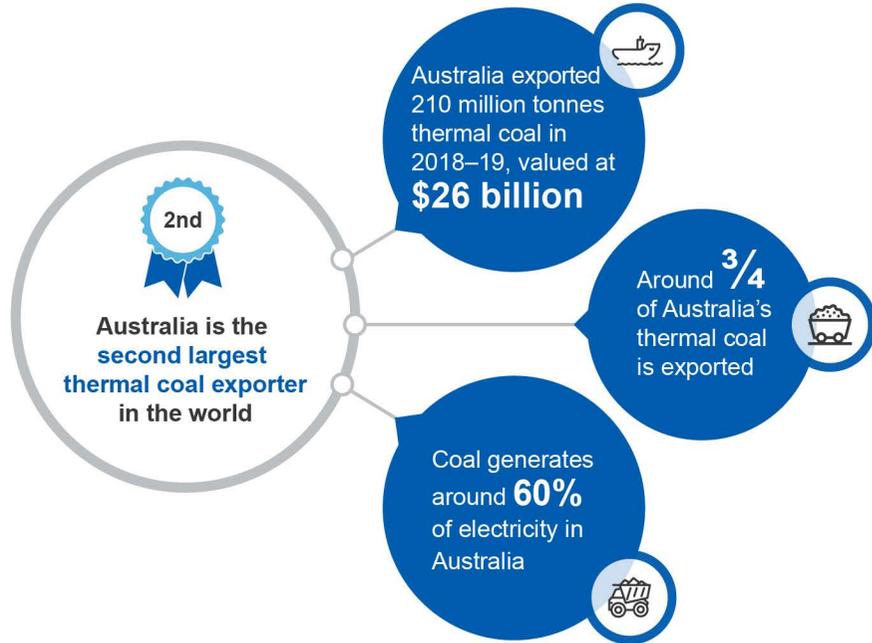
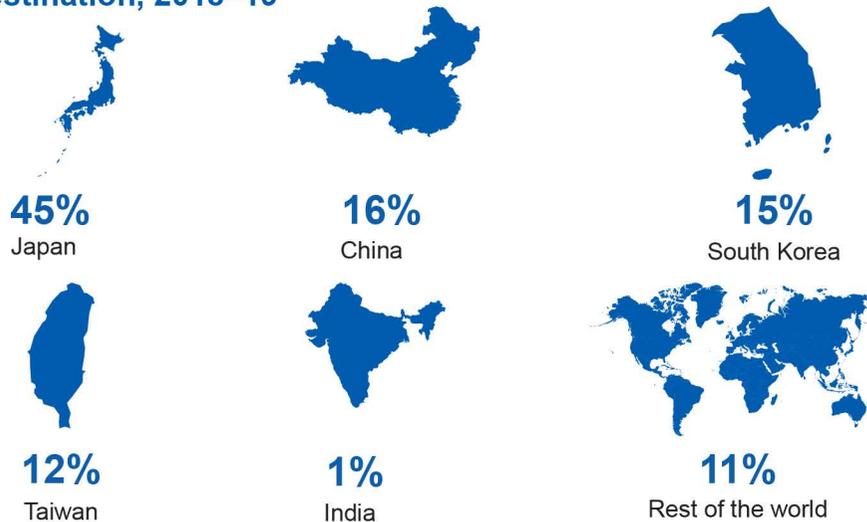


Thermal Coal

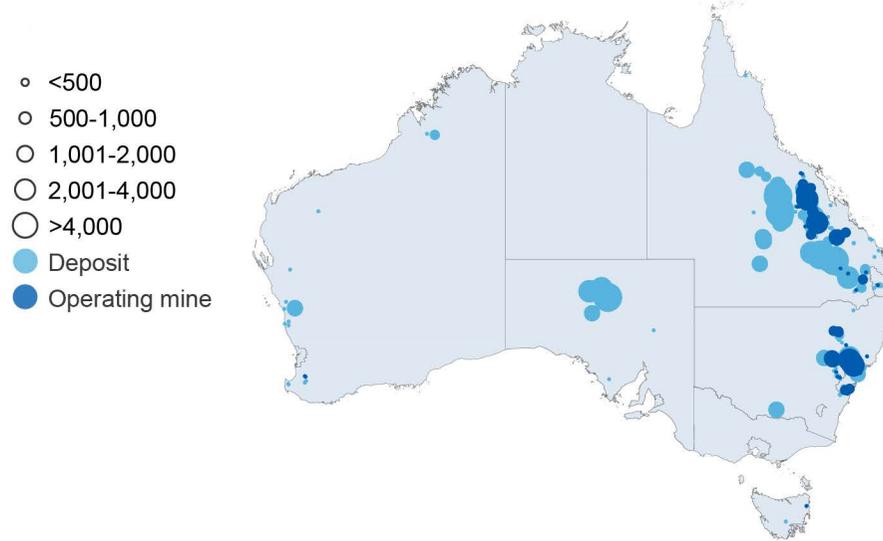
Resources and Energy Quarterly December 2019



