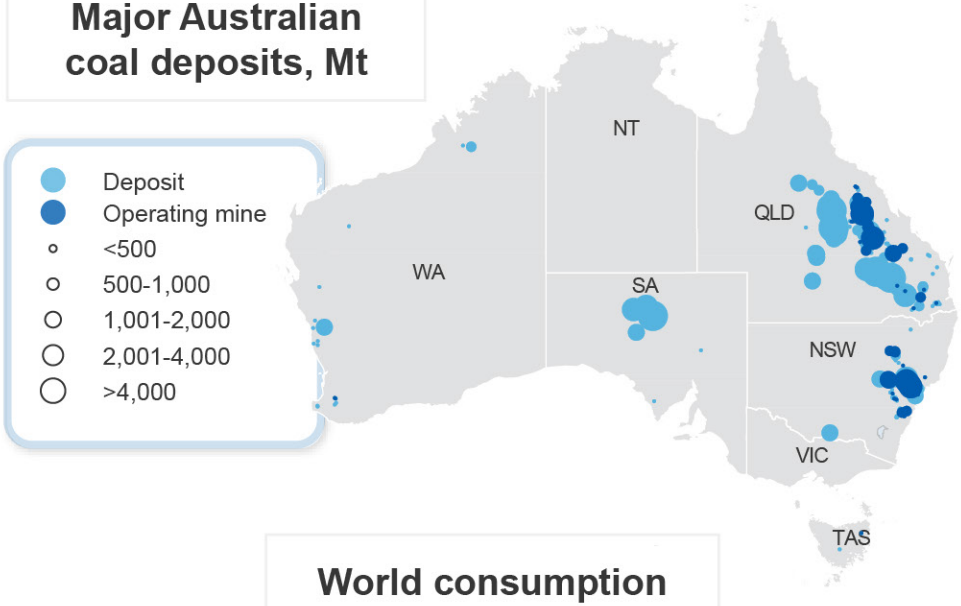
Thermal coal

6 C Carbon 12.011

Major Australian coal deposits, Mt



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

World consumption

55% China

14% India

8% United States

3% South Africa

3% Indonesia

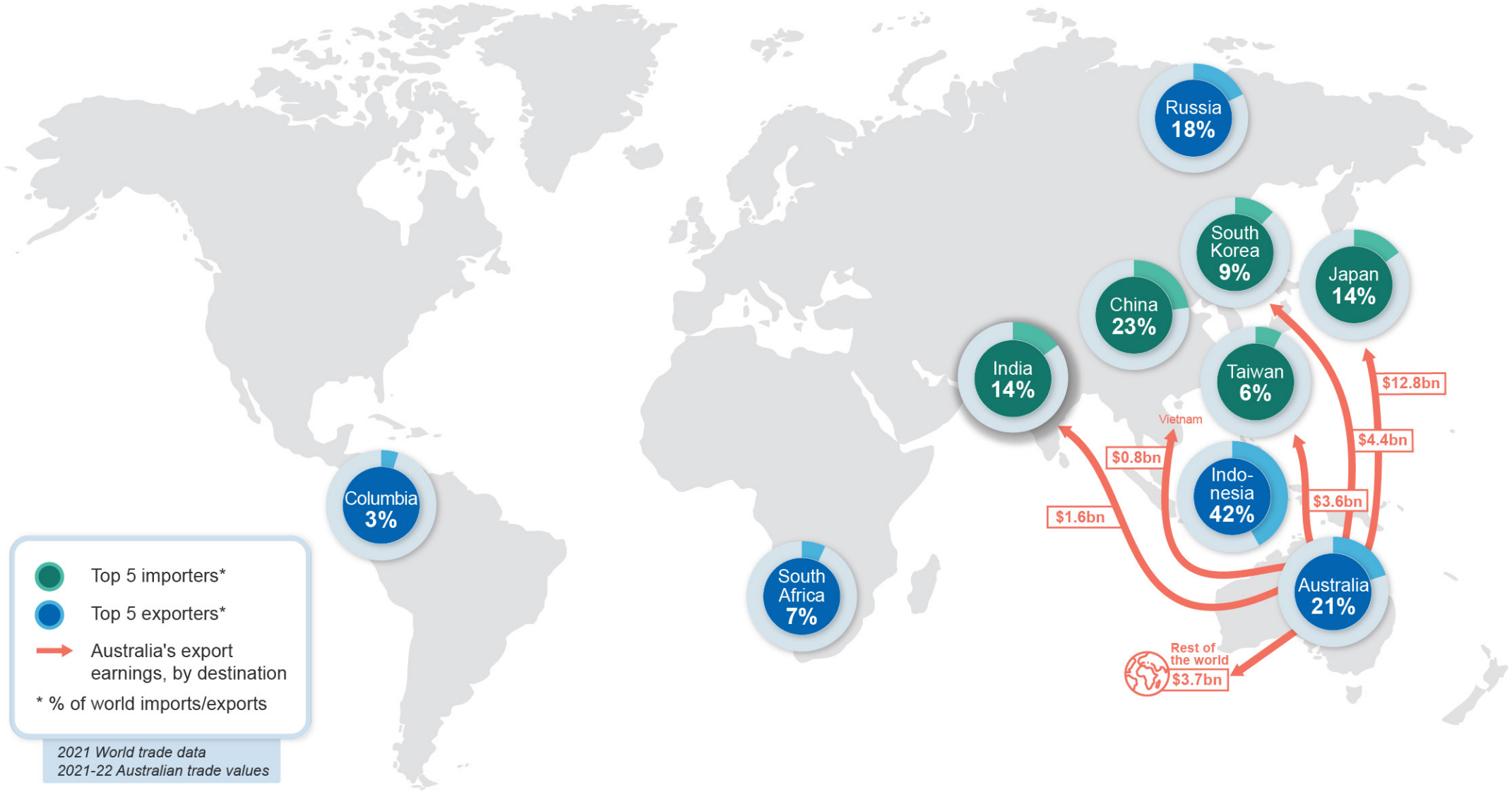
2% Japan

Australia's thermal coal

- **World's 2nd** largest **thermal coal** exporter
- **World's 4th** largest **black coal** resources
- **75-80%** of thermal coal **is exported**

Thermal coal

Trade map | September 2022



6.1 Summary

- Thermal coal prices remain extremely high, driven by weather and COVID-19 disruptions, as well as market uncertainties linked to the Russian invasion of Ukraine. As more normal conditions return, the Newcastle benchmark price is forecast to ease from an average of US$333 a tonne in 2022, to around US$125 in 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 203 million tonnes by the end of the forecast period (see Australia section).
- Record prices are expected to see export values reach $62 billion in 2022–23 before a (price-driven) easing to about $38 billion in 2023–24.

6.2 World trade

A return to 'normal' conditions in the coal market is not expected over the outlook period. A range of unusual factors remain in play, with most expected to persist for the foreseeable future.

Among these factors is the COVID-19 pandemic. Many of the impacts of the pandemic have eased (outside of China), but there is potential for renewed impacts if new and more dangerous variants of the virus emerge. China's ongoing zero-COVID policy could also lead to further economic and industrial shocks, with flow-through effects on commodity markets.

It is not clear how long the Russian invasion of Ukraine and subsequent sanctions against Russia will affect coal markets. The exclusion of large quantities of Russian coal from markets in the Northern Hemisphere could inflate coal prices for years to come. Several European Union member states and the UK have made preparations to increase coal-fired power generation in response to the reduced supply of natural gas from Russia. Announcements from Germany, Austria, France and the Netherlands suggest that over 10 GW of coal-fired power generation capacity has been placed on standby in Europe for the 2022-23 European winter.

Germany's Substitute Power Plant Maintenance Act (passed in July) imposes new limits on natural gas use and locks in existing coal capacity until the end of March 2024. The Netherlands has announced that 4.5 GW of coal-fired power plants will be permitted to operate at full capacity until the end of 2023 (previously, capacity utilisation at the plants had been limited to 35%). The UK Government has asked Uniper (which owns a coal plant at Ratcliffe-on-Soar) and EDF (which owns the two West Burton A units) to extend their plants beyond their previously planned closure in September 2022. However, the UK Government has not changed its overarching net zero timetable, which schedules complete closure of the nation's remaining coal generation by 2024. Broader European net zero target also remain unaltered.

