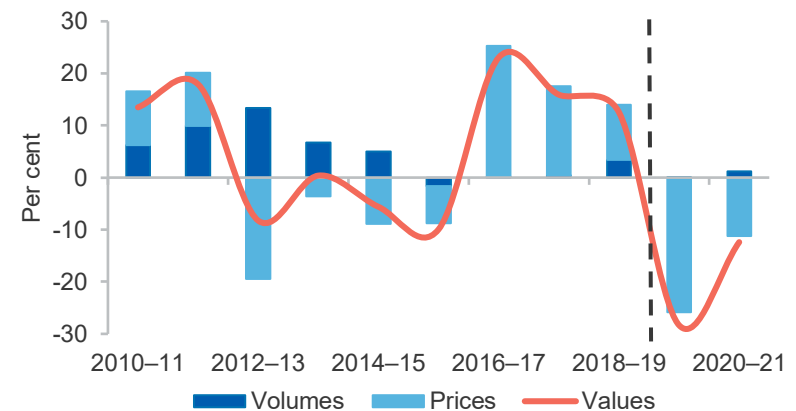
The strong growth in export volumes reflects a recovery from various weather, industrial, technical and infrastructure-related disruptions, that weighed on output in previous years. Ongoing productivity improvements and the ramp up of new capacity — notably at the Mount Pleasant mine in New South Wales — also supported export volumes growth.

Figure 6.7: Australia's thermal coal exports



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

Figure 6.8: Annual growth in Australia's thermal coal exports values, and contributions from export volumes and prices



Notes: Price changes are based on export unit values.
Source: ABS (2019) International Trade, Australia 5368.0; Department of Industry, Innovation and Science (2019)

While thermal coal prices have steadily declined in 2019, they were high in the second half of 2018, supporting the strong results for 2018–19. Australian thermal coal export unit values (EUUV, the average price received per tonne of coal) have also been strong, due to the high contract price of US\$95 a tonne settled for the 2019–20 Japanese financial year.

Although it is difficult to assess the precise volumes of Australian thermal coal sold under contracts, it is estimated that around a third of Australia’s thermal coal exports were sold on contracts in 2018–19, a decline from an estimated 40 to 50 per cent five years ago. Buyers tend to prefer purchasing on the spot market when prices are in decline. The falling share also represents a shift in the buying preferences of Japanese utilities towards purchasing more coal on shorter term contracts — or at spot — to lower costs following electricity sector reforms.

Australia’s thermal coal export earnings are forecast to decline

Export earnings are projected to decline over the outlook period — in line with weaker prices — to \$18 billion in 2020–21. The impact of lower prices is expected to be partially offset by modest growth in export volumes (Figures 6.8).

Export volumes are forecast to grow by 4 million tonnes over the next two years, reaching 214 million tonnes in 2020–21. This growth reflects a mix of productivity improvements, expansions, and the ongoing ramp up of the Mount Pleasant mine and other smaller operations. Although there is a large pipeline of potential projects in Australia, declining prices and growing challenges in developing greenfield projects could weigh on final investment decisions and export growth beyond the outlook period.

Revisions to the outlook

Australia’s forecast thermal coal export earnings have been revised down by \$1.2 billion in 2019–20 and by \$1.0 billion in 2020–21 compared to the June 2019 *Resources and Energy Quarterly*. The revision reflects a lower forecast benchmark thermal coal price, which declined at a faster-than-expected pace in the September quarter of 2019, and a slight downward revision to export volumes. BHP has indicated that production at the

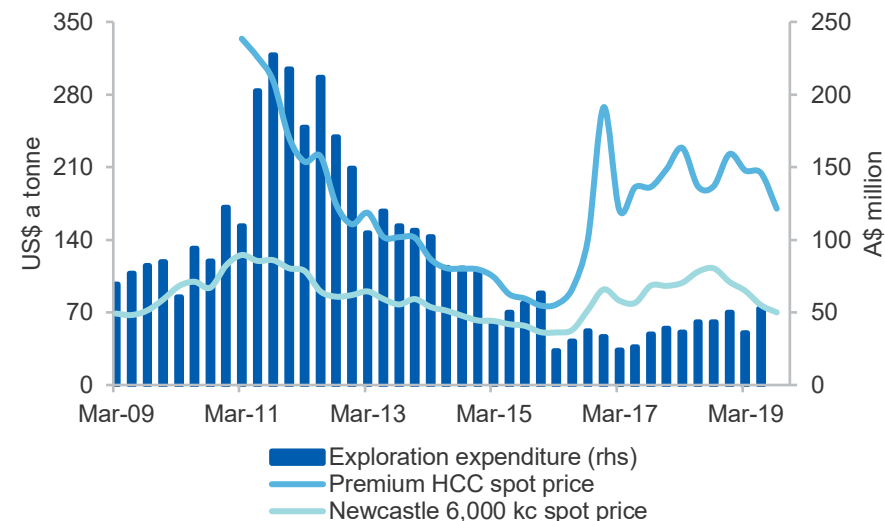
Mount Arthur mine in New South Wales could fall by up to a fifth in 2019–20, partly due to the company shifting its focus to producing higher quality products.

