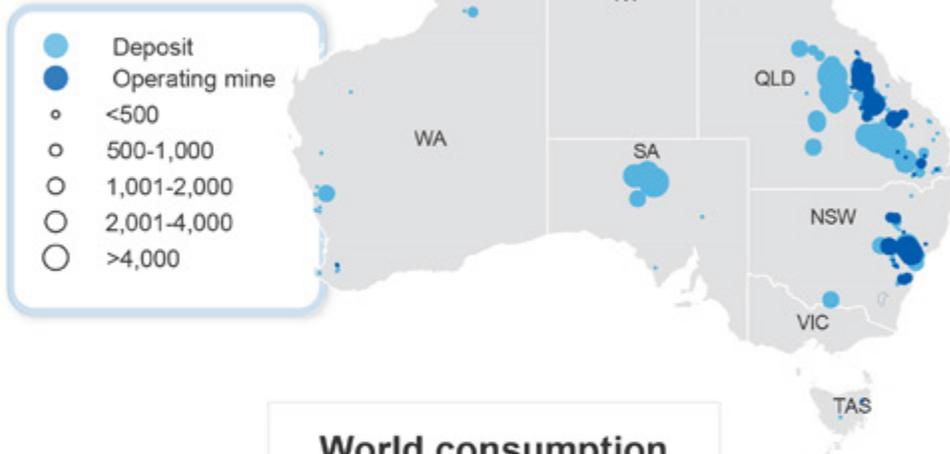
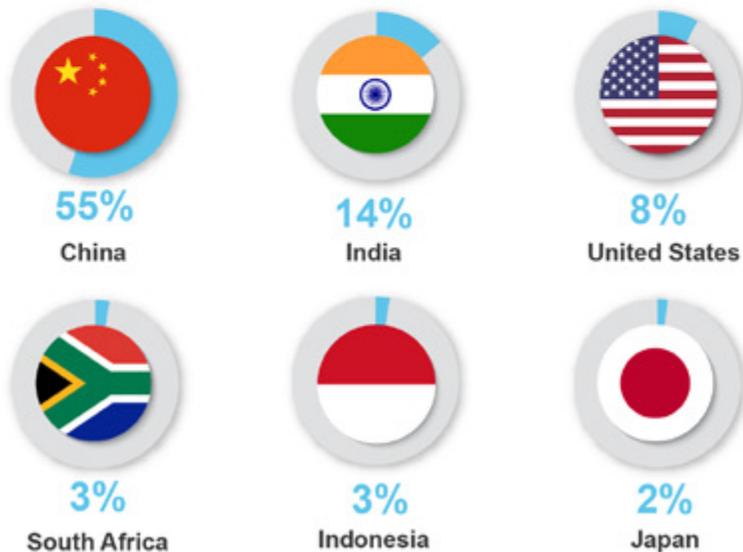


Thermal coal

Major Australian coal deposits (Mt)



