27 December 2022 The 443rd Forum on Research Works

Coal Market Outlook for 2023

- Coal prices will remain high in 2023 -

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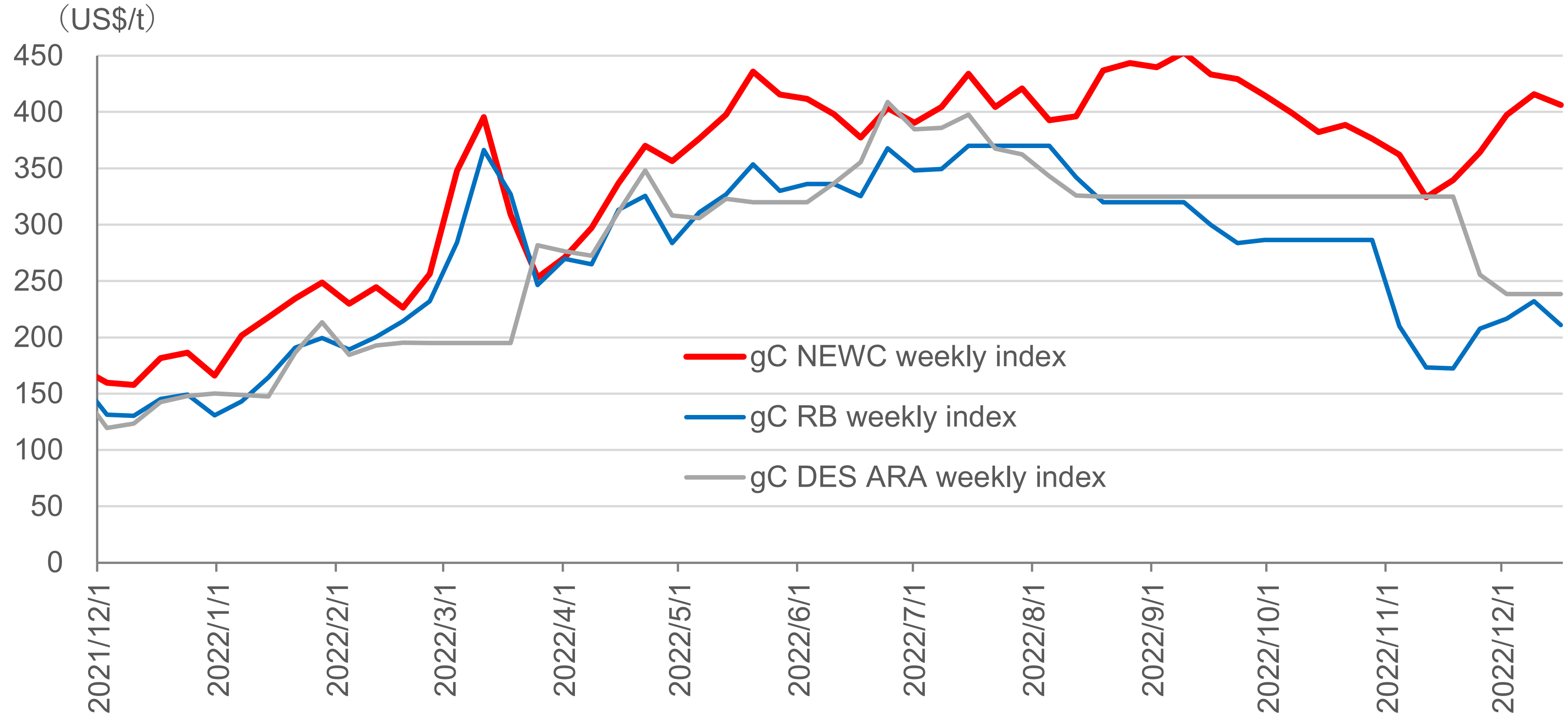
Key Points of the Report