Coal exploration expenditure shows positive signs, but headwinds remain

Australia’s coal exploration expenditure (including both metallurgical and thermal coal) totaled \$182 million in 2018–19. This represents an increase of 18 per cent from 2017–18. However, Australian coal exploration expenditure remains substantially lower than its peak in 2011 (Figure 6.9).

There are growing challenges for coal projects in Australia and around the world, particularly for thermal coal. There is a growing reluctance to commit to greenfield projects, and an expanding list of lenders have announced they will no longer finance thermal coal projects. Pension and equity funds are also divesting from coal, community opposition is growing, and challenging regulatory conditions are also impacting on investment decisions.

Figure 6.9: Australian coal exploration expenditure and prices



Source: ABS (2019) Mineral and Petroleum Exploration, cat. no. 8412.0; IHS Markit (2019), Platts (2019)

Table 6.1: World trade in thermal coal

	Unit	2018	2019 ^f	2020 ^f	2021 ^f	Annual percentage change		
						2019 ^f	2020 ^f	2021 ^f
World trade	Mt	1,119	1,131	1,130	1,125	1.1	-0.1	-0.4
Thermal coal imports								
Asia	Mt	841	869	868	868	3.1	0.1	0.0
China	Mt	231	213	199	185	-8.4	-6.0	-6.8
India	Mt	188	197	200	203	4.7	1.6	1.5
Japan	Mt	138	141	140	138	1.9	-0.7	-1.4
South Korea	Mt	106	106	105	104	0.5	-0.9	-1.0
Taiwan	Mt	59	60	60	60	0.9	0.0	0.0
Thermal coal exports								
Indonesia	Mt	435	455	440	425	4.5	-3.3	-3.4
Australia	Mt	208	206	213	216	-0.8	3.3	1.7
Russia	Mt	173	179	181	183	3.7	1.1	1.1
Colombia	Mt	80	73	71	70	-8.2	-2.7	-1.4
South Africa	Mt	78	78	78	78	-0.2	0.0	0.0
United States	Mt	49	38	35	30	-22.6	-7.9	-14.3

Notes: ^f forecast. Trade data has been revised from the June 2019 *Resources and Energy Quarterly* due to the release of updated IEA *Coal Information* data.

Source: IEA (2018) *Coal Information 2018*, accessed through the IEA 20/20 Professional Browser; IEA (2018) *Coal Market Report 2018*; IHS (2019); Department of Industry, Innovation and Science (2019)

Table 6.2: Thermal coal outlook

World	Unit	2018	2019 ^f	2020 ^f	2021 ^f	Annual percentage change		
						2019 ^f	2020 ^f	2021 ^f
Contract prices ^b								
– nominal	US\$/t	110	95	72	74	-13.9	-23.7	2.9
– real ^c	US\$/t	113	95	71	71	-15.8	-25.4	0.7
Spot prices ^d								
– nominal	US\$/t	105	77	70	72	-27.0	-9.1	2.9
– real ^e	US\$/t	108	77	68	69	-28.6	-11.1	0.7
Australia	Unit	2017–18	2018–19	2019–20 ^f	2020–21 ^f	2019–20 ^f	2019–20 ^f	2020–21 ^f
Production	Mt	267	270	273	276	1.2	1.1	1.3
Export volume	Mt	203	210	211	214	3.5	0.4	1.7
– nominal value	A\$m	22,586	25,968	19,981	18,199	15.0	-23.1	-8.9
– real value ^h	A\$m	23,450	26,524	19,981	17,773	13.1	-24.7	-11.0

Notes: **b** Japanese Fiscal Year (JFY), starting April 1, fob Australia basis. Australia–Japan average contract price assessment for steaming coal with a calorific value of 6700 kcal/kg gross air dried; **c** In current JFY US dollars; **d** fob Newcastle 6000Kcal net as received; **e** In 2019 US dollars; **f** Forecast; **h** In 2019–20 Australian dollars.

Source: ABS (2019) International Trade in Goods and Services, Australia, Cat. No. 5368.0; IHS (2019); NSW Coal Services (2019); Queensland Department of Natural Resources and Mines (2019); Company Reports; Department of Industry, Innovation and Science (2019)