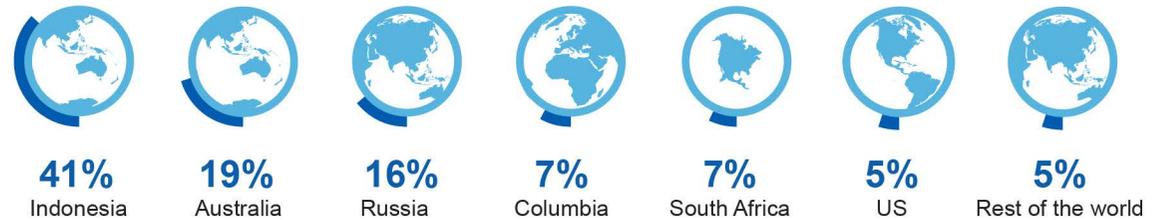
Australia's thermal coal export earnings by destination, 2018–19



Major Australian coal deposits (Mt)



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 drift from an estimated average of US\$74 a tonne in 2019 to US\$72 a tonne in 2021, as supply continues to outpace demand.
- 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 (arising from new capacity and expansions), a recovery from recent disruptions, and productivity improvements.
- Australian thermal coal exports reached a record \$26 billion in 2018–19. Earnings are forecast to fall to \$21 billion in 2019–20 and \$19 billion by 2020–21, as the impact of price falls more than offsets higher volumes.

6.2 Prices

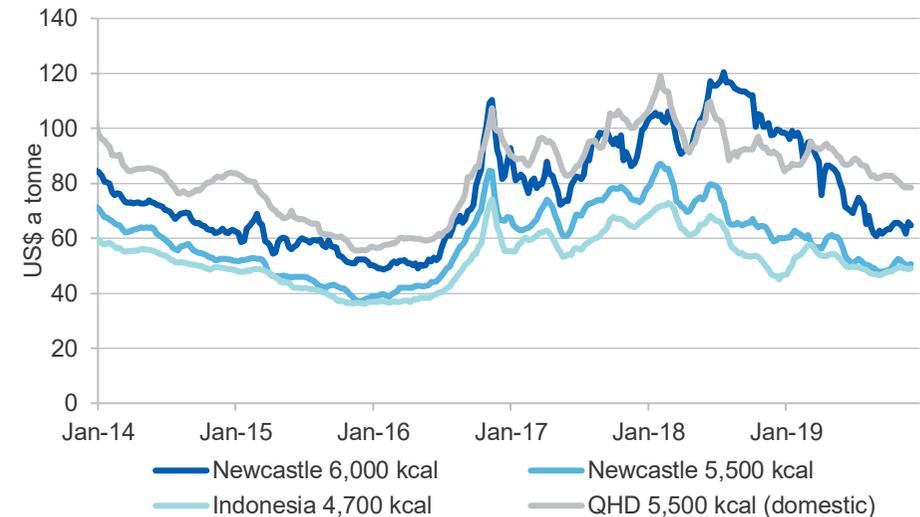
Thermal coal prices have declined on weaker fundamentals

The thermal coal benchmark spot price — Newcastle 6,000 kcal/kg Net As Received (NAR) — has steadied after a sharp (47 per cent) fall to US\$60 a tonne in the year to end August 2019. The price has traded in a relatively narrow US\$60 band since then, and looks likely to average \$64 a tonne in the December quarter of 2019 (Figure 6.1). Weak global demand placed downward pressure on the thermal coal price in the first eight months of 2019: persistently low spot LNG prices encouraged some coal-to-gas switching — predominantly in Europe — dampening demand for thermal coal imports. While Chinese imports have been resilient, the prospect of tighter import controls have weighed on buying sentiment as 2020 approaches. Supply cuts from the US, Colombia and Indonesia appear to have helped steady the price, after large amounts of thermal coal flowed in to seaborne markets in late 2018 and the first half of 2019.

Thermal coal price forecast to remain subdued over the outlook period

Strong seasonal (northern hemisphere winter) demand is likely to underpin the price over the next month or so. Strong short-term Japanese demand is expected, as nuclear reactors close for planned maintenance until early 2020. Thereafter, the market will be impacted by the pace of coal-fired power generation in Asia, in turn influenced by reduced economic activity.