World consumption



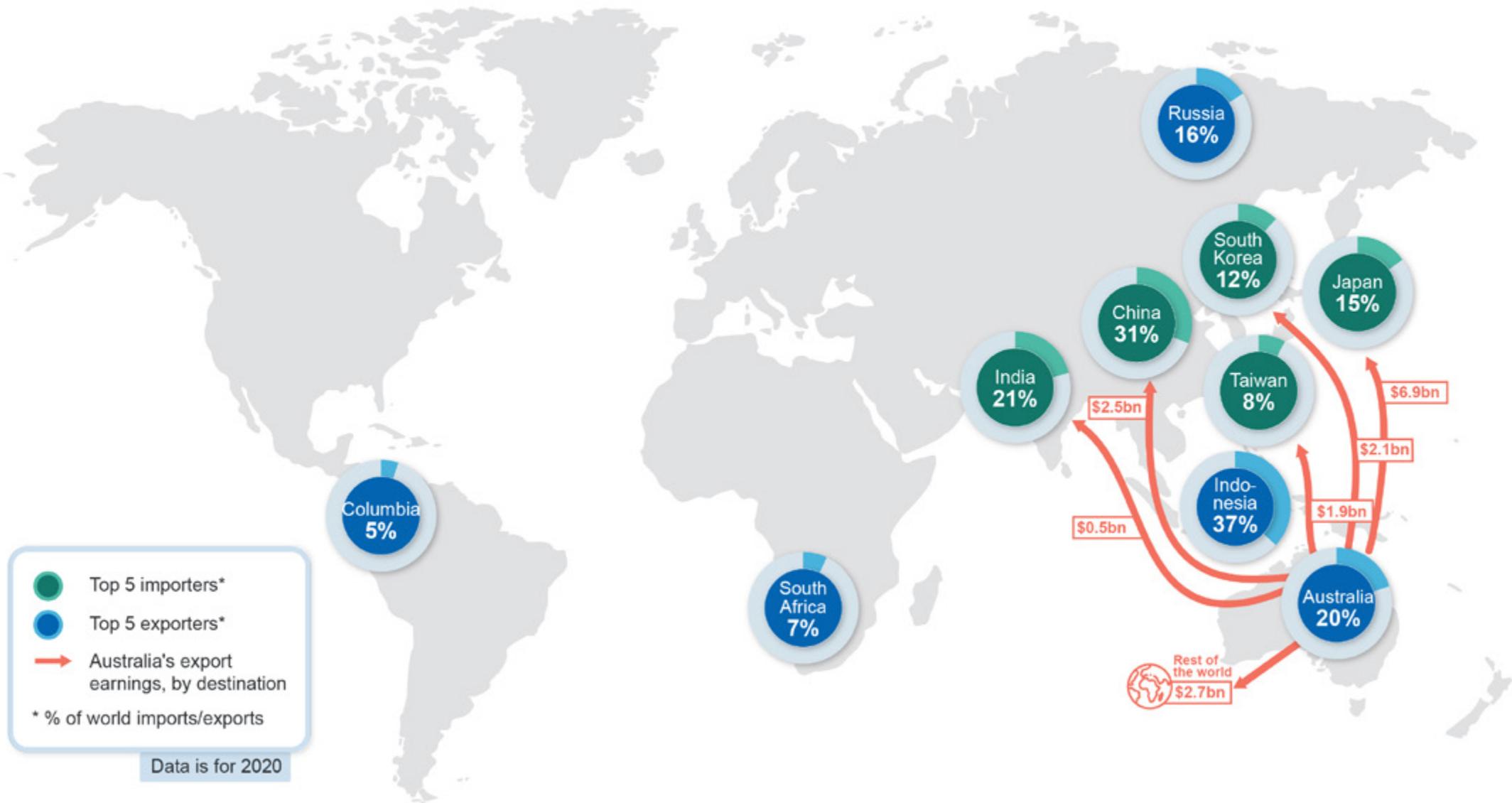
Thermal coal



- Thermal coal is primarily used in **electricity generation**
- Coal accounted for **38%** of power generation globally in 2018
- Mines are open cut or underground depending on the **geology of the deposit**
- Coal formation began **290-360 million years ago**

Australia's thermal coal





6.1 Summary

- Thermal coal spot prices have generally recovered over the past quarter, as Asian economies continue to emerge from the 2020 downturn. The Newcastle benchmark price is forecast to average US\$90 a tonne in 2021, easing slowly to US\$68 a tonne by 2023.
- The COVID-19 pandemic and informal import restrictions imposed by China have led to a decline in Australian thermal coal exports, from 213 million tonnes in 2019-20 to a forecast 194 million tonnes in 2020-21. Exports are expected to recover to 212 million tonnes by 2022-23, as Asian economies return to normal conditions.
- Australia's thermal coal exports are forecast at \$17 billion in 2021-22, a relatively strong result, but lower than 2019-20 earnings of \$20 billion.

6.2 World trade

Thermal coal markets have tightened up in recent months, with supply cuts running up against a gradual recovery in demand. Thermal coal trade fell sharply in 2019 and 2020, but is expected to partly recover as the world emerges from recession in 2021. Demand from domestic electricity use and industrial production is rising across Asia, with growth broadening out from China. This has led to a recovery in prices, with relatively tight supply conditions expected to persist through the rest of 2021.

However, conditions in coal markets remain uncertain. The new wave of COVID-19 in India creates added risks for thermal coal demand and prices. Risks have also grown in the other direction, with a possible hot summer in the northern hemisphere potentially adding to electricity demand across Asia. The current informal restrictions imposed on Australian exports to China also represent a significant variable, though no change to this policy is assumed over the outlook period.

Demand over 2021 is not expected to reach its level of 2019, but demand growth is likely to persist over subsequent years, peaking towards the end of the outlook period, then flattening from 2023. Prices are also expected

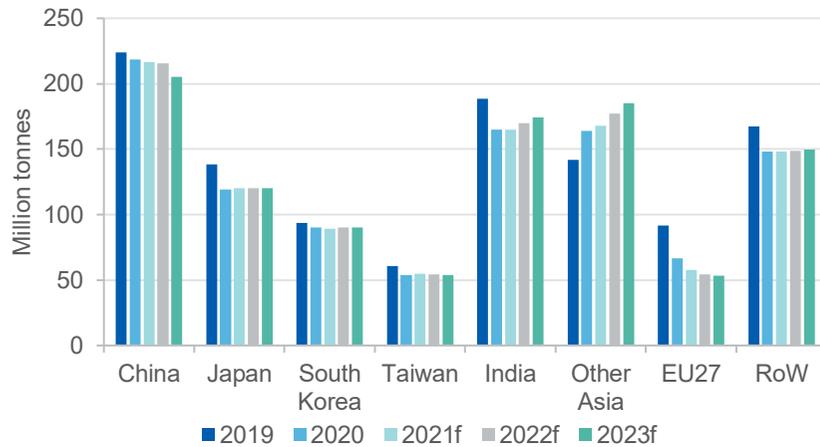
to trend down over time, affected by the long-term trend of declining demand against a backdrop of plentiful spare supply, which is expected to return to the market over the coming years.