Coal is being increasingly affected by global energy transition, with investment in new coal capacity continuing to decline. This lack of investment hampers the ability of coal producers to respond to high prices with additional supply. In the short term, these shortfalls may be exacerbated by shortages of skilled labour in some areas. In the longer term, it is likely to be exacerbated by the increasing average depth of deposits and falling coal quality, leading to a further, gradual tightening in affordable supply.

Weather disruptions, which have persistently affected coal supply over the past year, are expected to ease. However, risks remain in the form of the Indian Ocean Dipole and La Niña in the final months of 2022. The emergence of these weather patterns adds to the risk of supply disruptions, notably through the higher flood risk across eastern Australia.

Some less recent disruptions continue to affect markets. The primary impacts of Chinese informal import restrictions on Australia have passed, but the reworking of global trade routes continues to add to freight costs and distances in the seaborne coal market. Rumours of a Chinese policy change have circulated in recent weeks, but have not been supported by any official announcements at the time of writing.

Given the scale of these variables and the lack of clarity around their likely duration, a 'base case' for coal has become difficult to define. However, it

is expected that thermal coal prices will remain elevated and volatile through the outlook. Prices should ease to some extent as markets adjust (partially) to sanctions on Russia, and as weather conditions improve in the most affected parts of the world.

Trade volumes are expected to largely hold steady just below their pre-COVID level, with investment shortfalls and peaking demand continuing to constrain output. Seaborne trade is forecast to edge down from 1,056 million tonnes in 2021, to around 1,050 million tonnes by 2024. Thermal coal supply is forecast to largely track with demand from 2023.

6.3 World imports

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

Chinese thermal coal imports continue to trend down, partly as a result of rising domestic production in early 2022 (some of which has been maintained through to mid-year); and partly due to lower industrial activity as a result of COVID-19 containment measures.

Imports have also come under pressure, as the Government further prioritises reducing import dependency. Policies to this end include strict sale price controls on domestic production, acceleration of approvals for new or expanded domestic coal mines, investment in domestic coal transport, and expansion of coal-by-wire energy transfer. Investments in nuclear power, renewables and gas plants have also risen in recent years, as Beijing and provincial governments in China seek to reduce pollution and diversify their power grids.

