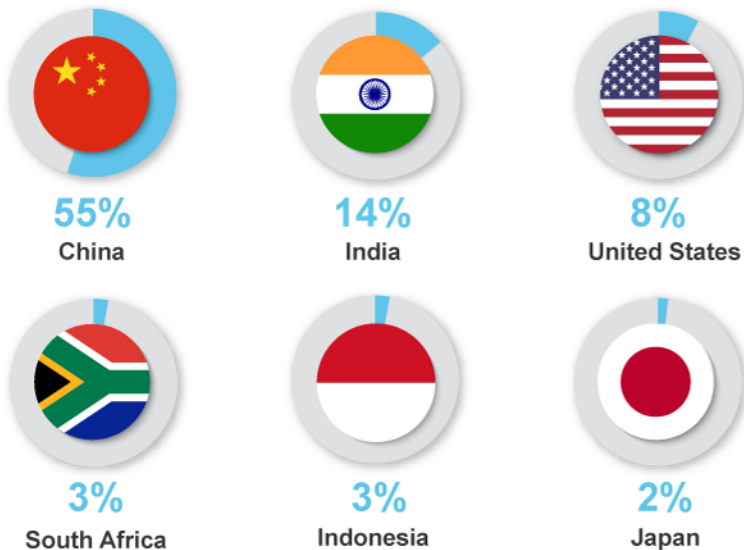


Thermal coal

Major Australian coal deposits, Mt



World consumption



Thermal coal



Thermal coal is primarily used in **electricity generation**

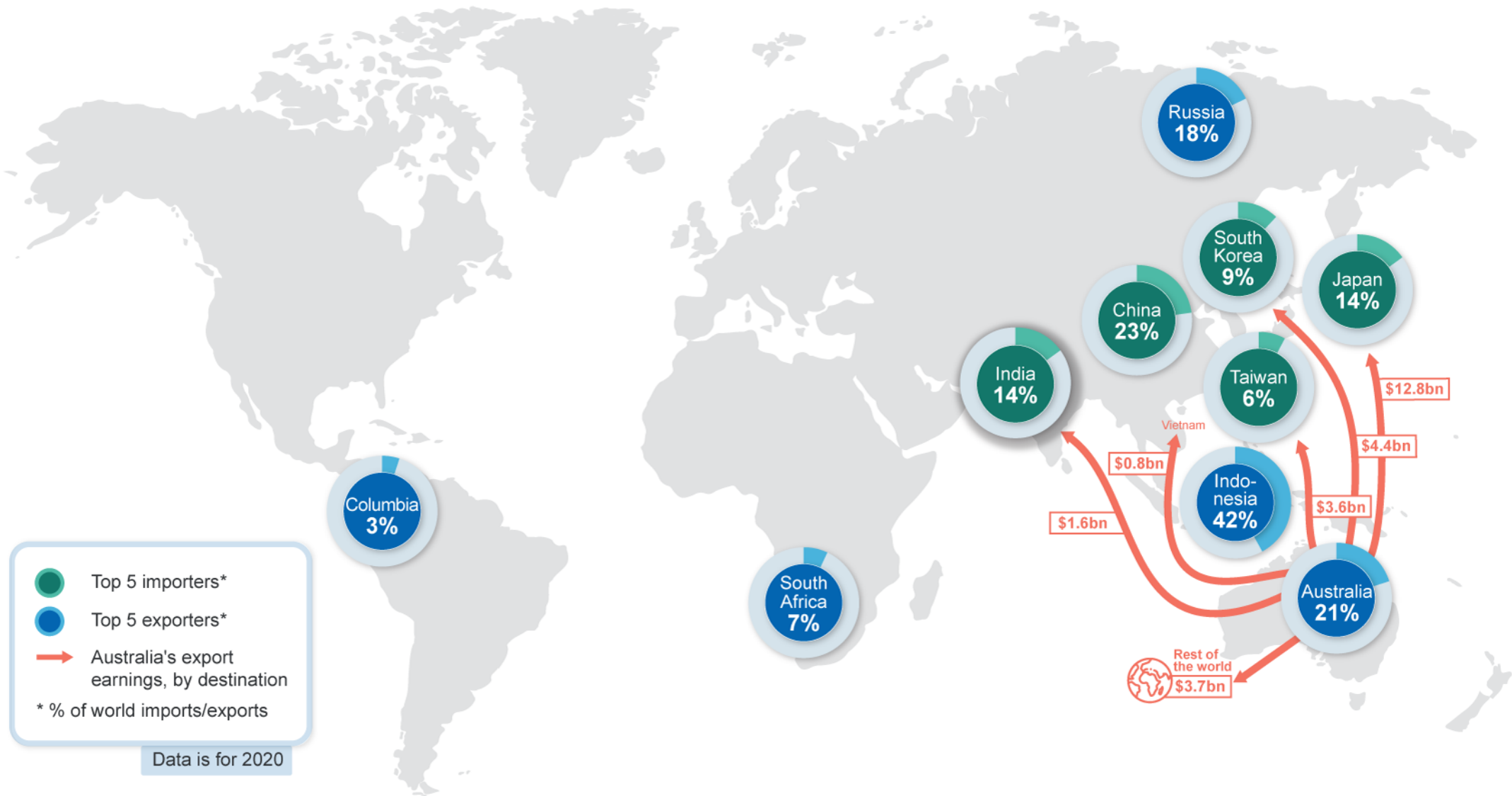
Coal supplies **over one-third** of global electricity generation