There is significant variance among regions. The Asia Pacific region contains the most significant coal exporters and importers, and its share of seaborne trade is set to grow further as Europe withdraws from coal. The Asia Pacific region is also seeing significant investment in coal transport infrastructure. Russian exports are expected to pick up over coming years as the Russian government upgrades its capacity for the transport and shipment of coal. Russian coal exports are of comparable quality to Australian exports, and expanded exports from Russia are expected to compete directly with the higher grade Australian coal in Asian markets.

Coal plant construction is also concentrated in the Asia Pacific region, with China holding an increasingly large share of ongoing construction proposals. Coal use is expected to rise in South and South East Asia (albeit to a lower peak than previously forecast), driven by rises in electricity use in India, Bangladesh and a number of ASEAN nations. The recent rebound in gas prices is also likely to support short-term coal demand across Asia. Significant variance is also evident across coal grades, with 6,000kcal coal prices lifting rapidly relative to prices for lower grade coal. China's informal import restrictions on Australian coal are also driving growing price differentials between Australian coal and coal of equivalent quality produced elsewhere.

Global coal demand is expected to rise slowly over the outlook period, flattening just beyond it. Coal use in most OECD countries is expected to resume structural decline in 2022, but demand will be supported in the short-term through growing coal use in parts of Asia (Figure 6.1). However, trajectories for coal use in Asia are expected to vary widely, with imports to India, Vietnam, Japan and South Korea all expected to remain below their 2019 levels. This reflects a combination of stronger domestic supply (notably in China), competition from renewables, and government policies that have curbed importations to the power sector.

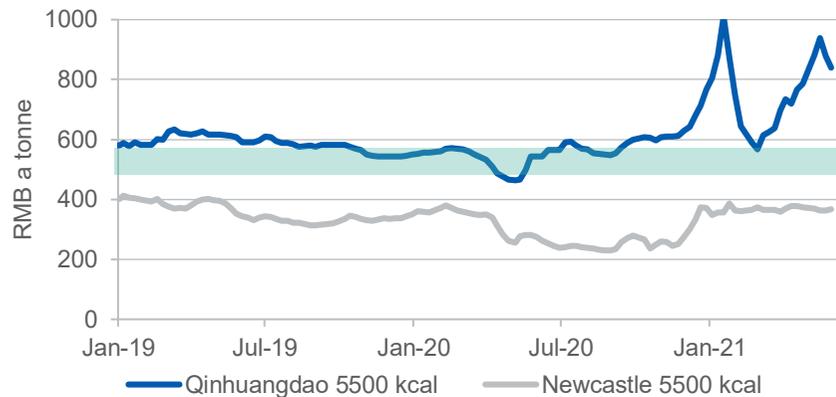
Figure 6.1: Thermal coal imports



Note: f Forecast; . ROW = Rest of World.

Source: IHS (2021); IEA (2021) Coal Market Report; Department of Industry, Science, Energy and Resources (2021)

Figure 6.2: China's domestic vs Australian thermal coal export price



Notes: The 'green zone' is a price band from 500-570RMB. Qinhuangdao (QHD) prices are a key benchmark for coal prices in northeastern China. Note that the Newcastle series excludes freight costs which typically add around US\$10/t or 66 RMB.

Source: Bloomberg (2021)

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6.3 World imports

China's import price premium remains high as import restrictions persist

China's thermal coal imports fell by around one-fifth over the year to April 2021, and are expected to come under further pressure over the next few years despite some recent tightness in domestic supply. Domestic production of coal in China topped 970 million tonnes in the March quarter 2021, up by 16% through the year. In April, China's National Development and Reform Commission ordered coal producers to increase their output in order to contain surging prices (Figure 6.2) and allow for inventory build ahead of the summer period, when electricity use is expected to increase.