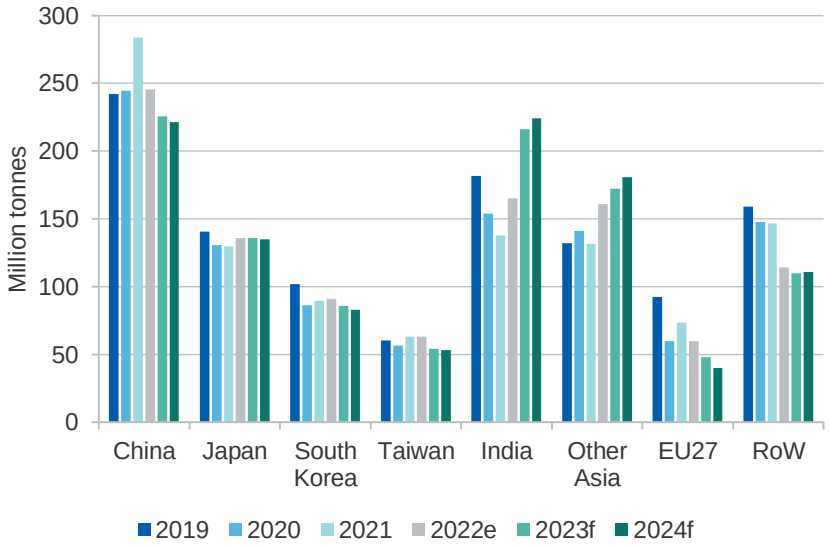
Imported thermal coal volumes are expected to keep falling. Imports are also expected to become more volatile as China's coal import share shrinks relative to domestic production. The Chinese Government has previously announced a target of an additional 300 million tonnes of coal from domestic assets in 2022. This would build on around 200 million tonnes of capacity added in 2021 (about three-quarters of which is thermal coal). This target is close to being reached, with domestic coal output up by 260 million tonnes over the first seven months of 2022 compared to the same period in 2021. The government continues to pressure domestic coal mines to speed up output, in order to deal with an unusually hot/dry Northern Hemisphere summer.

Some parts of China are also seeking to reduce coal consumption, potentially pushing a broader energy transition in China via policy and technology transfer. Notable cases include Hong Kong, where thermal coal imports fell by half in 2020 (partly in the wake of COVID-19, but also as a result of longer-running efforts to reduce carbon intensity).

In contrast however, Sichuan province recently hit a 2 year high in coal consumption as summer heatwaves combined with a drought pushed up energy demand while restricting hydro-electric output.

With strong pressure now being applied to increase domestic coal output, Chinese imports are expected to decline from 284 million tonnes in 2021 to 222 million tonnes by 2024 (Figure 6.1).

Figure 6.1: Thermal coal imports



Note: **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

India is expected to continue growing in importance as a global thermal coal importer, progressively displacing China as Chinese imports recede (Table 6.1). India expanded its imports of Russian and Indonesian coal in mid-2022 to replace Australian coal, which has been increasingly directed to Europe at the expense of more price-sensitive Indian buyers. Indian imports are expected to come under some pressure in 2022 and 2023, as a result of high coal prices around the world. This may soften import growth, but it is not expected to lead to a fall in imports given the failure of Indian domestic coal output to grow in line with domestic electricity needs.

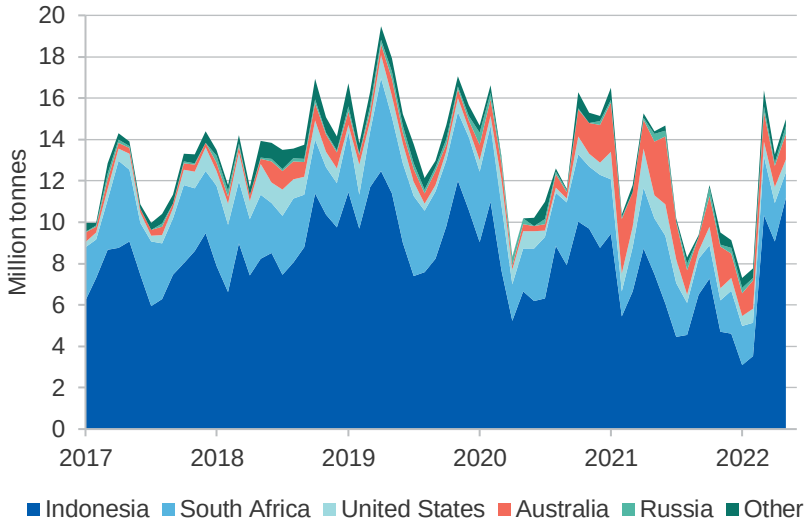
Demand and price pressures are likely to grow further as the Northern Hemisphere winter peaks. However, high prices and potential power curbs will likely constrain demand somewhat over the outlook period. Indian thermal coal importers are typically highly price sensitive, and are not expected to lift imports from the current high levels (Figure 6.2) during the final stages of 2022. Imports are expected to increase in subsequent years.