- ✓ The coal market, which experienced excess demand since late 2021 due to demand recovery and natural disasters in supplier countries, was disrupted by the invasion of Ukraine and the Russian coal embargo announced by the EU and Japan. In addition, on the supply side (Australia), heavy rains in late March and early July caused temporary supply disruptions.
- ✓ Coal prices have experienced two sharp rises, with steam coal prices hovering around $400/ton since June while coking coal prices have fallen since late June after briefly hitting $600/ton.
- ✓ In China, electricity generation was weak in the first half of 2022, mainly due to the lockdown in Shanghai. Coal consumption increased and imports decreased due to growth in domestic production. In India, both production and imports increased.
- ✓ In the EU, where the issue of stable fossil energy supply surfaced, coal demand temporarily increased due to postponing coal-fired power plant closure periods and restarting of operations at previously inactive plants.
- ✓ In 2023, the FOB coal prices for steam coal are forecasted to trend downward from the current price of $400/ton, which has been high. Coking coal, which is currently in the mid $200s/ton range, is expected to continue on a gradual upward trend.

Steam Coal Price Trends

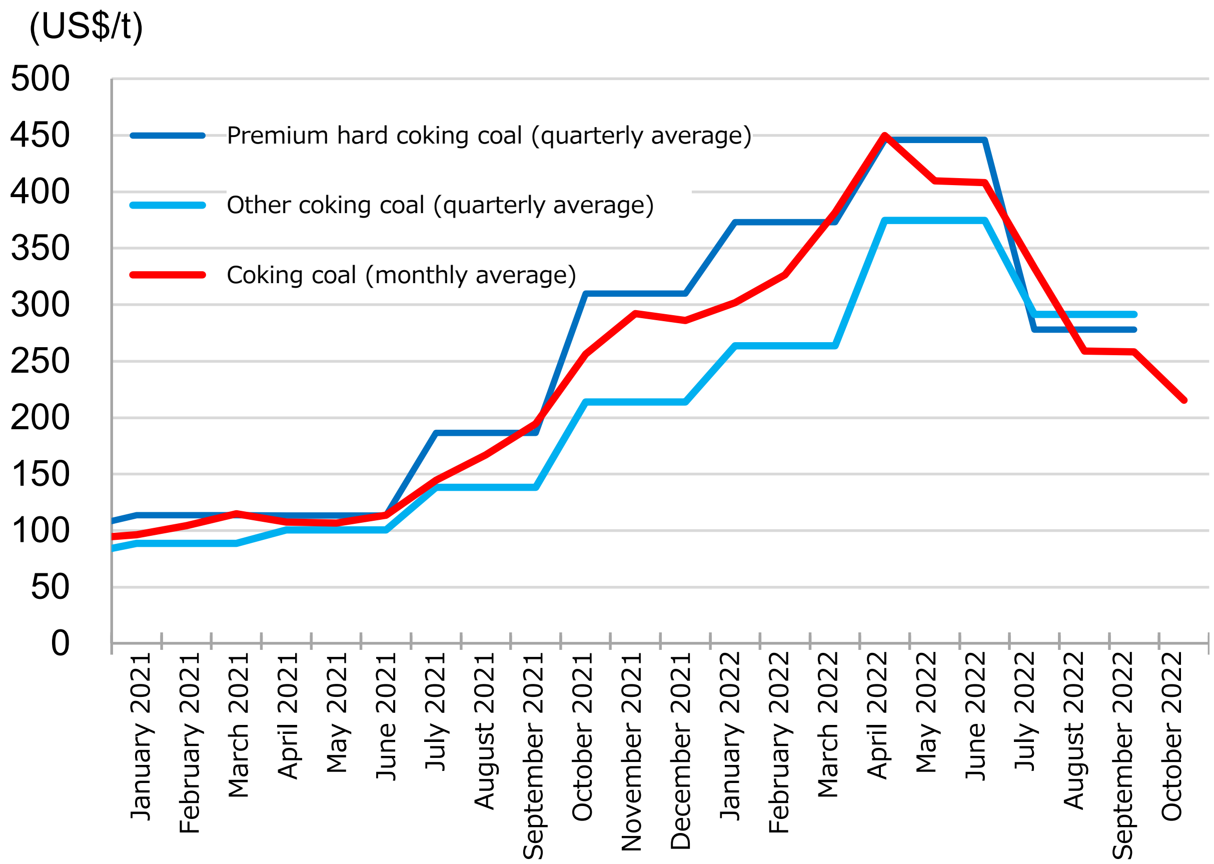


Source: globalCOAL (a division of Global Commodities Holdings Limited)

- Amid an excess of demand, the market continued on an upward trend due to unfavorable weather in Australia and South Africa (from December), an export ban in Indonesia (in January), a shortage of human resources caused by the outbreak of the Omicron variant, concerns about the situation in Ukraine, and other factors.
- Prices surged following Russia’s invasion of Ukraine in late February. After another sharp rise due to reduced exports caused by heavy rains in Australia (from March) and the EU and Japan’s announcement of a ban on Russian coal imports (April 7), the price hovered between $400–450/ton. The price continued to decline in September but rose again to over $400/ton.