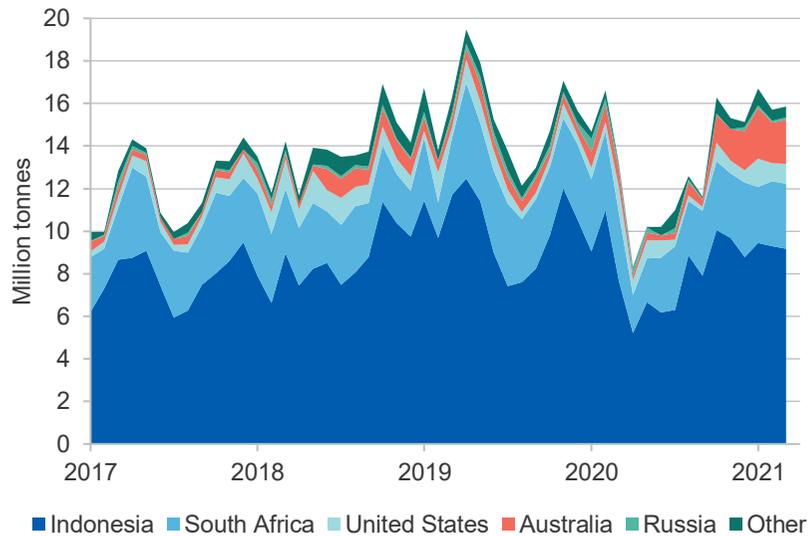
As Chinese domestic coal output rises, imports will account for a gradually smaller share of Chinese coal supply. Australian coal exports to China were effectively nil over the March quarter 2021, which added considerably to China's domestic coal prices. However, imports from other nations are partially filling the gap, with Indonesia becoming China's largest coal supplier. Chinese import volumes from Russia also rose by 23% over the year to the March quarter. However, with the overall Chinese import market likely to decline over time, the opportunity to these exporters may eventually lose steam, with Australia's exporters potentially gaining an advantage through having re-organised their supply chains sooner.

India's coal imports have moderated

Higher prices have led to Indian buyers deferring some of their planned restocking, leading to a fall in imports in the first quarter of 2021. This follows a brief rise at the end of 2020, when power station imports surged to meet expected demand. However, this rise has subsequently reversed, with demand falling back and domestic supply providing a larger share of overall inputs in the March quarter.

Australian supply has increased its share of the Indian market as supply chains redirected and costs for the lower calorific grades have come down relative to other countries (Figure 6.3).

Figure 6.3: India's thermal coal imports, monthly



Source: IHS (2021)

India's challenges with the COVID-19 pandemic have affected its coal use. Imports are expected to be largely unchanged at around 165 million tonnes in 2021, following the sharp fall of 2020.

Further out, domestic supply is expected to continue to rise slowly. A second round of commercial block auctions commenced in February, with potential buyers requested to submit bids ahead of auctions in June and July 2021.

Indian coal imports are expected to grow modestly after 2021, rising from 165 million tonnes (in 2021) to 174 million tonnes by 2023. Imports are not expected to reach their peak 2019 level of 189 million tonnes. Higher domestic coal production, ongoing policy focus on self-sufficiency, high inventories, and the impacts of COVID-19 are all expected to weigh on imports over the coming years.

Japan's imports remain under pressure from a range of sources

Japanese thermal coal imports have edged up in recent months, driven by the need to rebuild inventories after a colder than normal winter, which has led to increased electricity use.

Japan faced an earthquake in February, which resulted in almost 7GW of coal generation capacity being taken temporarily offline. This coincided with extensive maintenance work across Japan's coal fleet. Nearly all of Japan's coal-fired power plants have been taken offline at some stage over the past 18 months, with around one-third of Japan's coal capacity remaining offline through April and May. Some capacity — notably that affected by the earthquake — will remain offline until June. This has led to a sustained period of low coal imports, with the gap being filled by rising gas imports, and the recent reconnection of the Takahama 3 nuclear power plant.

Policy factors may also have an impact on Japanese coal imports over the outlook period and beyond. On 22 April, the Japanese Government announced a significant tightening of Japan's emissions reductions target. This target was increased from a 26% cut (between 2013 and 2030) to a 46% cut over the same timeframe. However, Japan retains its previously announced plans to add more than 6GW of coal capacity (representing a growth of over 10% in its total capacity) by 2024.

South Korean coal imports are yet to recover

South Korean thermal coal imports were largely unchanged in the March quarter 2021 when compared with the equivalent period in 2020 (Figure 6.4). The results reflect competing pressures: the unusually cold winter season led to higher demand, but this was offset by stronger fine particle emissions rules, which obliged around a quarter of South Korean coal generation to close during the March quarter.

Nuclear generation in South Korea, which was subject to maintenance during 2020, is likely to recover in 2021. On balance coal imports to South

Korea are expected to remain largely steady over the outlook period, at levels well short of their pre-COVID-19 peak.

Taiwan's imports remain low in 2021

Taiwan has faced relatively minimal disruption to its economic activity due to its successful COVID-19 response, though there are signs of a re-emergence of the pandemic in recent weeks. As a result, coal imports fell only modestly in 2020 (Figure 6.4). Prospects are mixed for the outlook period, with modest growth in electricity use expected to be offset by pollution controls and tighter carbon emissions policies, which are intended to reduce the share of power generation obtained from coal. Taiwan's coal imports are expected to remain largely steady over the outlook period, with decreases over the longer term.