Mines are underground or open cut depending on the **deposit's geology**

Coal formation began 290-360 million years ago

Australia's thermal coal





6.1 Summary

- Thermal coal prices remain elevated, driven by extreme weather and COVID-19 disruptions, and market uncertainties linked to the fallout from the Russian invasion of Ukraine.
- As more normal conditions return, the Newcastle benchmark price is forecast to ease from an average of US\$280 a tonne in 2022, to around US\$115 over 2024 (still well above historical averages).
- A resolution of recent supply disruptions is expected to see Australian thermal coal exports increase from 192 million tonnes in 2020–21 to 207 million tonnes by the end of the forecast period (see [Australia section](#)).
- Record prices are expected to see export values reach \$39 billion in 2021–22, with a peak in 2022–23 and a subsequent (price-driven) easing to around \$31 billion by 2023–24.

6.2 World trade

Thermal coal markets have entered a sustained period of volatility, as global supply faces disruption from weather events, an outbreak of COVID-19 in China, and the fallout from the Russian invasion of Ukraine. Markets have faced successive restructuring due to China's cessation of purchases of Australian coal, followed by trade sanctions imposed on Russia. It is likely that COVID-19 and weather events will ease slightly in the near future, as the La Niña weather event passes and economies continue to adjust to the COVID-19 pandemic. However, other factors — such as sanctions targeting Russia — are expected to become more significant.

Russian coal continues to flow to Europe, despite recent announcements of an intention to sanction it. Coal shipments are expected to last through to August, when the EU ban takes full effect. Prices previously surged in the immediate aftermath of the Russian invasion of Ukraine, but eased when commodity exports were not immediately restricted. The imminent EU restrictions thus present a significant possibility of causing another price surge in the near future, with longer and less efficient freight routes adding to costs for importers.

The European Commission has noted that Europe's efforts to withdraw from using Russian gas may require a postponement of some coal plant closures in Europe. However, alternative gas supplies obtained through higher US LNG output are also expected to add 50 bcm annually, providing a partial replacement for Russian gas. Greater efforts to increase the take-up of renewable energy are also underway, with an agreement reached between Fortescue and E.ON in March to provide an additional 5 million tonnes per annum (Mtpa) of hydrogen by 2030. However, this measure (and others currently mooted) will have little effect in relieving supply pressures during the outlook period.

European coal demand is likely to lift slightly in mid-2022. However, recent announcements by Germany's government (which is seeking to eliminate Russian coal imports by the September quarter 2022) suggest that much of this demand will be met from domestic and non-Russian sources.

An easing in supply disruptions in Indonesia, Australia, Colombia and South Africa is expected to provide some modest relief to global markets over the rest of 2022 and into 2023. Imports and prices for seaborne thermal coal will remain sensitive to other factors, including the direct effects of the Russia-Ukraine conflict, the impact of any further COVID-19 lockdowns in China, and the global energy transition.

Domestic conditions in China are expected to be the primary swing factor over the rest of 2022. Further lockdowns and containment measures would likely take significant pressure off the seaborne market, potentially leading to price falls. Recent price controls mooted by the Chinese government may also present some downside risks to domestically produced coal prices over the rest of 2022.

Seaborne thermal coal volumes edged up to 1,059 million tonnes in 2021, but are expected to edge back as demand softens over the outlook period, to reach just over 1,000 million tonnes by 2024. Thermal coal supply is expected to largely track with demand from 2023.

6.3 World imports

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

China continues to face high prices in its domestic coal market, along with significant challenges in maintaining the strong domestic output growth of January and February. The Chinese authorities are undertaking more active measures to contain prices, through updated guidance and changes to import levies. In May, China's National Development and Reform Commission ordered power companies to build stocks as a buffer against future price surges. It also set a price ceiling of RMB770 a tonne for term contract prices of 5,500kc product, and imposed a cap of RMB1,155 a tonne on spot prices. Ok

Some provinces have also imposed their own price rules. The Hebei Provincial Development and Reform Commission has released guidance specifying that 5,500kc coal produced in Hebei should be priced at around 480-680 yuan per tonne, with power generators encouraged to 'sign as much as they should' at this price.

The Chinese Government has also announced that coal import duties (typically above 5% on thermal coal products) will be removed from May 2022 until the end of March 2023. The measure seeks to cut potential import barriers and reduce input prices for domestic energy suppliers. Indonesia, which has supplied the majority of Chinese coal imports following the imposition of restrictions on Australian coal, is already exempt from Chinese coal duties. The removal of duties will thus primarily affect higher quality coal imported from other sources, including Russia.