Coking Coal Price Trends (Australian export prices)

- Demand recovery in major countries and a sharp rise in domestic coking coal prices in China pulled the price up from July 2021. Prices subsequently fell due to measures to restrain crude steel production in China.
- Entering 2022, the market was on an upward trajectory due to unfavorable weather conditions in Australia, a shortage of human resources caused by the outbreak of the Omicron variant, concerns about the situation in Ukraine, and other factors.
- Russia's invasion of Ukraine in late February sent prices soaring, with prices for premium hard coking coal temporarily exceeding $600/ton.
- Heavy rains in Australia as well as the EU and Japan's announcement of a ban on Russian coal imports (April 7) pushed prices up again, temporarily exceeding the $500/ton mark.
- Since late May, the price has been on a downward trend due to a recovery in supply, falling to nearly $200/ton in July.
- In reaction, the price rose again, hitting $300/ton at one point in early November, then dropping to nearly the mid $200s/ton range recently.

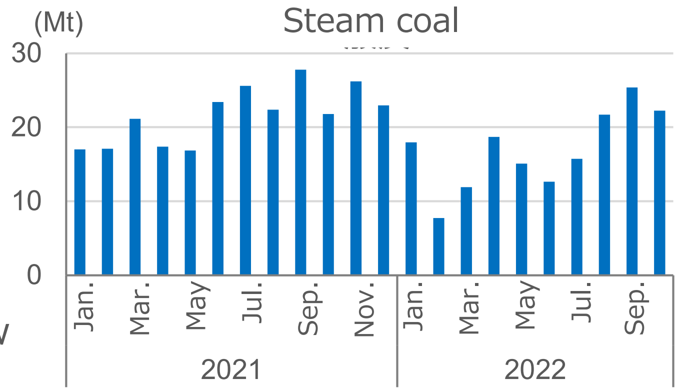


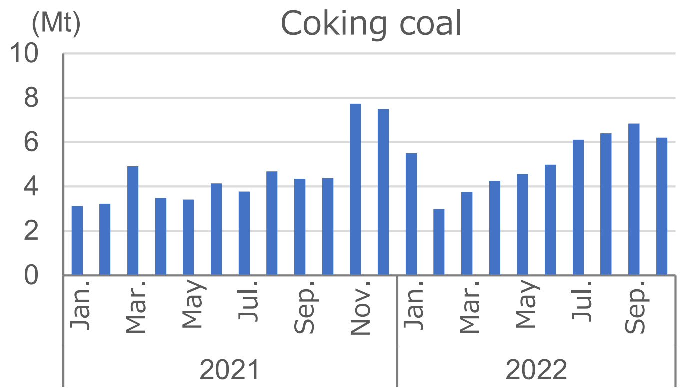
Source: Department of Industry, Science, Energy and Resources (DISER), Australia Government, "Resources and Energy Quarterly – December 2022"

Status of Demand Countries in 2022 (China)

- Raw coal production increased year over year (Jan-Oct: up 420 million tons)
- Imports increased from March onward, but year over year (Jan-Oct) steam coal was down 41.5 million tons while coking coal was up 12.2 million tons.
- Although consumption fluctuated due to the expansion of COVID-19 infection, the consumption increased based on raw coal production.