Figure 6.1: Thermal coal prices



Source: IHS (2019)

Developments in China's import policies and domestic coal markets are likely to drive ongoing volatility in thermal coal imports and prices. The differential between Australian export prices and domestic prices in China has declined in recent weeks, after reaching 7-year highs in July. This suggests that the differential reached a level such that Chinese utilities became more prepared to import — and wear the risk of long customs delays rather than use domestic coal — their incremental needs.

Having fallen to insignificant levels in the second half of 2019, the differential between Newcastle 5,500 kcal/kg NAR and Indonesian 4,700 kcal/kg NAR suggests that Australian exporters of low to mid energy coal might be able to limit (further) market share losses to Indonesian miners over the next quarter.

Production cuts from high-cost (North and South) American producers will act to tighten the market. The price is forecast to move in a US\$55-85 a tonne range over the outlook period, down from an average of US\$105 a tonne in 2018.

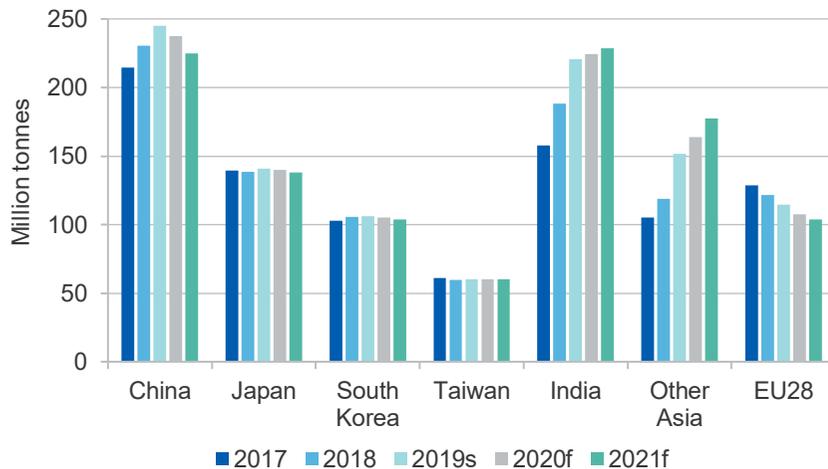
World trade

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 2019, thermal coal imports are likely to have risen modestly to 1.2 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 in 2020, as domestic output rises and hurried stockpiling ends. Countering these trends, emerging Asian nations are expanding their coal-fired power generation and have seen stronger-than-expected import growth. The net result of these divergent trends is a marginal decline in imports out to 2021 (Figure 6.2).

Figure 6.2: Thermal coal imports



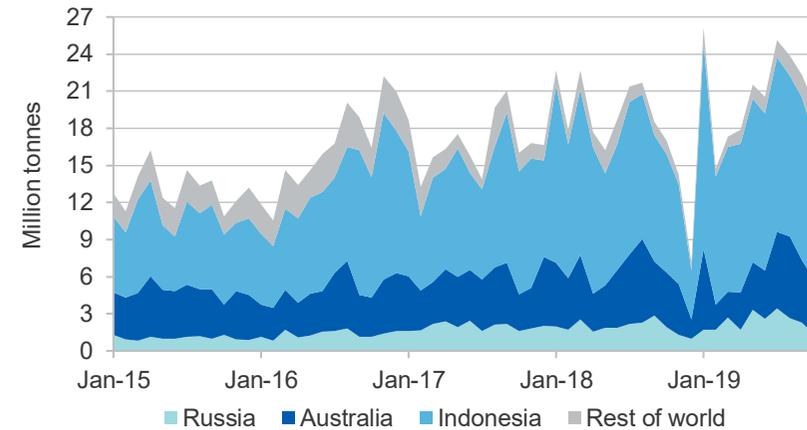
Notes: s Estimate f Forecast

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 strong in 2019 (Figure 6.3), after import caps in late 2018 affected the amount of coal entering from Indonesia and Australia. In the first ten months of 2019, imports stood at an estimated 210 million tonnes, up 7.7 per cent year-on-year.