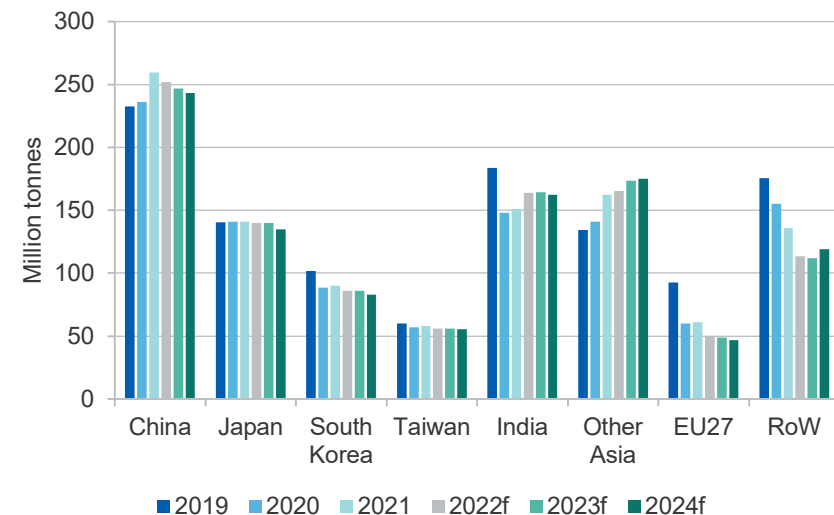
The Chinese Government is also attempting to increase domestic coal production by 300 million tonnes. This would build on around 200 million tonnes of capacity added in 2021 (around three-quarters of which is thermal coal). Infrastructure constraints are likely to hold the next phase of growth under 200 million tonnes in the absence of significant upgrades, but some growth appears to have been achieved in the early part of 2022.

Chinese imports showed signs of softening in the June quarter, as recent COVID-19 containment measures affected the economy. It is expected

that Chinese imports will remain soft early in the September quarter, but the Northern Hemisphere summer is likely to provide some upside to thermal coal demand over the subsequent months. However, the import falls could potentially outlast the effects of the northern summer, if COVID-19 containment measures persist or are expanded.

With strong pressure now being applied to increase domestic coal output, Chinese imports are expected to decline from around 260 million tonnes in 2021 to 245 million tonnes by 2024 (Figure 6.1).

Figure 6.1: Thermal coal imports



Note: e estimate; f Forecast

Source: IHS (2022); IEA (2022) Coal Market Report; Department of Industry, Science, and Resources (2022)

India's coal imports are expected to grow each year of the outlook period

Electricity demand in India rose by 3% over the year to March, placing greater pressure on coal prices. After months of easing, thermal coal imports surged in the March quarter (Figure 6.2). Electricity demand growth remains broad-based, driven by household consumption as well as

industrial activity. With domestic output unable to increase sufficiently, the resulting growth in coal use has been met by import markets. Indian thermal coal imports grew by more than a third in March, with the Indian Government instructing power plants to build inventories by importing at least 15% of their needs until October. Despite the high prices on offer, domestic coal supply stalled in the March quarter, and declined in the month of March. Domestic producers are facing infrastructure issues, with Indian Railways behind schedule with efforts to expand its coal transportation facility.

Demand and price pressure are likely to grow further as the Northern Hemisphere summer begins. If prices increase beyond an acceptable level, the Indian Government is expected to attempt to ease pressures on the power sector, potentially resulting in brownouts or power curbs for industrial users. State governments managing low inventories may also resort to power rationing over the next few months.

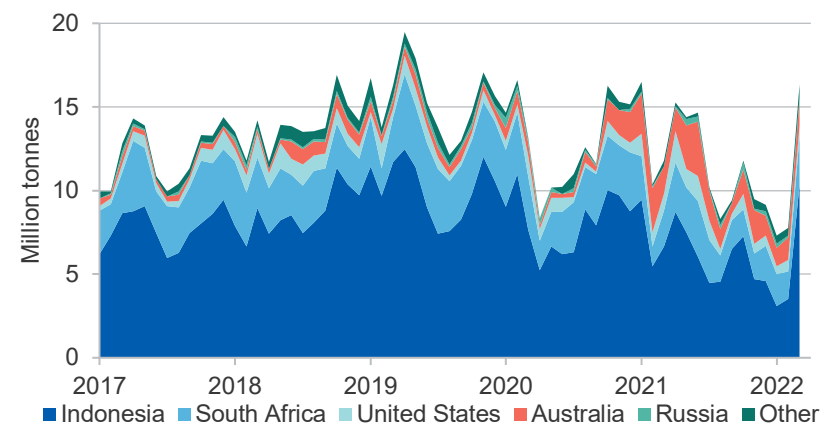
India may gain some relief by increasing imports of displaced Russian coal. However, Russian coal is of a generally higher calorific quality (and price) than the coal typically imported — which may restrain its utility given India’s price sensitivity. India is traditionally only a minor importer of Russian product, but has some capacity to take up Russian exports within the limits imposed by costs, infrastructure and shipping constraints. At present, India appears to be more interested in drawing greater supply from Indonesia, in growing competition with China.

Imports to India from Australia fell by almost 10% between March and April, and by almost half since November 2021. Prices of Australian coal have surged since the Russian invasion of Ukraine, increasing its cost relative to Indonesian coal — which is of lower grade than Russian output. The Indian Government has stated it remains committed to diversifying its coal supply and reducing its dependency on Australian supply, which is relatively expensive and vulnerable to weather disruptions.

While electricity demand is expected to remain robust, high prices and potential power curbs will likely constrain demand somewhat over the outlook period. Indian thermal coal importers are typically highly price

sensitive, and are expected to flatten import levels somewhat in the rest of 2022. Growth previously expected this year is now forecast to occur in 2023 and 2024.