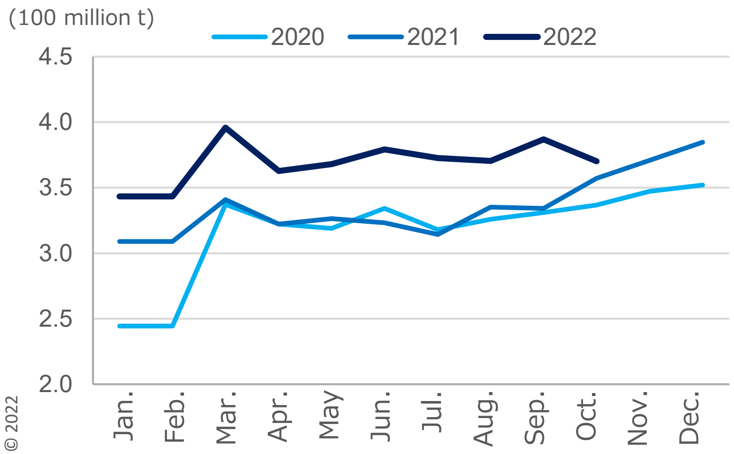
Coal imports



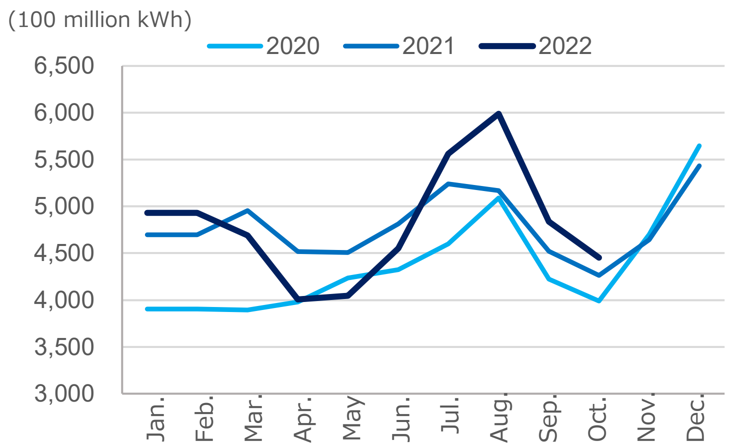


Source: The TEX Report, Coal Monthly Statistics

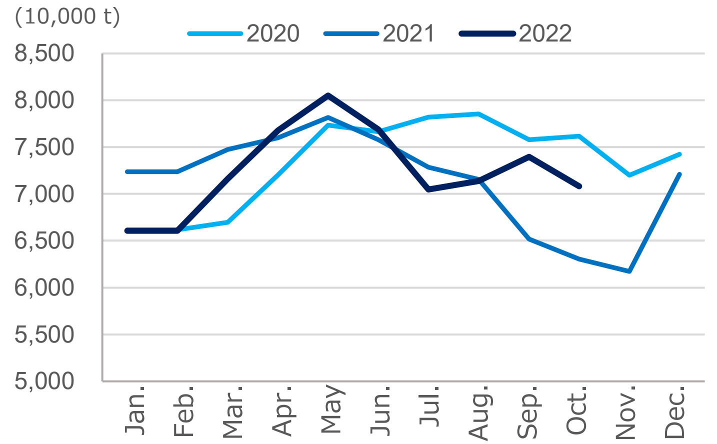
Raw coal production



Fossil-fired power generation



Pig iron production



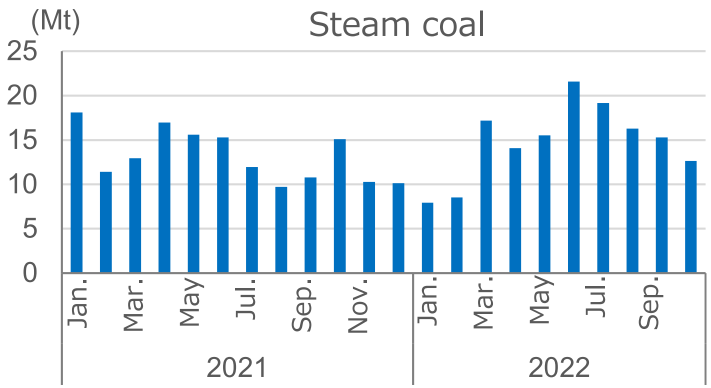
Source: National Bureau of Statistics of China, Monthly Statistics