Figure 6.3: China's monthly thermal coal imports



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

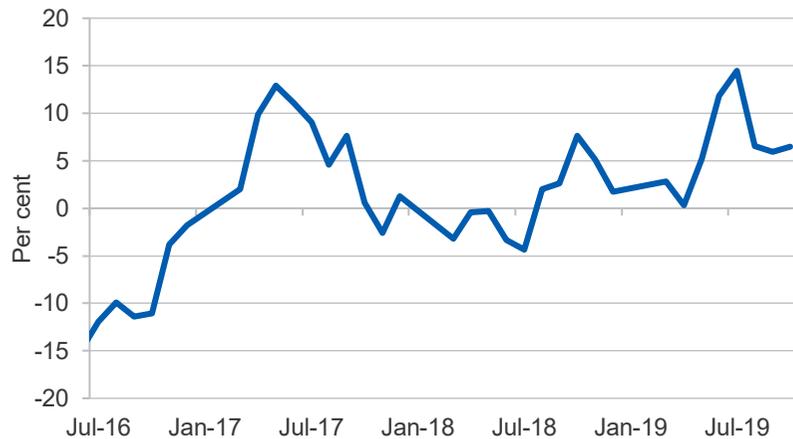
Imports have been supported by a tight domestic coal market in China, with domestic prices very high relative to imports. Domestic coal production is likely to have grown by about 5-6 per cent in 2019. Producers have been encouraged by relatively high domestic prices and strong demand from both power utilities and industry.

Thermal coal demand has been strong, as power utilities raised coal-fired generation to fill the gap left by poor hydro power generation in the year to October and a significant weakening in wind power generation in the September quarter.

The Chinese government appears to have relaxed import caps. Higher domestic prices relative to imports have supported import demand.

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 Chinese government is expected to continue to manage overall import levels to achieve various goals, including balancing domestic consumption and production, stabilising domestic coal prices, supporting domestic industries and reducing air pollution.

Japanese thermal coal imports forecast to gradually decline

Japan is the world's third largest thermal coal importer. Its imports fell by 3.5 per cent in the first ten months of 2019, weighed down by high coal inventories, gradually recovering nuclear output and maintenance shutdowns.

Thermal coal imports in 2020 should be buoyed by ongoing outages in Japan's nuclear power sector, including two plants closed for security upgrades. Updates by Japanese power utilities on the availability outlook for 2020 means Japanese nuclear output could drop to 56TWh, down from the 66.6TWh expected in 2019. Longer term, coal (and gas-fired) power generation will be adversely affected by increased competition from nuclear restarts and renewables.

South Korea's coal imports to decline as energy transition accelerates

In the first nine months of 2019, South Korea's thermal coal imports declined by 8.7 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. South Korean importers have recently reduced imports of Russian thermal coal because of dust issues. This has seen a lift in imports from Australia.

In early November, the Government announced that South Korea will bring about the early permanent closure of six of its older coal-fired power units by the end of 2021. This will remove 2.62 GW of capacity, however, the impact of this will be offset by 3.1 GW of new coal-fired capacity, due to come online before 2021.

Since 2018, to improve air pollution, coal plants in operation for over 30 years have been unable to operate from March to June. In late November, South Korea confirmed an escalation of that approach, announcing that it will suspend operations at 15 of its oldest and most polluting coal-fired power units from the start of December to the end of February. Power utilities have been preparing for it, with some bringing forward planned maintenance from the spring period. Higher utilisation rates by gas-fired plants and the more efficient coal-fired power plants are likely to fill the gap left by the closed units; estimates suggest about 3-5 million tonnes of thermal coal demand will be impacted by the measure.

Beyond 2019–20, the government will conduct annual reviews to decide the scale of coal shutdowns in December-March. Overall, South Korea's thermal coal imports are forecast to fall modestly over the outlook period.

Taiwan's coal imports are forecast to remain steady

Taiwan's thermal coal imports have been slightly weaker in the year to date compared with the corresponding period in 2018, and this trend is forecast to continue. While Taiwan's government is seeking to raise power generation from gas and renewables, annual coal imports are expected to remain resilient in the outlook period, hovering at about 60 million tonnes.

India's coal production has declined more sharply than demand

Growth in power demand in India in 2019 has been impacted by weaker than expected activity, as tighter lending sees the auto sector struggle. India has also been impacted by the fallout from US-China trade tensions.

Annual growth in domestic production of thermal coal recorded sharp declines in the three months to October 2019 (Figure 6.5). Coal India's production recovered to 50 million tonnes in November, still down 4 per cent on October 2018. October's production was 39.35 million tonnes, against a target of 57.17 million tonnes. In percentage terms, this was the highest monthly shortfall in a number of years. Output in September-October was hampered by local community agitations and unrest, and by the monsoon season, which ran for longer than normal and had a heavy impact on production and transport. The prolonged monsoon season has also raised the likelihood that hydro output will be better than expected over the next few months, lowering coal-fired power generation needs.

Domestic coal production is expected to return to strong positive growth in 2020, but is expected to continue to lag consumption growth for some time: import requirements will therefore remain high for the foreseeable future, which is inconsistent with the Indian Government's desire to move to total self-sufficiency in thermal coal.