Figure 6.2: India’s thermal coal imports, monthly



Source: IHS (2022)

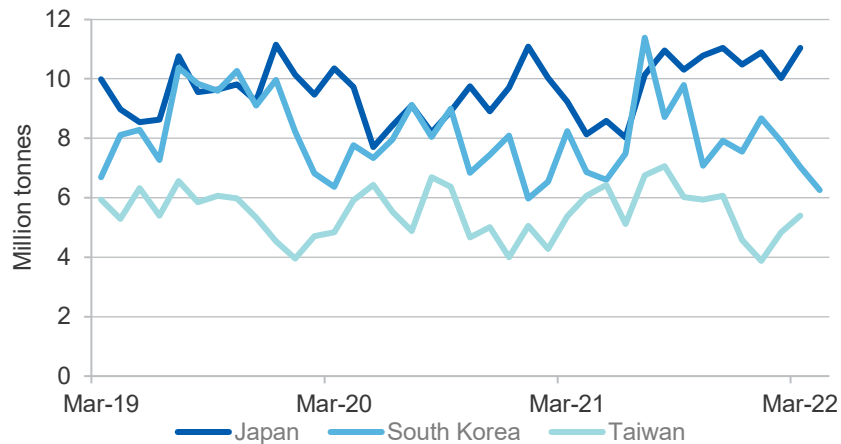
Japan’s imports are expected to hold up over the outlook period

Japan faces complex conditions in its coal markets, with the authorities balancing ‘net zero’ commitments, attempts to reconnect nuclear power, and a proposed ban on Russian coal imports. These complexities have been further magnified by an earthquake in March which affected the country’s north and led to interruptions and closures at several coal-fired plants. This is likely to reduce domestic coal demand for several months.

In April, the Japanese Government announced that it will phase out Russian coal imports in line with recent G7 proposals. However, at the time of writing, the Japanese commitment has not been detailed and timetabled to the same extent as the earlier European announcement. The ban is not expected to take effect until 2023, with around 16 million tonnes of Russian-sourced thermal coal imports needing to be sourced from other countries. The task of withdrawing from Russian suppliers will be hindered by the European policy, which takes effect earlier and will draw much of the available non-Russian product to Europe.

Japanese coal imports have levelled out in recent quarters (Figure 6.3), and are expected to ease slightly during the outlook period. Many factors are currently in play, with planned coal plant closures and the completion of the country's final coal-fired power plant constructions largely offsetting each other.

Figure 6.3: Japan, South Korea and Taiwan's thermal coal imports



Source: IHS (2022)

South Korean coal imports will face growing pressure

South Korea has begun diversifying away from Russian coal, with the state utility (Korea Electric Power Corp) announcing that orders for Russian coal have now halted. Previously, the company sourced about 10% of its imports from Russia. Other power generation firms in the nation are similarly seeking alternative suppliers, such as those from Australia. Overall South Korean imports from Russia declined by 6% to 1.5 million tonnes in April.

Gas plants, which have faced competitive disadvantages in recent years due to high contract prices, will not find much relief given the recent surge in gas prices. The conclusion of scheduled maintenance at several nuclear plants in 2022 and 2023 (and the completion of new ones over the outlook period) will reduce some pressure on coal imports.

Taiwan's imports are expected to start declining slowly

Taiwanese coal imports have risen in recent months, with the country importing 5 million tonnes of thermal coal in February. This was up by 17% over the year, and reflects higher imports from Indonesia and Australia. Growth was driven by strong industrial output, and there is considerable potential for demand to increase further during the upcoming Northern Hemisphere summer. However, coal demand will be somewhat constrained by the Government's abandonment of plans to upgrade its coal fleet, and to convert existing coal plants to use gas. Given the age of Taiwan's coal fleet, it is expected that coal imports will start to decline modestly over the next few years.

South East and South Asia imports are set to grow

Markets in South and South-East Asia remain the key growth centre for thermal coal (Figure 6.4). Plans for coal plant constructions across the region have been wound back, but a sizeable pipeline remains under construction. There is little sign that the fallout from the Russian invasion of Ukraine will change supply chains across the region, with countries showing little interest in trade or sanction policies targeting Russia. Nations in the region (excluding India) collectively import about 150 million tonnes of thermal coal each year, and this is expected to rise over the outlook period (Figure 6.4).

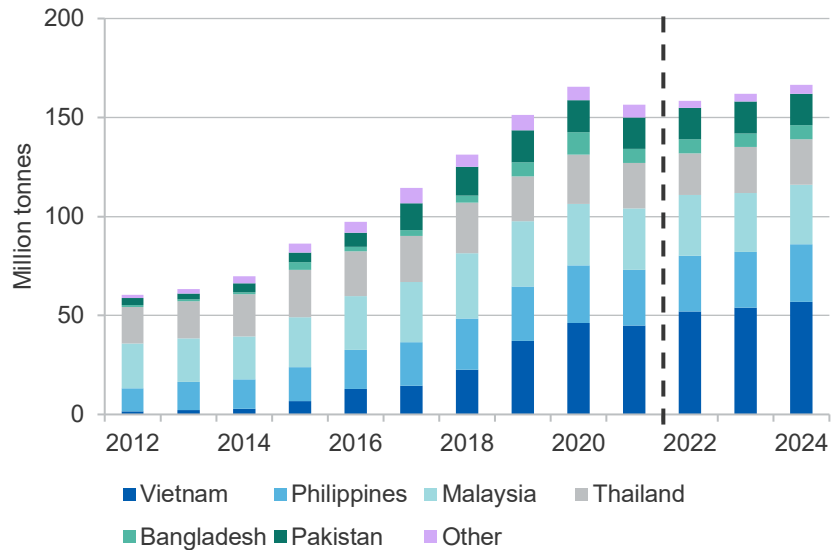
The Philippines is expected to require more coal over the next three years, with significant coal-fired capacity under construction. Steady import growth is forecast in every year of the outlook period, with coal consumption expected to double by the time of its peak around 2030.