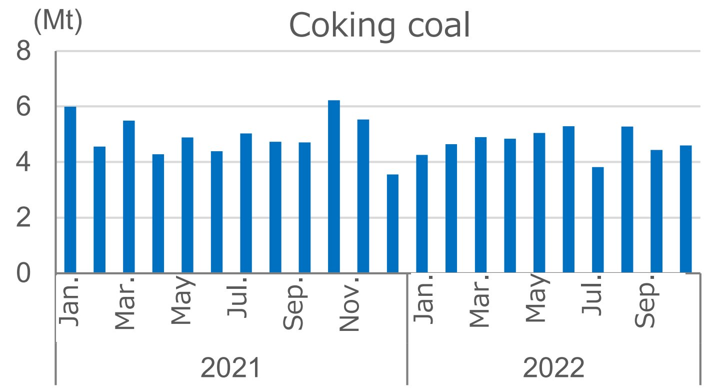
Status of Demand Countries in 2022 (India)

- Raw coal production increased year over year (Jan-Nov: up 18.4 million tons).
- Imports of steam coal increased from March while imports of coking coal decreased slightly.

  Year over year (Jan-Oct), steam coal was up 10.4 million tons, while coking coal was down 3.2 million tons.
- Steam coal consumption increased, while coking coal consumption rose slightly.

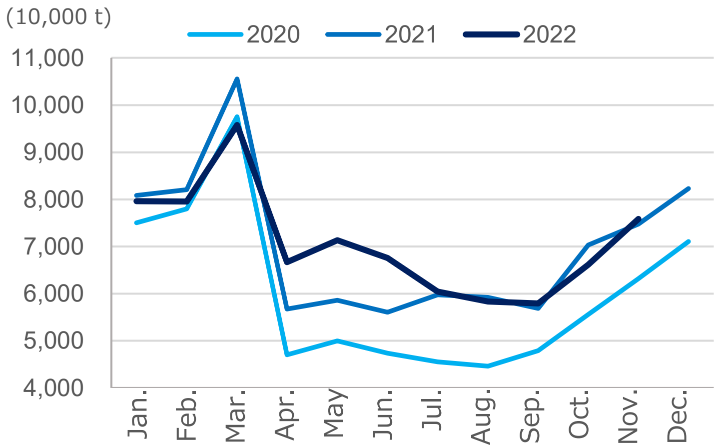
Coal imports





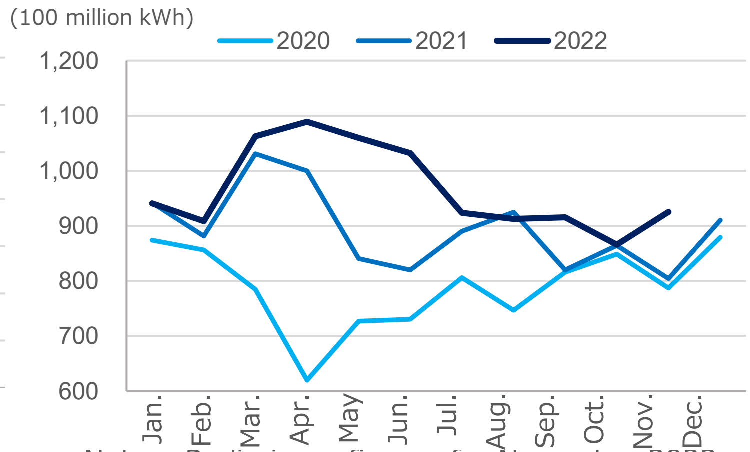
Source: Trade Statistics of India

Raw coal production



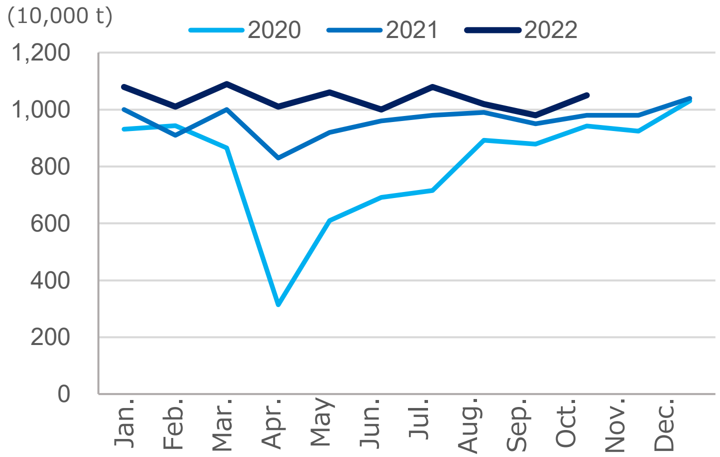
Note: Preliminary figures for November 2022
Source: Ministry of Coal. Monthly Statistics Report