South East and South Asia imports are set to grow, led by Vietnam

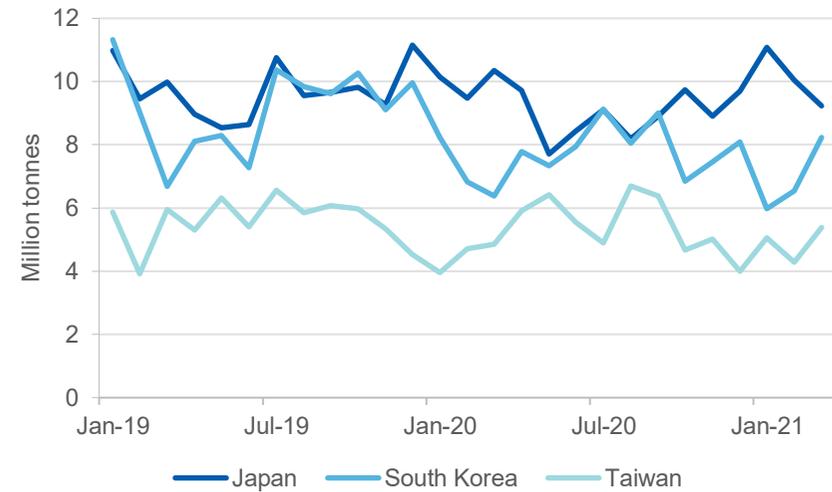
Nations in South East and South Asia (excluding India) collectively import around 150 million tonnes of thermal coal. This sum is expected to grow over the outlook period (Figure 6.5).

Imports to Vietnam are expected to rise, with two substantial coal plants expected to be connected by the end of 2021. However, import growth has not yet become evident in monthly figures for Vietnam, which remain relatively low through the early part of 2021.

In the Philippines, imports also remained relatively low, but are expected to rise over the remainder of 2021 and beyond, following the connection of the new Mariveles coal plant. Coal imports to Malaysia were relatively firm in 2021, and are expected to grow modestly over the outlook period, with most of the impact of lower electricity demand falling on gas imports.

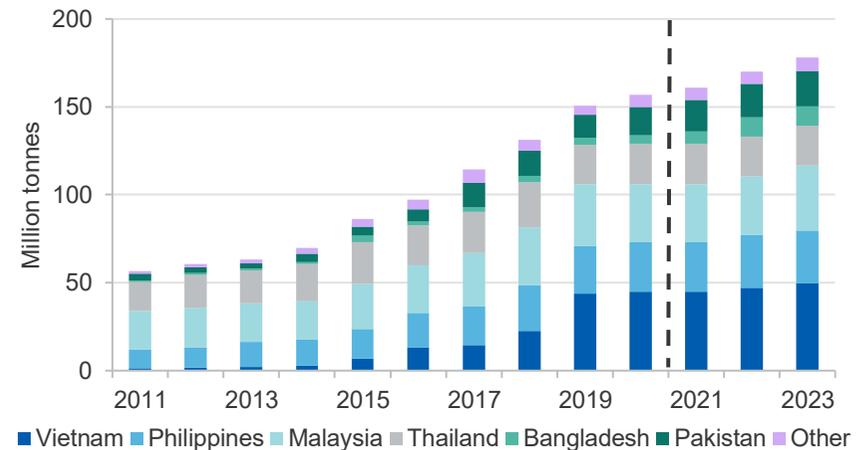
On balance, it is expected that thermal coal imports to South East and South Asia will increase from 157 million tonnes in 2020 to 178 million tonnes by 2023 (Figure 6.5).

Figure 6.4: Japan, South Korea and Taiwan's thermal coal imports



Source: IHS (2021)

Figure 6.5: South and South East Asia thermal coal imports



Source: IEA (2021) Coal Information; Department of Industry, Science, Energy and Resources (2021); IHS (2021)

6.4 World exports

Global exports have shifted in recent quarters, with Australian coal exports being rapidly redirected to India and other South Asian markets following the informal import restrictions imposed by China. Discounts for mid-calorific Australian coal have led to a two-tiered price across most coal blends, creating added complexity across coal supply chains.

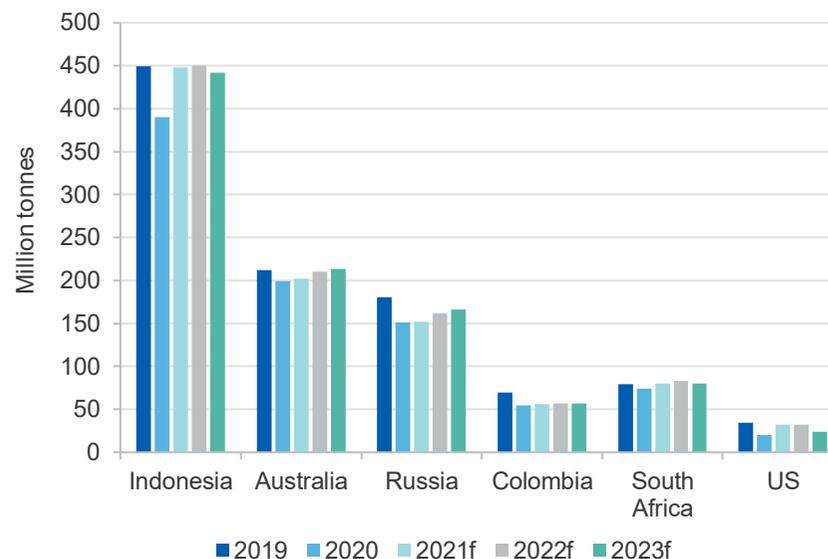
Global freight costs have declined in parts of 2021, but growth in electricity use over the summer period — in conjunction with stronger industrial production growth in China — may add to demand for freight services and push costs up again. Despite this, the short-term outlook for exporters is expected to be relatively solid, with demand growth now forecast to outpace supply growth, which is expected to remain modest in 2021 (Figure 6.6).