Malaysia has large and modern coal-fired power plants, which have managed to out-compete gas-fired generation. Coal plants consolidated their advantage during the COVID-19 pandemic, as gas production was forced to cut back. Coal imports are expected to grow slightly over the outlook period.

Thailand's coal imports are rising in line with growing demand from the country's industrial sector, which has been led by a rapid expansion in

cement production. However, coal plant construction has largely come to a halt, with proposed plants cancelled in the Krabi and South Songkhla provinces. Official policy announcements support a reduction in coal use, but there is little sign of adjustment to the trajectory in recent times.

Figure 6.4: South and South East Asia thermal coal imports



Source: IEA (2022) Coal Information; Department of Industry, Science, and Resources (2022); IHS (2022)

Vietnam has scaled up coal imports over the last ten years, resulting in higher imports from Indonesia. Several new coal plants already under construction are expected to be grid connected during the outlook period. It is not expected that Vietnam will provide much support for Russian coal, given the distance and complexity of transport between the two countries. Import growth is instead likely to draw further on Indonesia and potentially Australian product.

6.4 World exports

Global supply chains are facing a second round of reorganisation, with Western sanctions against Russia following on from Chinese import restrictions against Australia. These policies have pushed prices up and forced rapid adjustments in shipping and transportation across the global market. They have also raised the distance — and thus the freight cost — of the thermal coal trade, reducing market efficiency. Over time, this may reduce the competitiveness of coal against other energy types. However, Australia remains somewhat insulated due to the high quality of its deposits, especially with a significant competitor in higher grade markets now locked out of parts of the market.

Indonesia's exports are rising despite temporary disruptions

Indonesian exports lifted in the early part of 2022, following the cessation of a temporary export ban in January. Heavy rainfall disrupted operations for key producers (including Bumi Resources and Adaro Energy in March), but subsequently eased to more manageable levels as the impact of La Niña lessened. Exports are expected to lift further in the coming months, as sustained high prices encourage more production. Indian demand in particular is likely to build over the outlook period, providing a stronger business case for greater investment among Indonesian suppliers.

With domestic inventories now relatively solid, no further export ban is expected over the outlook period. Stricter monitoring of domestic inventories is set to become a primary policy of the Indonesian authorities.

Indonesia retains a pipeline of coal fired power constructions, with several new plants expected to come online during the outlook period. This will not necessarily pressure exports, as Indonesia also has the potential to grow supply through large untapped deposits in the Kalimantan and Sumatra regions. The exclusion of Russia from sections of the global coal market will add pressure on global supply and create new opportunities for Indonesian exporters — though they may struggle to directly substitute for the higher grade Russian product. Exports are expected to hold up over the outlook period, with higher supply balancing higher domestic use.

Russia's exports face an uncertain time following the invasion of Ukraine

The fallout from the Russian invasion of Ukraine adds significantly to the risks affecting domestic coal suppliers, though, at the time of writing, the overall impact remains moderate. Coal production held up over the March quarter, despite a slight easing in the month of March. The rouble fell following the imposition of initial sanctions, but recovered when it became clear that energy exports would continue to provide significant income. Russian coal production remains highly profitable, and continues to be exported to Europe under pre-existing contracts.

The impact of sanctions on Russian coal is expected to increase over time. Thermal coal export flows to Europe (around 48 million tonnes in 2021, with Ukraine accounting for 10 million tonnes) are scheduled to halt by August as the full array of sanctions takes effect. Coal shipments from Baltic ports lifted early in the June quarter, but this was likely due to attempts to ship ahead of the commencement of sanctions. Efforts to divert supply to other markets will face capacity and infrastructure constraints affecting rail capacity in the country's east. Attempts to upgrade this capacity could also be hampered by the cessation of machinery and equipment exports to Russia. Exports to Ukraine have halted, but some offset will come as a result of lower Ukrainian demand.

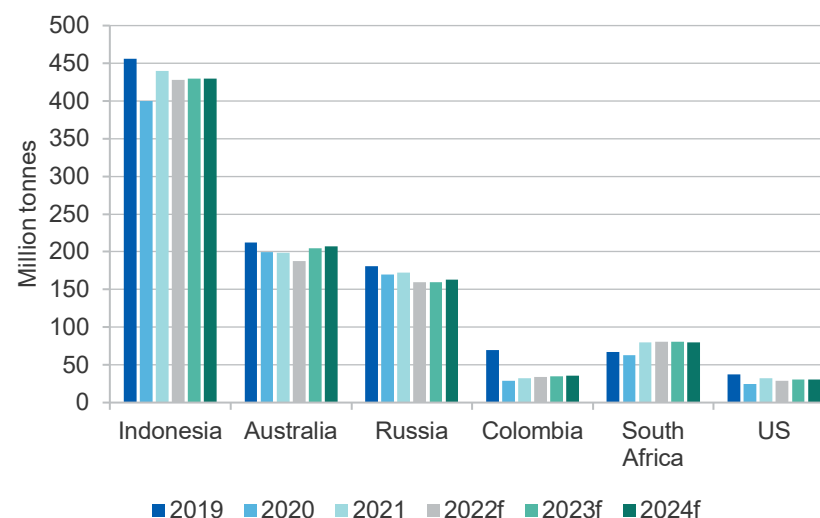
Given the uncertainty stemming from the Russian invasion of Ukraine, our analysis assumes its impacts continue for the foreseeable future, along with the sanctions deployed in response. Russia's importance as a global coal supplier means that these measures will add noticeably to volatility and price pressure on thermal coal markets. After a brief fall in March, coal prices surged again in April, as markets reacted to increasingly detailed and firm commitments from European governments seeking to reduce dependency on imported Russian energy.