Coal-fired power generation



Note : Preliminary figures for November 2022
Source: CEA, Executive Summary on Power Sector

Pig iron production



Source: World Steel Association

Status of Demand Countries in 2022 (Japan, South Korea)

Steam coal :

- Increased in both Japan and South Korea in Jan-Oct.

Coking coal :

- Decreased in both Japan and South Korea in Jan-Oct.

Comparison of coal imports

Japan (Jan-Oct)

(10,000 t)

	2022	2021	Change
Steam coal	9,630	9,225	405
Coking coal	5,139	5,311	−171

Source: Trade Statistics of Japan

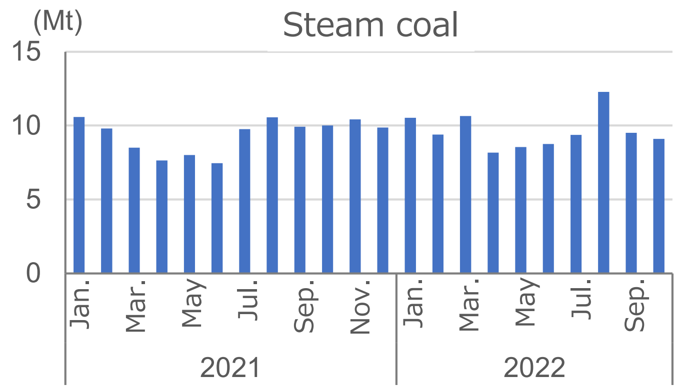
South Korea (Jan-Oct)

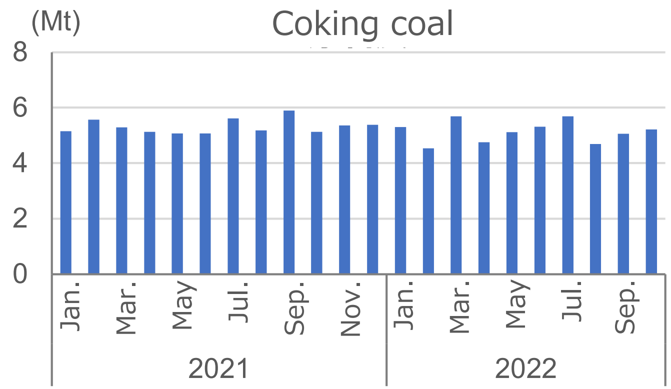
(10,000 t)