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

Coal remains important to Japan following the closure of most of its nuclear fleet. Of the 54 reactors taken offline after the Fukushima accident in 2011, only 10 have been re-connected to date. The closure of nuclear plants has increased Japan's reliance on coal, making it more vulnerable to coal price impacts which followed the Russian invasion of Ukraine. Japan's announced sanctions against Russia would obligate it to seek alternative sources of high quality thermal coal supply.

The pace of nuclear reactor connections is accelerating, with the Japanese Government increasing its push for re-openings. Recent opinion polls suggest more than half of respondents now favour use of nuclear power (the first such result for more than 10 years). The Japanese Government is prioritising a rapid opening of 7 more reactors, and at least 12 are expected to be reconnected over the next five years. Ultimately, around half of the 54 closed generators are expected to come back online.

Figure 6.2: India's thermal coal imports, monthly



Source: IHS (2022)

In the short-term, however, Japan remains coal-dependent, with thermal coal imports growing above expectations in recent months as extreme weather and tight inventories affect energy markets (Figure 6.3). Coal imports are expected to ease slightly during the outlook period, with scheduled coal plant closures and the completion of the country's final coal-fired power plant constructions offsetting each other.

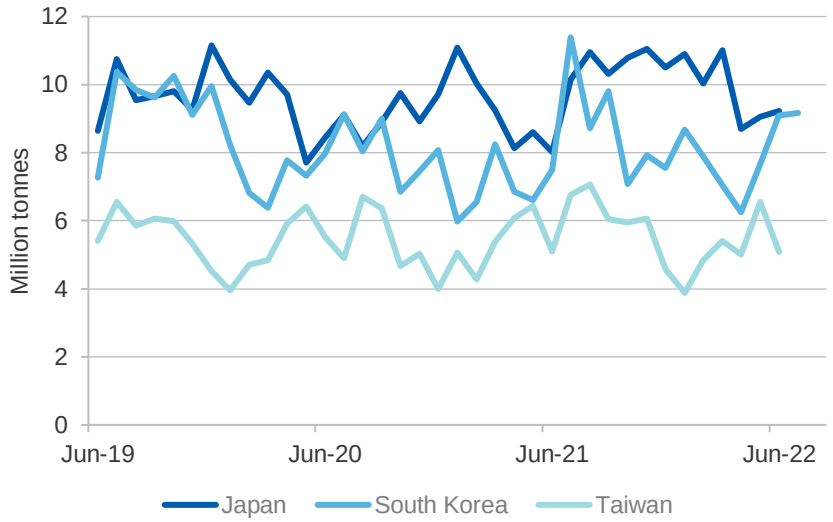
South Korean coal imports will face growing pressure

The conclusion of scheduled maintenance at several nuclear plants in South Korea during 2022 is expected to reduce pressure on coal plants. However, efforts to diversify away from Russian coal would increase demand for imports from other sources. South Korea's state utility (Korea Electric Power Corporation) has announced that orders for Russian coal have now halted. Previously, the company sourced about 10% of its imports from Russia. Other South Korean power generators are similarly seeking alternative suppliers, including from Australia. Despite this, South Korean coal imports from Russia increased in July, though the bulk of this

appears to have occurred under long-term contracts, with purchases from spot markets falling sharply.

Tight conditions in South Korean energy markets have pushed imports up in mid-2022 relative to the same period in 2021. On balance, it is expected that coal imports are peaking and will ease back slowly over the outlook period. The completion of maintenance at the remaining nuclear plants (alongside new nuclear plants coming online) should reduce pressure on South Korean coal imports from late 2022.

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



Source: IHS (2022)

Taiwan's imports are expected to start declining slowly

Taiwanese coal imports have risen in recent months, with the country importing 6.5 million tonnes of thermal coal in May — its highest monthly total to date in 2022. This is largely seasonal, reflecting the impact of the northern hemisphere summer just passed, and is around the same level as in May 2021. Coal demand likely peaked in June or July.

In the coming years, coal imports are likely to be somewhat constrained. Taiwan has abandoned plans to upgrade its coal fleet, opting instead to convert existing coal plants to using gas. Given the age of Taiwan's coal fleet, it is expected that coal imports will begin a long-term decline 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). The pipeline of proposed coal capacity across South Asian countries fell by 63% between 2015 and 2021, but a sizeable number of plants remain under construction. South Asian countries have not shown significant interest in targeting Russia with sanctions. 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).

With significant coal-fired capacity under construction, the Philippines is expected to require more coal over the next three years. Imports in April and May were above the level of a year ago: this increase is partly structural, reflecting higher quantities of coal burning capacity. Imports are expected to grow each year of the outlook period, with coal consumption expected to double by the time of its peak, around 2030.