In November, Coal India announced that it had decided to advance — by two years to 2023–24 — its target year for achieving an annual production capacity of one billion tonnes. By March 2024, Coal India plans to switch over to mechanized coal handling and loading systems at 35 projects with a yearly production capacity of 4 million tonnes and above. This is aimed to reduce transport costs and production process losses.

Figure 6.5: Coal India production, monthly



Source: IHS Markit (2019)

South East Asia to be a key source of import growth

While South East Asian countries are relatively small importers individually, collectively, the region is expected to play a growing role in thermal coal markets over the 2020s. The region has a significant number of new and planned coal-fired power plants.

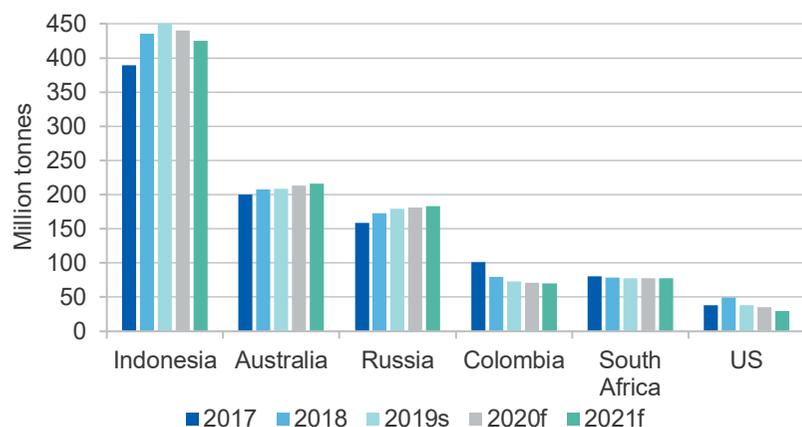
Coal plays a key role in Vietnam's Power Development Plan. With a significant number of newly constructed coal-fired power stations likely to boost coal demand further beyond rising domestic supply, import requirements are likely to rise. Vietnam's thermal coal imports were up 112 per cent on the year in January-October 2019, to 37.47 million tonnes from 17.71 million tonnes.

Australia has been the biggest benefactor of this surge in Vietnamese demand, with volumes in the 10 months more than trebling on the year, to 13.58 million tonnes from 4.46 million tonnes.

World exports

World exports of thermal coal are likely to be little changed in 2019, after growing by over 4 per cent in 2018. Lower exports from the Americas and South Africa were offset by increased supply from Indonesia and Russia. Lower prices are expected to drive a decline in supply from the more marginal producers in 2020. 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 — continued to grow noticeably in 2019. Exports rose by almost 8 per cent year-on-year in the first ten months of 2019, contributing to weakness in prices in seaborne thermal coal markets.

The rise in exports comes as production surges. Indonesia's Ministry of Energy and Mineral Resources (ESDM) has revised its coal output target to around 530 million tonnes for this year, up from an initial target of

489 million tonnes. The increase comes after the ESDM granted approvals to several coal mining companies to raise their output this year.

Indonesia's new online Coal Sales Verification Module (MVP) went live on 1 November — despite late calls for a delay from Indonesian miners. The MVP was created by the central government to raise control over the coal sector by monitoring production/sales activity. A key feature of the MVP is that it will issue a verification report electronically for port authorities and surveyors, which is designed to assist with compliance. The government warned that miners who do not populate the system with the required production data on time will likely face stumbling blocks in processing paperwork required for their exports to sail.

Beyond 2019, thermal coal exports are forecast to fall from current record levels. The fall in prices in 2019 is expected to lower exports over the early part of the outlook period. In the longer term, fast growing domestic needs are also expected to weigh on Indonesian exports.

Russia's thermal coal exports forecast to grow

After strong growth in 2018, Russian thermal coal exports have risen at a more modest pace in 2019 — exports were 4.7 per cent higher year-on-year in the first three quarters of the year.

Rail and port developments in Russia's east, 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

In the first ten months of the year, Colombia's thermal coal exports fell by 7.5 per cent year-on-year. A sharp fall in exports to Europe drove the fall, more than offsetting a rise in exports to China, South Korea and India.

Going forward, Colombian exports of thermal coal to China and India are unlikely to climb sufficiently to offset losses in Europe and North America — Colombia's traditional export markets — where thermal coal consumption is shrinking. As a result, exports are forecast to continue to fall over the outlook period.

South Africa's coal exports forecast to remain subdued

Despite production disruptions due to community and union protests, thermal coal production has grown strongly in South Africa in 2019. A relatively tight domestic market has allowed miners to arrest a fall in profit margins by diverting sales away from weaker seaborne export markets (particularly in East Asia). Between a quarter and a third of the country's output is exported. More than three quarters of South Africa's electricity is currently supplied from domestically produced thermal coal.