Indonesia's exports are on a recovery path

Indonesian coal exporters faced difficult conditions as global demand fell in 2020. Indonesian exports are dominated by lower grades of thermal coal, which are typically harder hit in downturns. However, the targeting of Chinese import restrictions at Australia has created new opportunities for Indonesian suppliers, effectively cushioning them from COVID-19 related price weakness. Indonesian exports have faced other issues, including unusually high rainfall, which has disrupted supply. However, this has also led to stronger price growth, creating an incentive for quick expansion in Indonesian supply when weather conditions improve.

Indonesian exports may be contained in some measure by recent government measures seeking to redirect a greater proportion of thermal coal production to domestic markets, which faced shortfalls in the early part of 2021. On balance, it is expected that exports will grow solidly in 2021, rising from just under 400 million tonnes to almost 450 million tonnes. Exports are subsequently expected to remain at around this level — and close to peak capacity — for the rest of the outlook period.

Figure 6.6: Thermal coal exports



Notes: f Forecast.

Source: IHS (2021); IEA (2021) Coal Information; ABS (2021); Department of Industry, Science, Energy and Resources (2021)

Russia's exports will be supported by improvements in infrastructure

Russian exports lost ground in 2020 due to the effects of the COVID-19 pandemic in many of its key markets. However, there are signs of a recovery in 2021: partly due to the global economic rebound, and partly due to successful expansion work on the Port of Taman — which connects Russian coal mines to shipping routes in the Black Sea. This provides an alternative to bottlenecked freight railways in Russia's east, and Russian port shipments appear now to be rising strongly.

Further expansion of port capacity (from 36 million tonnes to 50 million tonnes annually) is under development, and is expected to begin operation in 2022.

Rail freight capacity connecting Russia to markets in East Asia is also underway, with R.Z.D. (the Russian state rail operator) foreshadowing growth in eastbound volumes from 53 million tonnes in 2020 to 69 million tonnes by 2024. The Russian government is also considering measures to ensure this capacity will be utilised.

In eastern Russia, output from the Republic of Sakha is expected to expand rapidly, though much of the new production will likely be metallurgical coal. New railways to transport this coal are also currently being laid, as part of a larger project to expand east Russian railway infrastructure.

Overall, Russian coal freight capacity is expected to grow from 125 million tonnes to 200 million tonnes by 2025. The new capacity will provide a tailwind for coal exports in the coming years, though if Asian coal demand fails to fully recover, some of this capacity may prove to be surplus to requirements over the longer term. Russian coal is mostly of high quality; it has a relatively low sulphur content which makes it highly suitable for South Korea and other nations with strict laws against fine-particle pollution.

Historically, exports from Russia have been constrained by the inland placement of its coal basins. Improved transportation infrastructure will partly offset this, allowing Russian coal to compete more strongly with high-grade Australian coal in many parts of the Asian region.

[Colombia's exports are growing slowly, but face ongoing disruption](#)

Colombia remains a relatively important thermal coal supplier — mainly to Europe and the Americas — but its exports fell by around 25% (to 55 million tonnes) in 2020, amidst difficult global conditions. There are provisional signs of recovery in early 2021, though exports remain well below their pre-COVID level. Production has been affected by temporary closures at mines owned by CNR and Prodeco, and by suspended operations and declaration of force majeure by Cerrejón, which is among the largest coal suppliers in Colombia.

[US exports have picked up, but long-term cost challenges remain](#)

The US is estimated to have exported about 20 million tonnes of thermal coal in 2020, a sharp fall from the 34 million tonnes exported in 2019 (Figure 6.6). US mine output is highly price sensitive due to its inland location and high transport costs. However, exports prospects appear to have improved, due to a cold northern hemisphere winter and some recent thermal coal price gains.

The share of US output shipped to Asian continues to increase, though it remains a marginal exporter to this region due to its distance and high costs. US coal exports are expected to grow in 2021 as favourable conditions persist through the year. However, US thermal coal exports are not expected to recover to their pre-COVID levels, and remain subject to a downward trend over the longer term.

[South African exports have lost steam so far in 2021](#)

South Africa's coal exports have been volatile in recent quarters, declining during the first stage the COVID-19 pandemic, rebounding in the second half of 2020, but subsequently losing ground in early 2021 as cheaper coal from alternative suppliers has displaced it.