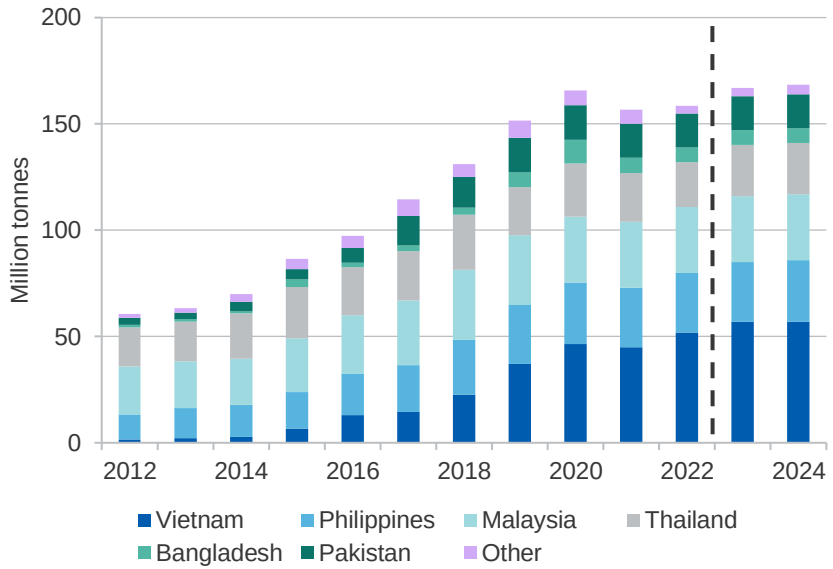
Thailand's coal imports are rising in line with growing demand from the country's industrial sector, which has been led by a rapid expansion in cement production. Imports rose sharply in February, but subsequently eased back slightly, remaining relatively high in April and May. However, coal plant construction 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 mostly beyond the outlook period.

Coal reserves in Vietnam tend to be located in areas of substantial population density, rendering them inaccessible. Vietnam remains highly import dependent, with most imported thermal coal coming from Australia. Many recently built coal plants have been designed to use Indonesian coal, and it is expected that imports of Indonesian coal will increase as

coal plants currently under construction are completed. However, plants at the pre-construction stage have largely been abandoned, meaning that the peak in Vietnamese coal imports will be sooner and lower than previously thought.

Most East Asian governments have expressed intentions to move away from coal imports, but the process is likely to be complex in practice. Security of supply remains a key requirement for countries in the area, and coal is likely to remain important given the surge in gas/LNG prices and reduction in global gas supply following the invasion of Ukraine. Coal imports are expected to rise in key countries over the outlook period, and no fall is expected across the South Asian region in the near term.

Figure 6.4: South and South East Asia thermal coal imports

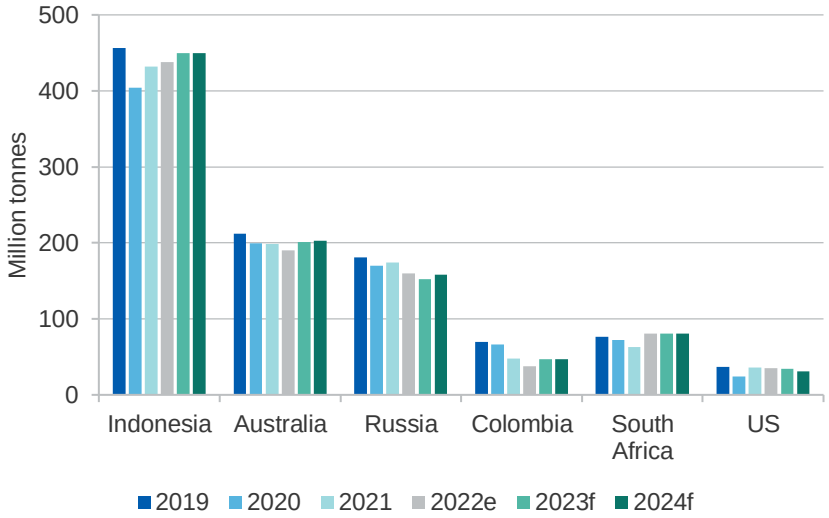


Source: IEA (2022) Coal Information; Department of Industry, Science and Resources (2022); IHS (2022)

6.4 World exports

Global supply chains have reorganised twice in recent months: once following the imposition of Chinese informal import restrictions on Australia, and again following the imposition of sanctions on Russia. Coal supply chains have lost a degree of efficiency as a result, with the higher costs and distance exacerbating the impact of other disruptions to global seaborne trade. Australia and Indonesia are expected to maintain a dominant position in global coal markets through the outlook period, with Russia losing some market shares (Figure 6.5).

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)

Over time, extended high coal prices will likely see coal losing competitiveness relative to other energy sources, with implications for its long-term viability. However, Australian coal, which is high quality and low-cost, retains a strong competitive advantage. And high prices are producing a bonanza for many existing coal mines around the world.

Indonesia's exports remain solid despite temporary disruptions

Indonesian exports rose in April and May following a policy-driven plunge in January, and are now above the level of a year ago. Exports over 2022 YTD are around the same level as in 2021, but higher prices have more than doubled coal export revenue to Indonesia. These high prices are expected to mostly hold up over the coming months, though the discount between the Indonesian benchmark and the Newcastle benchmark has widened recently. This widening reflects the importance of Australian coal to European plants, which would potentially suffer from degraded performance if lower calorific coals were used.