The government's Integrated Resource Plan (IRP) 2019 is an energy generation master plan for the nation. The IRP sets out how the nation's electricity will be supplied from now until 2030, and includes plans to decommission some of South Africa's coal-fired power plants. It forecasts 60 per cent of the nation's electricity will still be generated from coal by 2030. With a growing population and rising electricity use, that suggests a relatively strong level of domestic demand for South Africa's thermal coal output. However, miners will remain under government pressure to provide coal cheaply to Eskom — the country's state-owned electricity utility.

South Africa's thermal coal exports have declined by around 5 per cent in 2019; modestly higher exports to most of the main South African export markets — such as India and Pakistan — have been more than offset by sharp declines in exports to a number of other destinations, such as other African nations, the Netherlands, Taiwan, Sri Lanka and South Korea.

Low prices to drive down United States' exports

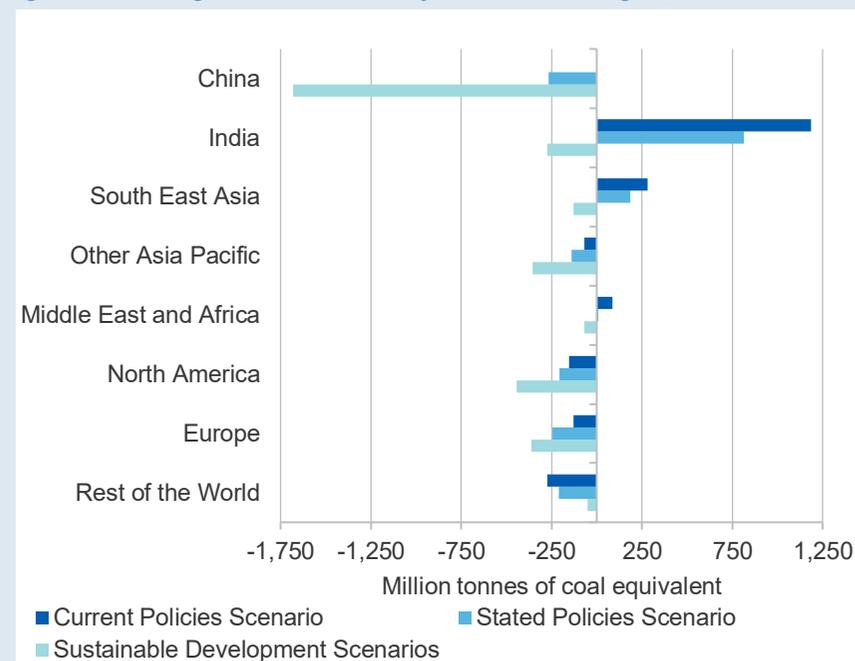
Thermal coal exports from the US have fallen sharply in 2019, in line with lower prices — falling by 29 per cent year-on-year in the first ten months of 2019. Lower exports to Europe, India and South Korea have more than offset the impact of a modest rise in exports to Japan and Latin America.

The US coal sector has been impacted by a number of bankruptcies, as lower prices eliminate profit margins and as coal-to-gas switching accelerates in the US power sector — coal's share as a source of power generation fell to 23.5 per cent in August from 28.3 per cent a year before. US exports look set to fall further in the outlook period as coal mines shut.

Box 6.1: The long-term outlook for thermal and metallurgical coal

Global coal demand increased for the second straight year in 2018, driven by growing electricity demand in developing Asian countries. The trajectory of future global coal demand is starkly different in each of the three different policy scenarios contained in the IEA's recently released World Energy Outlook 2019, as well as across different nations (Figure 6.7). The diverging pathways reflect the crucial role of environmental policies in determining the future for coal.

Figure 6.7: Change in coal demand by scenario and region, 2018–2040



Note: The Current Policies Scenario considers the impact of policies and measures that are firmly enshrined in legislation as of mid-2019. The Stated Policies Scenario (previously known as the New Policies Scenario) incorporates the likely effects of current and announced policies, including official targets. The Sustainable Development Scenario entails a pathway consistent with the Sustainable Development Goals and Paris Agreement.

The change in China's coal demand between 2018 and 2040 in the Current Policies Scenario is -4 mtce and cannot be seen in the chart due to the scale of the axis.

Source: IEA (2019) World Energy Outlook 2019

In the central Stated Policies Scenario, coal demand declines marginally, from 5,458 million tonnes of coal equivalent (mtce) in 2018 to 5,400 mtce in 2040. The shift in demand towards Asia continues, with rising demand in developing Asia (notably in India and South East Asia) offsetting a structural decline in demand from China, the US and the EU. Coal remains among the lowest cost sources of power generation in developing Asia, playing a large role due to its relatively young coal-fired power fleet.