Around 70% of European thermal coal imports are drawn from Russian sources. The high quality of Russian coal, and relatively stringent pollution and emission standards across Europe, will add to the difficulty of substitution. Many power plants across Europe require high-energy coal and would experience degraded performance (and potential mechanical

issues) if significant quantities of lower-calorie coal were included in their blends. It is thus expected that Russian supply chains will shift towards Australia over the outlook period.

Russian exporters will ultimately need to redirect about 48 million tonnes from the EU, and 16 million tonnes from Japan. Alternative buyers include China, India, and South and South-East Asia. However, Russian exports are expected to fall by at least 12 million tonnes in 2022, remaining somewhat constrained through the outlook period. The timetable for the overall redirection of Russian thermal coal remains highly unclear.

Figure 6.5: Thermal coal exports



Notes: f Forecast.

Source: IHS (2022); IEA (2022) Coal Information; ABS (2022); Department of Industry, Science, and Resources (2022)

US exports have picked up, but long-term cost challenges remain

US coal exports are ahead of their level of a year ago. But despite historically high prices since late 2021, US exports have not yet picked up substantially. This is likely due in part to hard limits on US capacity, with logistics and terminal storage space now fully allocated. Growth is likely to

remain constrained by difficulties in extracting and moving coal, with the issues most apparent for rail capacity. Beyond 2023, higher-cost US output is expected to become less competitive, as seaborne prices fall.

Colombian exports are not expected to recover fully

Colombian exports have faced tough conditions in recent times, largely due to the country's relatively high production cost and its reliance on the declining OECD market. Significant mines, including La Jagua and Calenturitas, have been taken offline following falls in regional demand, and are not expected to return to full operation in the foreseeable future. The country's large Cerrejón and Drummond mines remain in operation, but the former continues to face threats of disruption from protests among local indigenous communities and mine workers.

Some opportunities may open up, given efforts by many OECD countries to pivot off Russian exports. Exports have not yet risen significantly, but have the potential to grow modestly from 2022 (Figure 6.5). However, growth is not expected to restore the country's pre-pandemic export levels, as some capacity has closed for good.

Exports from other countries face mixed prospects

Small exporters, including South Africa and Canada, are expected to gain short-term opportunities, due to the withdrawal of some Russian production from global markets. However, long-term prospects for smaller coal producers remain clouded, given their lack of scale and the widespread adoption of net zero emissions targets.

South African exports continue to face disruptions from wet weather, rail issues (including derailments and cable thefts) and policy uncertainty.

Exports from Canada have risen, and are expected to lift further over the outlook period, as output ramps up at the Vista mine, which began production in 2019. Canadian exports are expected to shift toward Europe in the short-term. However, exports will also face growing pressure, due to the Government's COP-26 pledge to ban thermal coal exports by 2030.

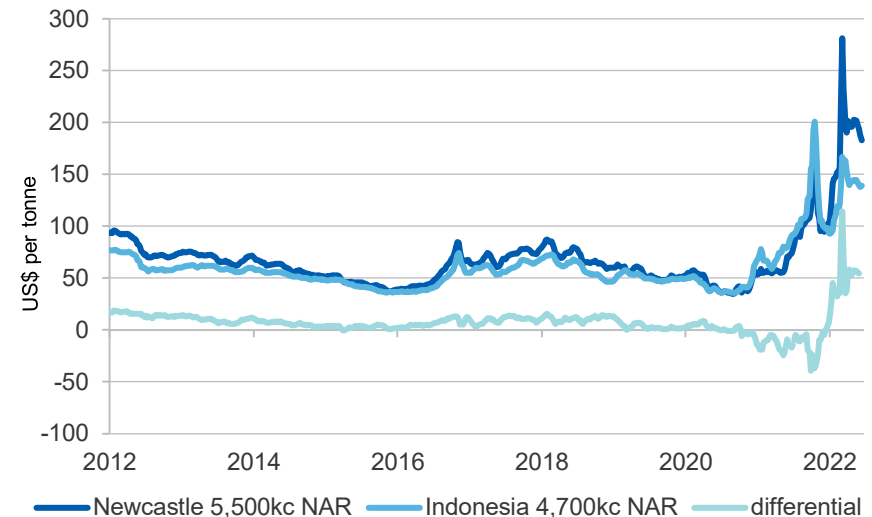
6.5 Prices

Prices are expected to continue to be relatively high and volatile

Thermal coal prices surged at the start of 2022, propelled by supply shortfalls against a backdrop of persistently low inventories. After peaking in late January, prices eased slightly in mid-February before rebounding again late in the month. Prices rose further in March, topping a record US\$375 a tonne by the middle of the month. Prices eased again in early April (Figure 6.6) and then rebounded late in the month, remaining above US\$400 a tonne at the time of writing.