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 to existing pressures on global supply, creating new opportunities for Indonesian exporters — though they may struggle to substitute directly 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

Russian exports have likely passed their peak, with European importers having stocked up ahead of the commencement of EU sanctions. The imposition of these sanctions (in August) is expected to see Russian coal exports to most of Europe drop to virtually nil. This freeze could potentially last for years, and could be magnified by similar announcements from Japan and the US. Informal sanctions from companies in other parts of the world will further lift the quantity of Russian coal pushed out of global markets.

Partially offsetting this, Russian exports to India, China and South Asia are expected to rise, but limits on infrastructure will likely prevent anything close to a full substitution. This will result in a long-term fall in volumes available to the global coal market, and a lift in the long-run floor price for thermal coal, especially at the higher grades where most Russian output sits.

Russia has significant coal reserves, but extraction is largely concentrated in the Kuznetsk Basin, which has infrastructure connections to ports in the Black Sea and the Pacific. Infrastructure constraints continue to affect coal in other regions, and sanctions on equipment supplies to Russia will likely magnify this impact.

The duration of the war and the sanctions remain unclear, and it remains possible that sanctions could persist even in the absence of active war. The resulting lack of essential engineering and maintenance equipment will add to the risk premium for Russian coal, as will the likely curtailment of a range of possible investments in Russian mines.

Russian exports are not expected to recover over the outlook period, and trade flows are not expected to return to their pre-war patterns. EU governments are seeking (through numerous means) to permanently offset their dependency on Russian energy exports, and these efforts are likely to curb trade flows between Russia and Europe substantially.

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

US thermal coal reserves are generally far inland, and rely on long supply chains (which encompass rail and barges), with west coast coal ultimately shipped from ports in California, British Columbia and Vancouver. The long distances and relatively low calorific quality make the US a marginal supplier, feeding markets mostly when prices are strong. US output fell sharply in 2020, but has recovered in the wake of surging prices in 2021 and 2022. Sales to Europe in the first half of 2022 were particularly strong, as European countries attempted to substitute for Russian coal and gas.

It is likely that some of the factors driving high prices will ease over the outlook period, reducing the incentive for marginal US suppliers. With investment now heavily constrained, it is likely that mine closures will result in permanent reductions in coal extraction in the US. However, recent rapid closures of domestic coal plants will indirectly support export markets for a time, with most of the initial fall in coal output being offset by lower

domestic demand. Mines that remain open will become more export oriented, potentially increasing their vulnerability to long-running issues around the cost and quality of US coal. These issues remain masked by high coal prices for the time being.

Shipments from California are expected to end within four years, following an announcement that the Levin-Richmond terminal will halt coal exports from its facilities by 2026. Coal exports from the eastern states (which typically support the Atlantic market) are high-cost even by US standards. The push by EU countries for alternatives to Russian coal will assist Atlantic exporters temporarily, but closer integration to the European market brings risks given the EU commitment to net zero targets and the long-term phase out of thermal coal.

On balance, the US appears now to be in the midst of an export peak, supported by high prices and surging European demand. However, net zero emission targets in key markets, high cost structures, and lack of investment in domestic capacity, are all expected to bring exports down steadily during the outlook period, and more rapidly beyond it.

Colombian exports are not expected to recover fully

Like the US, Colombia is a relatively high cost exporter, which has similarly benefited from the recent surge in prices and the imminent exclusion of some Russian coal from the market. Colombian exports are being sought to meet European demand, and this should underpin solid volumes over the outlook period.

Some mines, such as the Prodeco and CNR projects, continue to ramp up output. Other mines, including La Jagua and Calenturitas, remain out of operation, but could return to active use — with the country's National Mining Agency attempting to seek potential buyers and investors. Long term prospects depend on the success of the Colombian Government in enabling expanded mine operations, and the success of Colombian exporters in finding alternatives to European demand. However, with some mines having been permanently closed in recent years, it is not expected that pre-COVID export levels will be reached.

Exports from other countries face mixed prospects

South African exports remained steady in 2022 despite infrastructure constraints. Thermal coal shipments to the Richards Bay Coal Terminal (which exports the majority of coal from South Africa) have been hampered by rail issues and other disruptions. Export volumes from the port fell to a 25-year low in 2021. As yet, Transet, (which owns and operates the associated rail network), has not managed to restore full capacity. However, the decline at Richards Bay has been partly offset by very strong export results at South Africa's other ports.

South African export markets have shifted over time. During the 10 years to 2020, South African exports withdrew from the declining European market, finding new markets in South Asia. This was partially reversed in the wake of the EU sanctions against Russia, with Richards Bay coal pricing becoming increasingly important in the Atlantic market, despite persistent technical issues at the port.