Despite coal demand remaining essentially flat over the next two decades in the Stated Policies Scenario, coal's share of the global energy mix declines from 27 per cent in 2018 to 21 per cent in 2040, falling behind natural gas. Coal use in the power sector declines due to improvements in the efficiency of coal-fired power plants and competitive pressure from renewables and gas. Industrial coal use (in the iron and steel, cement and chemical sectors) expands due to the limited availability of substitutes.

Australia is one of the few major producers projected to increase coal production in 2040 in the Stated Policies Scenario. However, the outlook is sensitive to the extent of import demand in Asia and the financing environment for greenfield coal projects. Coal projects in Australia and around the world are facing a number of headwinds, including financing restrictions from a growing number of lenders. The outlook for coal production is mixed elsewhere. Production and exports are also projected to rise from Russia, competing with Australia in the Asian market. Indonesia's coal exports fall substantially, and the share of its coal output used domestically more than doubles.

In the Sustainable Development Scenario, global coal demand falls sharply at an annual rate of 4.2 per cent, to 2,101 Mtce in 2040, accounting for 11 per cent of the global energy mix. More stringent environment policies to reduce emissions drives global coal use in this scenario 60 per cent lower than in the Stated Policies Scenario. The large scale deployment of carbon capture, utilisation and storage (CCUS) is crucial in this scenario. However, the IEA notes today's policies fall short of what is needed to stimulate investment in CCUS.

Notes: 'Coal' in the IEA's World Energy Outlook refers to both metallurgical and thermal coal.

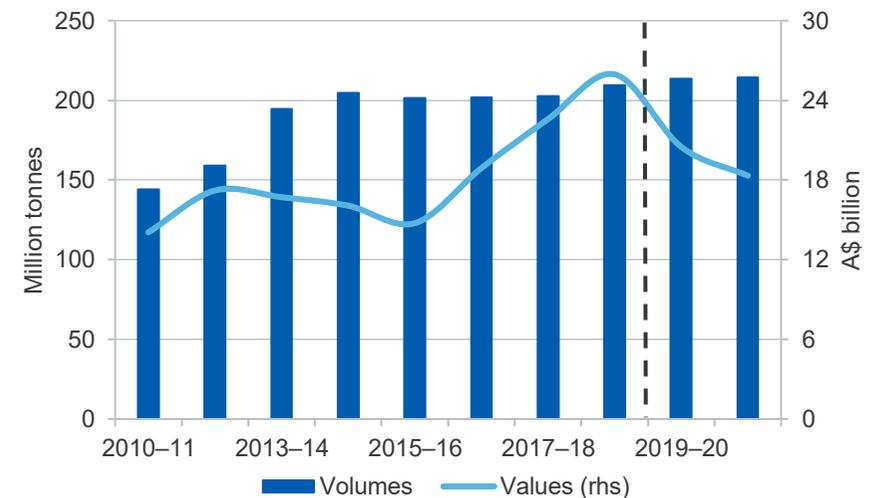
6.3 Australia

Australia's thermal coal export earnings set to fall from 2018–19 record

Over the outlook period, Australia's thermal coal export earnings are set to fall back noticeably from the 2018–19 record of \$26 billion (Figure 6.8). The impact of lower prices will far outweigh minor gains in export volumes (Figure 6.9). Export earnings are projected to decline to \$20.8 billion in 2019–20, and then fall further to \$18.8 billion in 2020–21.

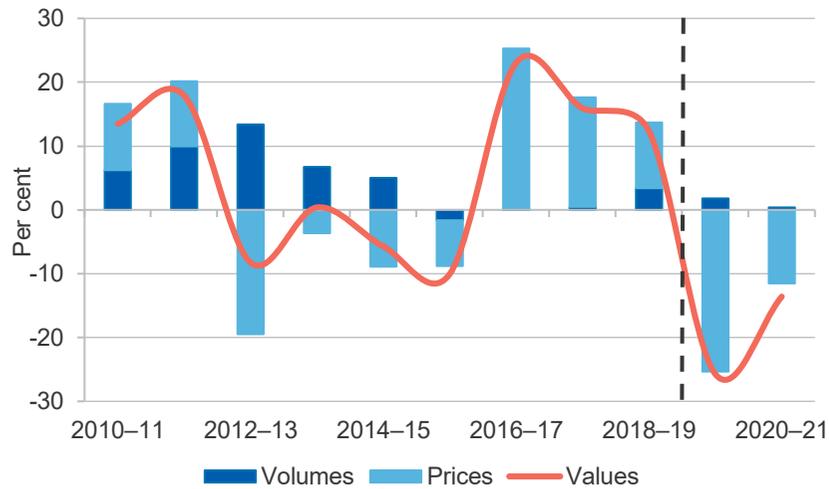
Export volumes are forecast to grow by 4 million tonnes over the outlook period, reaching 214 million tonnes in 2020–21. This growth reflects a mix of productivity improvements, expansions, and the ongoing ramp up of the Mount Pleasant mine and other smaller operations. Although there is a large pipeline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