South African coal exports to India have been increasingly affected by strong competition from mid-calorific Australian coal, which has been re-directed from markets in China.

Domestic coal projects in South Africa have also come under pressure from the South African government's Integrated Resource Plan, which seeks to diversify power sources to encompass more renewables, battery storage, and liquefied natural gas.

6.5 Prices

International thermal coal prices are likely to be peaking

Thermal coal prices have picked up over recent quarters (Figure 6.7), as global supply conditions tightened up: utilities restocked after the cold winter, and production cuts among price-sensitive miners further reduced supply.

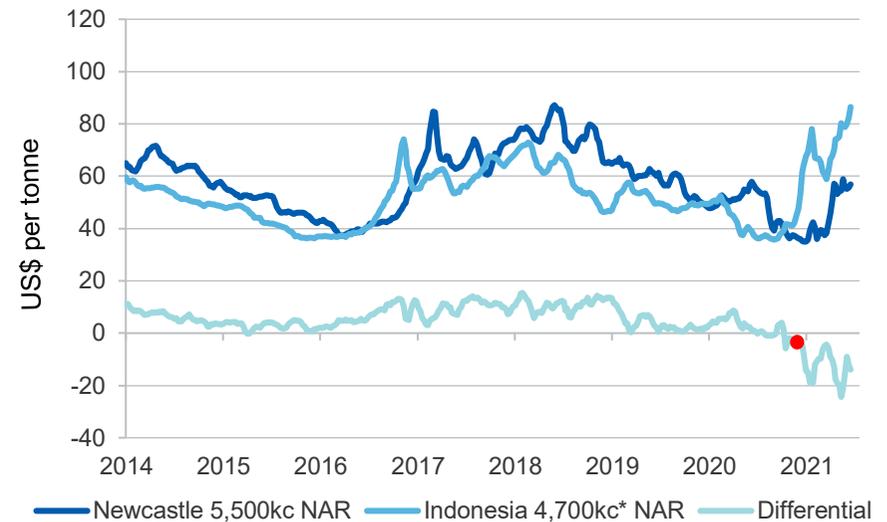
Most of this price growth has occurred for the higher-grade calorific coals, with lower calorific coal becoming somewhat oversupplied in some markets following the informal import restrictions imposed on Australian coal by China.

The Japanese Fiscal Year 2021-22 6322kcal GAR thermal coal contract reference price has now been agreed, and is set to increase by 60% from the previous year's level. The new price — US\$109.97 per metric tonne FOB Newcastle — is likely to be used as a reference price for contract prices of other grades of coal, and will be good news for coal producers, many of whom have faced months of losses due to low seaborne prices.

Prices for the benchmark Australian thermal coal spot price — Newcastle 6,000 kcal/kg — have lifted from around US\$80 a tonne at the end of 2020 to more than US\$100 a tonne at the time of writing. However, this rally is expected to partly unwind over the remainder of 2021, as inventories normalise and temporary drivers of price gains ease. Prices are forecast to ease to around US\$80 a tonne by the end of 2021, and then to US\$67 a tonne by the final quarter of the outlook period.

Prices across the Asia-Pacific market are expected to remain more favourable than in the Atlantic market, which will provide some relief to Australian exporters.

Figure 6.7: Thermal coal prices — Australian vs Indonesian



Source: IHS (2021). NAR = Net as received. Red dot indicates timing of Chinese restrictions.

6.6 Australia

Australian thermal coal exporters face volatile conditions in 2021

Australian coal exporters faced volatile conditions over 2020, culminating in informal import restrictions imposed by China in early November 2020. This particularly affected the 5,500kcal grades, which were the most common Chinese import from Australia.

Australian 5,500kcal coal found markets in India and the rest of South Asia, but these markets have been impacted by recent COVID-19 outbreaks. Australian Producers faced material price reductions over 2020 with a reversal in premiums enjoyed over other exporters. Prices have nonetheless increased in recent months and spiked in recent weeks as utilities scramble to build inventories ahead of the Northern Hemisphere summer, when power is needed for cooling.

Australian 6,000kcal coal has recently fared much better than the lower calorie grades. Supply problems in the NSW Hunter Valley and in South Africa have helped push prices of premium coal up. Most of the higher grade coal is traditionally exported to Japan and not China.

Prospective coal mines continue to face issues with financing, insurance, and market uncertainty. In April 2021, the NSW Government provided \$100 million in compensation to China Shenhua Energy Company, effectively buying back rights to the Watermark project and bringing an end to the proposed thermal coal project.