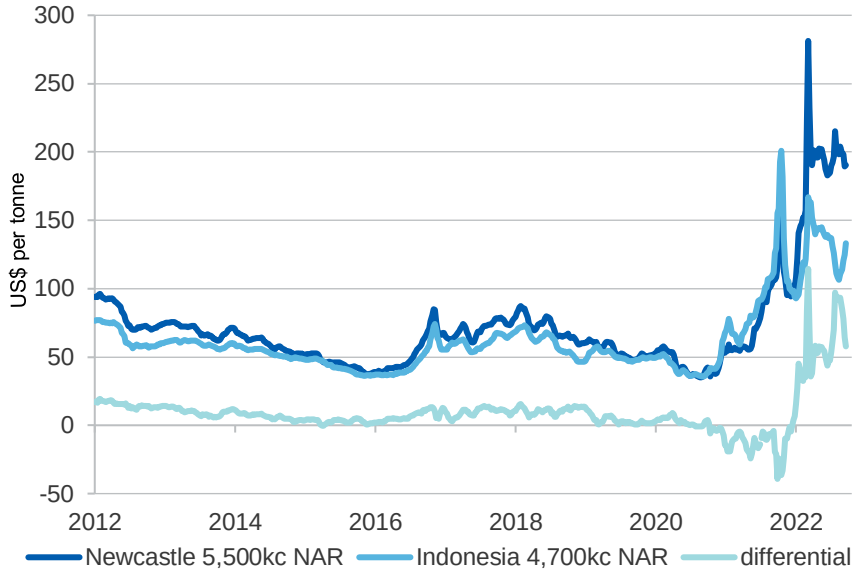
In Canada, both major export mines (Bighorn's Vista and Westmoreland's Coal Valley) continue to perform solidly. Both are relatively new mines, with production at Coal Valley having restarted only at the end of 2021. Canada's coal exports may be constrained by policy commitments, including a proposal to cancel all new thermal coal mines, and a commitment to cutting thermal coal exports to zero by 2030. Over the outlook period, however, export prospects look relatively solid, supported by a ramp-up at Coal Valley.

6.5 Prices

Prices are expected to continue to be relatively high and volatile

Supply shortages continue to send thermal coal prices to record levels in 2022. As previously noted, shortages are the product of a string of disruptions from COVID-19, weather events, the fallout from the Russian invasion of Ukraine, and a shortage of new investment. The price impact on higher grade coals has been greater, increasing their price differential relative to lower grades. This reflects the requirement for many European plants for access to high-calorific grades.

Figure 6.6: Thermal coal prices — Australian vs Indonesian



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

Many of these factors are likely to be long-term and structural, resulting in high and volatile prices for thermal coal over the foreseeable future. However, issues with social licence, insurance, finance and government policy are expected to persist, preventing a major supply increase despite the high prices on offer.

In quarterly terms, prices are expected to peak at US$385 a tonne in the September quarter, declining to $US325 a tonne in the December quarter. Prices are expected to continue easing slowly, finally falling below US$200 a tonne by the end of 2023. Prices are expected to remain above their long-term average out to 2024 and beyond.

6.6 Australia

Australian thermal coal exporters face volatile conditions in Q4 2022

Coal shipments from Australia have not picked up significantly in the first half of 2022, despite some easing in disruptive weather events, which included severe flooding in NSW and Queensland. There is a risk that output will be constrained further over the rest the year and into 2023, as a result of two further ongoing weather events: the Indian Ocean Dipole and the emerging La Niña. Both of these are typically correlated with high rainfall across eastern Australia, where coal operations have already faced months of flooding and lengthy mine de-watering.

Flood issues are still ongoing in some areas, including Maitland and the Hunter, where transport continues to face impacts from repeated cycles of heavy rain. Transportation services in the Hunter now appear to be resuming, but fresh flooding is creating new issues for thermal coal exports in nearby areas early in 2022–23, with significant impacts on mines and transport in July.

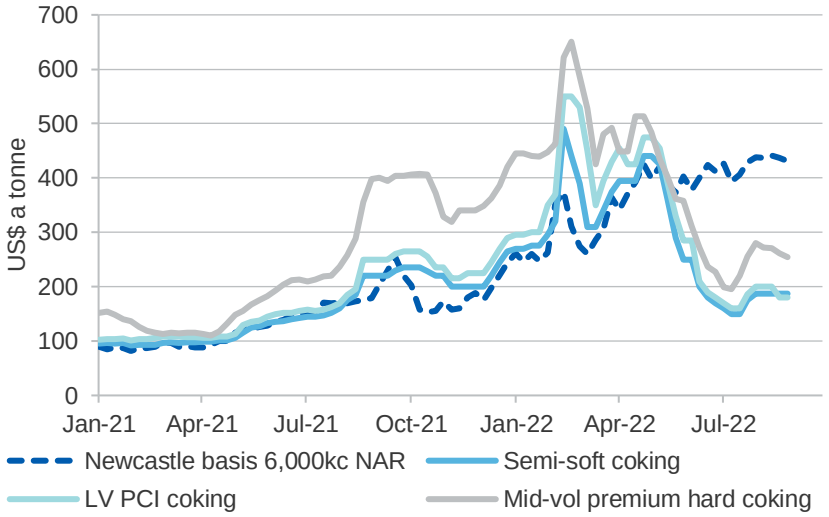
Australian coal remains highly profitable, with high prices (Figure 6.6) and reasonable volumes persisting despite weather disruptions. Volumes are expected to sustain through the outlook period, with a drawn-out peak over the next few years. Output is expected to be constrained in the longer term by a lack of progress in bringing new mines online. However, high prices will support maximum production at existing mines through the outlook period. Some volume growth is also expected in the early part of the outlook, as output ramps up at the Carmichael mine in Queensland.