Figure 6.8: Australia's thermal coal exports



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

Figure 6.9: 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)

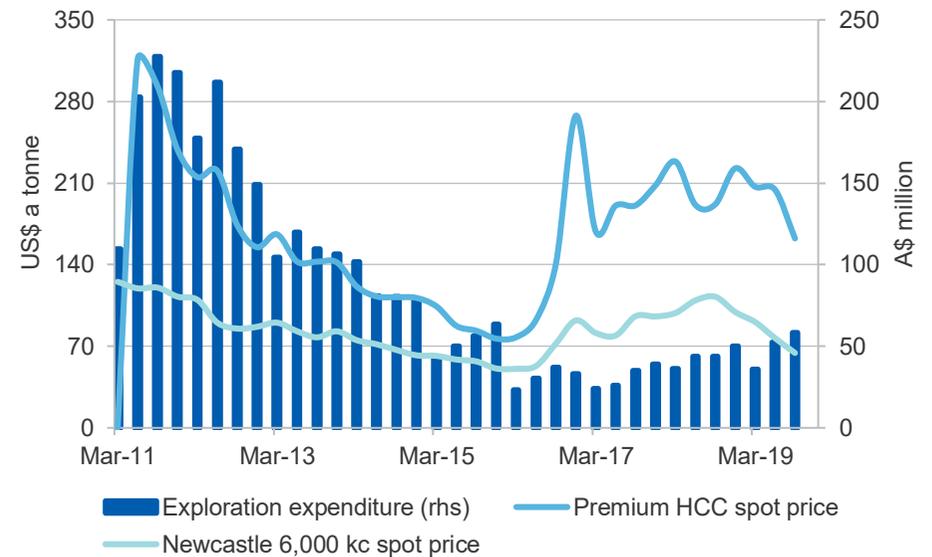
Revisions to the outlook

Australia's forecast thermal coal export earnings have been revised up by \$0.8 billion in 2019–20 and by \$0.6 billion in 2020–21 compared to the September 2019 *Resources and Energy Quarterly*. The revision reflects a downwards revision to the exchange rate, and to a lesser extent, an upward revision to export volumes.

Coal exploration expenditure rising, but price weakness

Australia's coal exploration expenditure (including both metallurgical and thermal coal) rose to \$58.2 million in the September quarter. However, Australian coal exploration expenditure remains substantially lower than its peak in 2011 (Figure 6.10).

Figure 6.10: 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 ^s	2020 ^f	2021 ^f	Annual percentage change		
						2019 ^s	2020 ^f	2021 ^f
World trade	Mt	1,119	1,182	1,185	1,184	5.7	0.3	-0.1
Thermal coal imports								
Asia	Mt	841	924	931	933	9.9	0.7	0.2
China	Mt	231	245	238	225	6.2	-3.0	-5.4
India	Mt	188	221	225	228	17.1	1.8	1.7
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	209	213	216	0.6	2.0	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: **s** Estimate, **f** Forecast.

Source: IEA (2019) Coal Information 2019, 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 ^s	2020 ^f	2021 ^f	Annual percentage change		
						2019 ^s	2020 ^f	2021 ^f
Contract prices ^b								
– nominal	US\$/t	110	95	72	74	-13.9	-23.7	2.9
– real ^c	US\$/t	112	95	71	71	-15.4	-25.2	0.8
Spot prices ^d								
– nominal	US\$/t	105	74	70	72	-29.2	-5.7	2.9
– real ^e	US\$/t	107	74	69	69	-30.4	-7.7	0.7
Australia	Unit	2017–18	2018–19	2019–20 ^f	2020–21 ^f	2018–19	2019–20 ^f	2020–21 ^f
Production	Mt	267	270	270	276	1.2	0.1	2.3
Export volume	Mt	203	210	212	214	3.5	1.2	0.9
– nominal value	A\$m	22,586	25,962	20,787	18,762	14.9	-19.9	-9.7
– real value ^h	A\$m	23,355	26,412	20,787	18,413	13.1	-21.3	-11.4

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; **s** Estimate.

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)