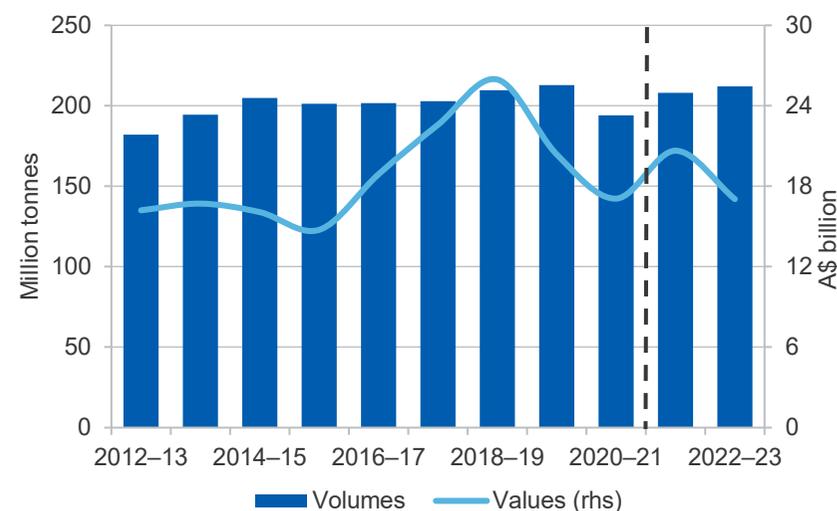
On balance, it is expected that coal exports will lift slightly during the outlook period, rising from around 194 million tonnes in 2020–21 to 212 million tonnes by 2022–23 (Figure 6.8). Export values are forecast to pick up from \$17 billion in 2020–21 to \$21 billion in 2021–22, before easing back to \$17 billion in 2022–23.

This outlook may improve if supplies from other sources (notably Indonesia) face ongoing weather disruptions, or should China decide to lift its informal import restrictions.

Revisions to the outlook for Australian thermal coal exports

Export revenue for thermal coal has been revised up by \$4 billion in 2021–22, but down by \$1 billion in 2022–23. The result reflects recent rapid price growth driven by a mixture of supply disruptions and unpredictable weather, which led to increased coal demand around Asia. It has also been driven by unexpectedly high (60% growth) in this year's Japanese Fiscal Year settlement price.

Figure 6.8: Australia's thermal coal exports



Source: ABS (2021); Department of Industry, Science, Energy and Resources (2021)

Table 6.1: World trade in thermal coal

	Unit	2020	2021 ^f	2022 ^f	2023 ^f	Annual percentage change		
						2021 ^f	2022 ^f	2023 ^f
World trade	Mt	1,025	1,019	1,030	1,032	-0.5	1.0	0.2
Thermal coal imports								
Asia	Mt	810	813	827	828	0.4	1.7	0.2
China	Mt	218	217	216	205	-0.8	-0.4	-4.8
India	Mt	165	165	170	174	-0.2	3.1	2.7
Japan	Mt	119	120	120	120	0.8	0.0	0.0
South Korea	Mt	90	89	90	90	-1.1	1.1	0.0
Taiwan	Mt	54	55	54	54	1.9	-1.3	-1.3
Thermal coal exports								
Indonesia	Mt	390	448	450	442	14.8	0.4	-1.8
Australia	Mt	200	200	210	213	0.3	5.2	1.4
Russia	Mt	151	152	162	166	0.7	6.6	2.5
Colombia	Mt	55	56	57	57	1.8	1.8	0.0
South Africa	Mt	74	80	83	80	7.5	3.8	-3.6
United States	Mt	20	32	32	24	57.6	0.0	-25.0

Notes: **s** Estimate **f** Forecast

Source: International Energy Agency (2021); IHS Markit (2021); Department of Industry, Science, Energy and Resources (2021)

Table 6.2: Thermal coal outlook

World	Unit	2020	2021 ^f	2022 ^f	2023 ^f	Annual percentage change		
						2021 ^f	2022 ^f	2023 ^f
Contract prices ^b								
– nominal	US\$/t	69	110	80	76	-1.7	3.7	8.6
– real ^c	US\$/t	70	110	78	72	-3.9	1.2	5.2
Spot prices ^d								
– nominal	US\$/t	58	90	74	68	48.3	-14.1	-8.1
– real ^e	US\$/t	59	90	72	64	44.9	-16.2	-10.7
Australia	Unit	2019–20	2020–21 ^s	2021–22 ^f	2022–23 ^f	2020–21 ^s	2021–22 ^f	2022–23 ^f
Production	Mt	268	237	262	265	-11.5	10.4	1.0
Export volume	Mt	213	194	208	212	-8.8	7.3	1.8
– nominal value	A\$m	20,376	17,077	20,650	17,040	-19.0	15.5	-9.9
– real value ^h	A\$m	20,600	17,077	20,308	16,471	-19.9	13.6	-11.5

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 6000 kcal net as received; **e** In 2021 US dollars; **f** Forecast; **h** In 2020–21 Australian dollars; **s** estimate

Source: ABS (2021) International Trade in Goods and Services, Australia, Cat. No. 5368.0; IHS (2021); NSW Coal Services (2021); Queensland Department of Natural Resources and Mines (2021); Company Reports; Department of Industry, Science, Energy and Resources (2021)