Contract price negotiations between Glencore and Nippon Steel in Japan have concluded, with the agreed contract price for the year to March 2023 increasing from around US$120 a tonne to US$375 a tonne. This is the highest contract price ever agreed between the two parties, and reflects the impact of the Russian invasion of Ukraine and its spill over to gas and coal markets. The agreement may also affect negotiations between Glencore and Tohoku Electric, whose contracts are often seen as a benchmark price for the wider Asian region.

China's informal import restrictions on Australian coal are assumed to remain in effect through the outlook period. Although rumours have emerged that changes to the current policy are under consideration, at the time of writing there has been no formal announcement suggesting any change.

Australian coal remains in high demand in the wake of the Russian invasion of Ukraine, with Australia being the primary alternative supplier for higher coal grades. This has led to additional price pressure among higher grade products (Figure 6.7) and is likely to see a larger share of Australian coal directed to Europe over time. 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 access ahead of European importers.

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



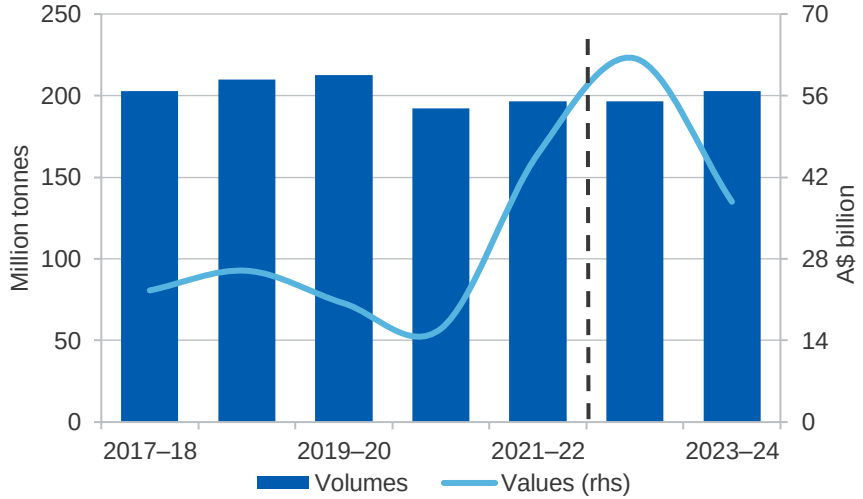
Source: IHS Markit (2022)

Export volumes are expected to increase marginally over the outlook period (Figure 6.8). However, prices will likely remain subject to significant volatility, with a gradual ebbing in the huge growth that followed the Russian invasion of Ukraine. Export values are forecast to rise from $46 billion in 2021–22 to more than $62 billion in 2022–23, before easing to $38 billion by 2023–24.

Revisions to the outlook for Australian thermal coal exports

The forecast for export earnings has been revised up by around $22 billion (nominal terms) in aggregate over the forecast period. Thermal coal export earnings are now expected to be around US$100 billion over the full outlook period. Revisions reflect the confirmation of a new La Niña cycle, which will likely add to prices over the next two years. The fallout from the Russian invasion of Ukraine has also added to price pressures over the medium term.

Figure 6.8: Australia's thermal coal exports



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

Table 6.1: World trade in thermal coal

	Unit	2021	2022[f]	2023[f]	2024[f]	Annual percentage change 2022[f]	2023[f]	2024[f]
World trade	Mt	1,056	1,036	1,048	1,049	-1.8	1.2	0.1
Thermal coal imports								
Asia	Mt	835	862	890	898	3.2	3.3	0.9
China	Mt	284	246	226	222	-13.4	-8.2	-1.8
India	Mt	138	165	216	224	19.9	31.0	3.7
Japan	Mt	130	136	136	135	4.8	0.0	-0.7
South Korea	Mt	90	91	86	83	1.5	-5.5	-3.5
Taiwan	Mt	63	63	54	53	0.1	-14.3	-1.3
Thermal coal exports								
Indonesia	Mt	432	438	450	450	1.4	2.7	0.0
Australia	Mt	199	190	201	203	-3.2	4.4	1.0
Russia	Mt	174	160	152	158	-7.9	-5.0	3.9
Colombia	Mt	48	38	47	47	-20.2	23.7	0.0
South Africa	Mt	63	81	81	81	29.5	0.0	0.0
United States	Mt	36	35	34	31	-3.2	-2.9	-8.8

Notes: **f** 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[f]	2032[f]	2024[f]
Contract prices[b]								
– nominal	US$/t	110	203	150	129	84.7	-26.3	-14.0
– real[c]	US$/t	118	203	146	123	72.8	-28.0	-15.8
Spot prices[d]								
– nominal	US$/t	135	333	232	125	147.0	-30.2	-46.0
– real[e]	US$/t	145	333	225	119	129.4	-32.3	-47.2
Australia	**Unit**	**2020–21**	**2021–22**	**2022–23[f]**	**2023–24[f]**	**2021–22[s]**	**2022–23[f]**	**2023–24[f]**
Production	Mt	228	246	257	253	8.0	4.4	-1.3
Export volume	Mt	192	197	197	203	2.4	0.9	2.1
– nominal value	A$m	16,009	46,006	62,391	37,798	187.4	35.6	-39.4
– real value[h]	A$m	17,890	49,223	62,391	36,267	175.1	26.8	-41.9

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)