Prices are not just high but highly volatile, with daily average swings far above their historical average during 2022. These fluctuations have become more self-reinforcing over time, with large swings drawing in speculators and increasing fears among some utilities of inventory shortages coinciding with peaking prices.

Figure 6.6: Thermal coal prices — Australian vs Indonesian



Source: IHS (2022). NAR = Net as received.

Some of the factors driving prices — La Niña-related weather disruptions, and COVID impacts on infrastructure and labour — are expected to ease during the second half of 2022. This may allow prices to moderate and stabilise somewhat in this period. However, other factors, such as the fallout from the Russian war on Ukraine, are likely to persist and intensify. The Indian Ocean Dipole may also present a risk of further weather disruptions. Prices are expected to trend down, but remain subject to high uncertainty, with a lack of investment in new coal resulting in a tenuous supply situation with the potential for further price surges in the event of any disruption. While recent events have seen nations — most notably in Europe — look to coal to address immediate energy shortages, the shift away from coal use is likely to continue in the background, adding to market uncertainty. Lockdowns in China, which have affected several significant industrial zones in that nation, should reduce thermal coal demand, potentially offsetting some of the impact of the Northern Hemisphere summer. However, prices are expected to remain elevated during the second half of 2022 and beyond.

6.6 Australia

Australian thermal coal exporters face volatile conditions in H2 2022

Australian coal supply is expected to pick up slowly over the outlook period, as a range of disruptions linked to weather and COVID-19 gradually pass. The La Niña weather event is fading, with previously disrupted shipping starting to catch up in late April and early May. However, other weather issues may emerge linked to the Indian Ocean Dipole.

Mines in the Hunter Valley are still affected by long periods of heavy rain, which flooded some mining pits. However, progress has been made in de-watering them. Recovery from weather disruptions may be hampered by renewed heavy rain in parts of Queensland and NSW, but weather disruptions may ease temporarily with the passing of the La Niña event.

Labour shortages, which have also affected exports in the March quarter, appear now to be gradually easing, though some companies still report

shortages of engineers. Rail maintenance, which has affected some shipments in the March quarter, has now been largely completed. Recent high wholesale power prices, have also added to input costs for some miners in the March quarter.

Among individual companies, BHP has continued to face labour shortages and flooding, with output in the March quarter falling to the lowest level for more than 10 years. Company guidance suggests some recovery through the rest of 2022 and into 2023, with output set to grow. The company has also announced that its Mt Arthur mine — the largest coal mine in NSW — will be closed in 2030 after the company failed to attract a buyer.

Heavy rainfall in the Hunter Valley has affected Yancoal and Glencore, which operate sizeable mines in the area. Flooding of several mine pits resulted in delays in production in April, as pits had to be de-watered. Peabody has faced similar issues, with flooding and labour shortages reducing output at its Wambo mine. A rebound appears to have occurred in the June quarter.

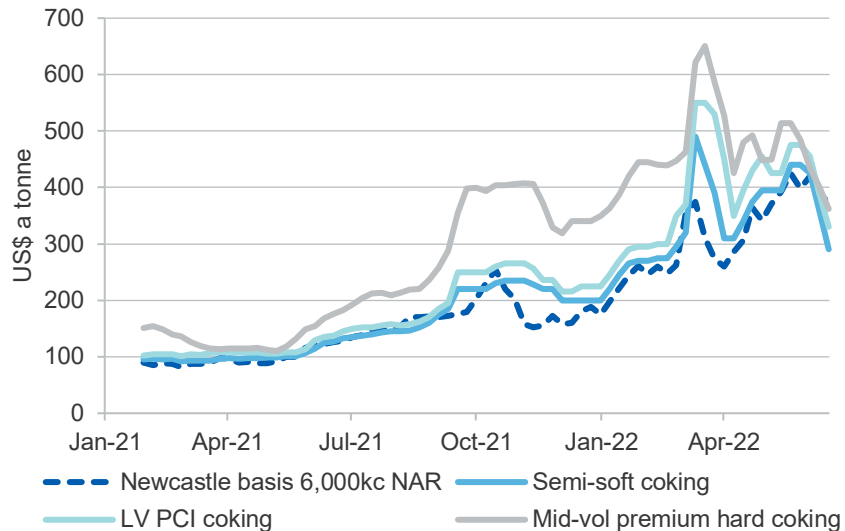
The passing of disruptive weather in the Gunnedah Basin has helped companies operating there, notably Whitehaven, which suggests a rebound in output over coming quarters. The company's Narrabri extension project has been approved by the Independent Planning Commission. In 2021–22, the company's output appeared little changed.

Two trial shipments have taken place from the Carmichael mine. The Adani group has announced that it will seek to build annual exports from the mine to more than 10 million tonnes annually from 2023, with the potential to increase above 15 million tonnes.

While supply difficulties are expected to linger over the short-term, an easing in weather and labour conditions should result in a small lift in export volumes over the second half of 2022. Australian coal remains in high demand in the wake of the Russian invasion of Ukraine, being the primary alternative supplier of higher coal grades. This has led to additional price pressure among the higher coal grades (Figure 6.7). It is likely that a larger share of Australian coal will be directed to Europe, while

Russian coal is diverted (in a smaller quantity) to Asian markets, resulting in a net fall in global supply and further upward price pressure from August.