	2022	2021	Change
Steam coal	7,503	7,340	163
Coking coal	2,431	2,540	−108

Source: The TEX Report, Coal Monthly Statistics

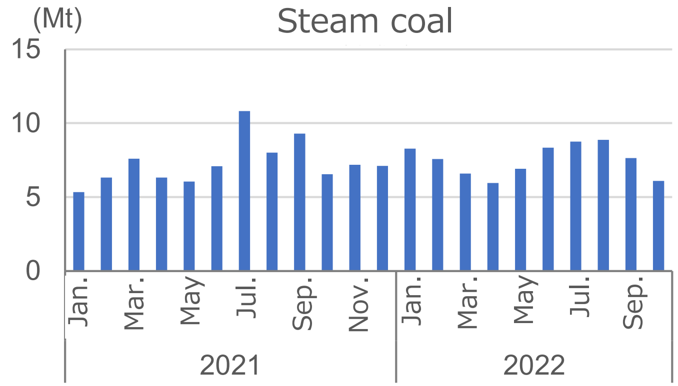
Japan's coal imports

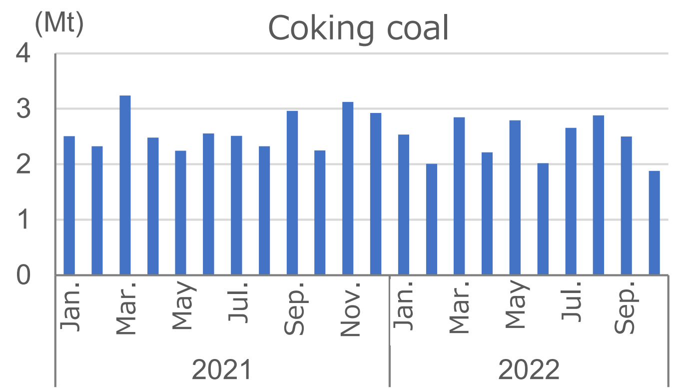




Source: Trade Statistics of Japan

South Korea's coal imports





Source: The TEX Report, Coal Monthly Statistics

Export Status of Australia and Indonesia in 2022

Australia:

- Due to supply disruptions caused by torrential rains, export volume was weak and below the previous year's level.
- In particular, exports from the Port of Newcastle declined by 20 million tons from January to November year over year.

Indonesia:

Coal export volume plummeted in January due to a ban on coal exports. The ban was lifted on January 14, and the export volume gradually recovered, exceeding year-on-year levels from March onward.

Comparison of coal exports

Queensland (Jan-Oct) (10,000 t)

	2022	2021	Change
Export volume	15,865	16,800	-935
Monthly average	1,586	1,680	-94

Port of Newcastle (Jan-Nov) (10,000 t)

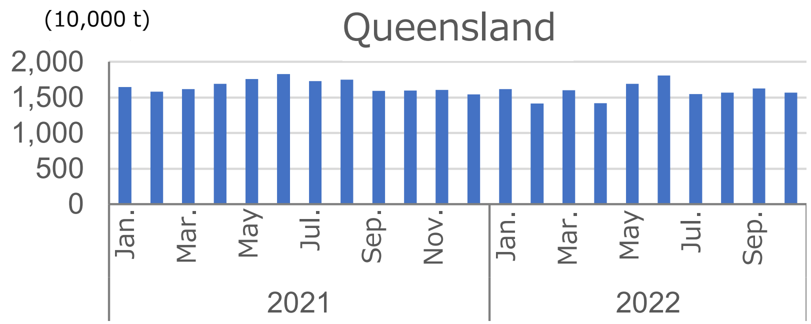
	2022	2021	Change
Export volume	12,276	14,368	-2,092
Monthly average	1,116	1,306	-190

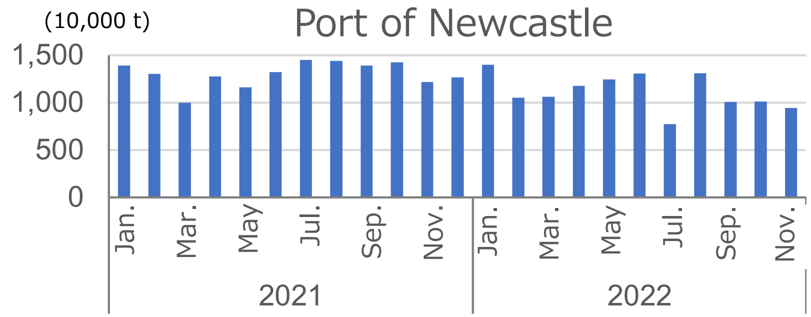
Indonesia (Jan-Sep) (10,000 t)

	2022	2021	Change
Export volume	34,407	32,077	2,331
Monthly average	3,823	3,564	259

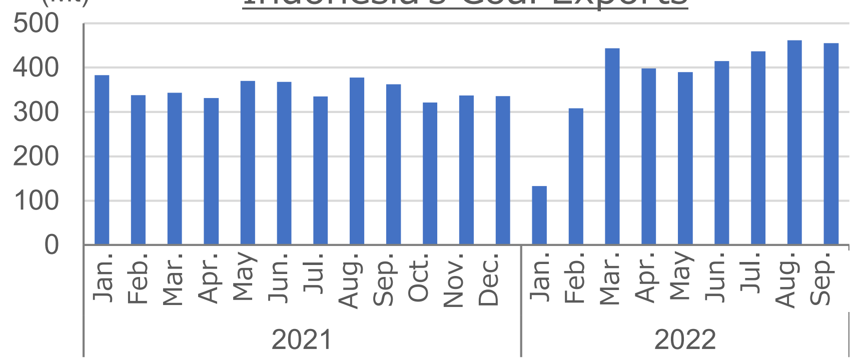
Note: Australia's exports excluding Port Kembla.
Source: Australia: Official websites for North Queensland Bulk Terminal, Port of Newcastle, Port of Gladstone, Port of Brisbane.
Indonesia: BPS (Statistics Indonesia)