Figure 6.7: Prices for thermal and low-grade coking coals

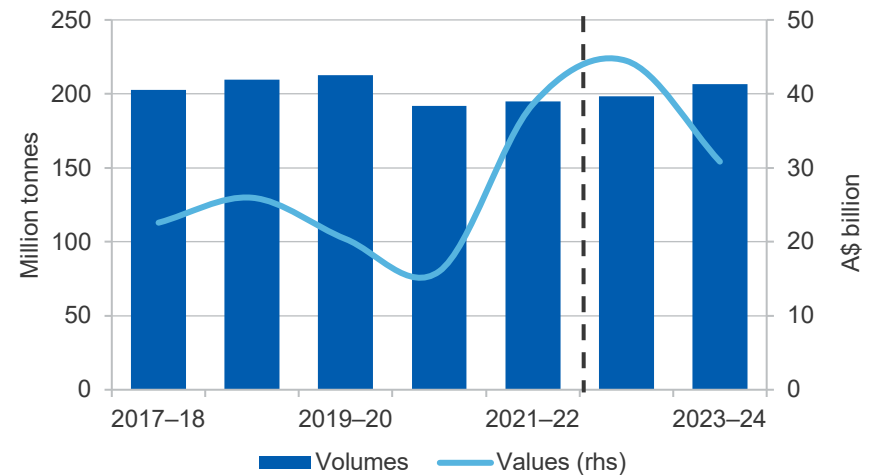


Source: IHS Markit (2022)

Japan and South Korea have also expressed interest in more imports of Australian coal, and may draw on contractual rights that would provide them with limited access ahead of European importers.

Export volumes are expected to hold largely steady over the outlook period (Figure 6.8). However, prices will likely remain subject to significant volatility, and a gradual ebbing in the huge growth that followed the Russian invasion of Ukraine. Export values are forecast to rise from \$16 billion in 2020–21 to \$39 billion in 2021–22, with a peak of \$44 billion in the following year and subsequent easing to \$31 billion by 2023–24. With global demand remaining solid, the primary swing factor for Australian export earnings will be the capacity for coal production to recover from lingering weather disruptions and labour shortages.

Figure 6.8: Australia's thermal coal exports



Source: ABS (2022); Department of Industry, Science and Resources (2022)

Revisions to the outlook for Australian thermal coal exports

The forecast for export earnings has been revised up by around \$7 billion (nominal terms) in 2022–23.

This reflects rapid changes to coal markets reflecting unusually severe weather disruptions, which have affected short-term export supply from Australia. The Russian invasion of Ukraine has added to price pressures over the medium term.

Table 6.1: World trade in thermal coal

	Unit	2021	2022 ^s	2023 ^f	2024 ^f	Annual percentage change		
						2022 ^s	2023 ^f	2024 ^f
World trade	Mt	1,059	1,029	1,031	1,023	-2.8	0.2	-0.7
Thermal coal imports								
Asia	Mt	865	865	869	857	0.1	0.5	-1.4
China	Mt	262	255	250	246	-3.0	-2.0	-1.4
India	Mt	151	164	164	163	8.3	0.3	-1.0
Japan	Mt	141	140	140	135	-0.7	0.0	-3.6
South Korea	Mt	90	86	86	83	-4.4	0.0	-3.5
Taiwan	Mt	58	56	56	55	-3.4	0.0	-1.3
Thermal coal exports								
Indonesia	Mt	440	428	430	430	-2.7	0.5	0.0
Australia	Mt	199	187	205	207	-5.7	9.3	0.9
Russia	Mt	172	160	160	163	-7.0	3.8	4.2
Colombia	Mt	32	34	35	36	6.3	2.9	2.9
South Africa	Mt	80	81	81	80	1.3	0.0	-1.2
United States	Mt	32	29	31	31	-9.4	6.9	-19.4

Notes: ^s Estimate ^z Forecast

Source: International Energy Agency (2022); IHS Markit (2022); Department of Industry, Science and Resources (2022)

Table 6.2: Thermal coal outlook

World	Unit	2021	2022 ^f	2023 ^f	2024 ^f	Annual percentage change		
						2022 ^s	2032 ^f	2024 ^f
Contract prices ^b								
– nominal	US\$/t	110	223	162	129	102.9	-32.9	-14.0
– real ^c	US\$/t	117	223	158	123	90.6	-34.7	-15.8
Spot prices ^d								
– nominal	US\$/t	135	279	163	118	107.3	-41.7	-27.3
– real ^e	US\$/t	145	279	158	112	92.4	-43.3	-28.9
Australia	Unit	2020–21	2021–22 ^s	2022–23 ^f	2023–24 ^f	2021–22 ^s	2022–23 ^f	2023–24 ^f
Production	Mt	228	256	256	257	12.1	0.3	0.2
Export volume	Mt	192	195	199	207	1.4	1.9	4.1
– nominal value	A\$m	16,009	38,585	44,467	30,840	141	15	-31
– real value ^h	A\$m	16,694	38,585	42,394	28,383	131	10	-33

Notes: **b** refers to benchmark Japanese Fiscal Year 6322kcal GAR thermal coal contract reference price; **c** In current JFY US dollars; **d** fob Newcastle 6000 kcal net as received; **e** In 2022 US dollars; **f** Forecast; **h** In 2021–22 Australian dollars; **s** estimate

Source: ABS (2022) International Trade in Goods and Services, Australia, Cat. No. 5368.0; IHS (2022); NSW Coal Services (2022); Queensland Department of Natural Resources and Mines (2022); Company Reports; Department of Industry, Science and Resources (2022)