Australia's Coal Exports





Indonesia's Coal Exports



Impacts on EU coal markets caused by the invasion of Ukraine and economic sanctions against Russia

- To ensure a stable supply of electricity, each country decided to postpone the coal-fired power plant closure periods, restart operations at previously inactive plants, and ease regulations, albeit as time-limited measures.
  ⇒ Coal demand and imports temporarily increased

Germany: Reserve power supply put into commercial operation (5.9 GW)
Postponed closure (2.12 GW)
Netherlands: Full lifting of the 35% operating cap (4.1 GW)

Resumption of operations in other countries

Country	Power plant	MW	Year of operation	
Austria	Mellach	246	1986	Closed (Apr 2020)
France	Emile-Huchet #6	647	1981	Closed (Mar 2022)
	Cordemais #4,5	1,200	1983	Reserve power supply
United Kingdom	DRAX	1,400	1985	Closed (Mar 2021)
	West Burton	1,000	1967	Closed (Sep 2022)

Source: Government publications, etc.

- Coal consumption in the EU increased ⇒ Increased imports and lignite coal production
- Imports from Russia decreased, while imports from the U.S. and other countries increased.

EU coal production and imports (Jan-Jun year over year)

(Mt)

	2022 (1-6)	2021 (1-6)	Change
Imports (Hard coal)	59.2	47.8	11.4
Production (Hard coal)	28.6	29.1	-0.5
Production (Lignite)	145.5	126.1	19.4

Source: EURACOAL, “EURACOAL Market Report”

Russia’s coal exports by destination (Jan-Jun year over year)

(Mt)

	2022 (1-6)	2021 (1-6)	Change
Total exports	98.9	106.7	-7.8
To EU	17.0	21.4	-4.4

Source: UGOL

U.S. coal exports to EU (Jan-Oct year over year)

(Mt)

	2022 (1-10)	2021 (1-10)	Change
Total exports	64.0	64.3	-0.2
To EU	21.1	13.2	7.9

Source: The TEX Report

Impacts on Asian coal markets caused by the invasion of Ukraine and economic sanctions against Russia

- Russian coal imports increased in China and India
- In China, Russian coal imports increased in 2021 due to the Australian coal embargo and further increased in 2022.
- In Japan and Taiwan, on the other hand, imports from Russia declined.

Amount of Russian Coal Imports in the Top 5 Coal-Importing Countries in Asia

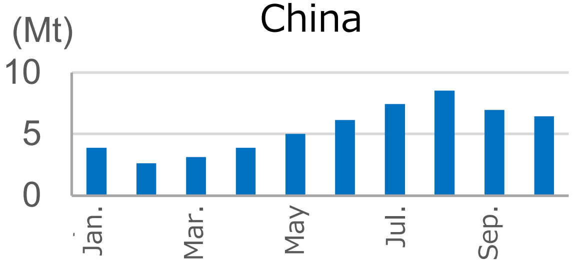
(10,000 t)

	2020	2021	2022
China (Jan-Oct)	2,941 (11.6%)	4,785 (18.6%)	5,401 (23.5%)
India (Jan-Oct)	641 (3.7%)	651 (3.4%)	1,371 (6.9%)
Japan (Jan-Oct)	1,788 (12.4%)	1,688 (11.2%)	1,039 (6.8%)
South Korea (Jan-Oct)	2,228 (21.8%)	1,891 (18.2%)	2,044 (19.7%)
Taiwan (Jan-Oct)	906 (16.8%)	845 (14.8%)	604 (11.0%)

Note: Figure in parentheses reflects the percentage of Russian coal imports relative to total coal imports.
Source: The TEX Report, trade statistics, etc.

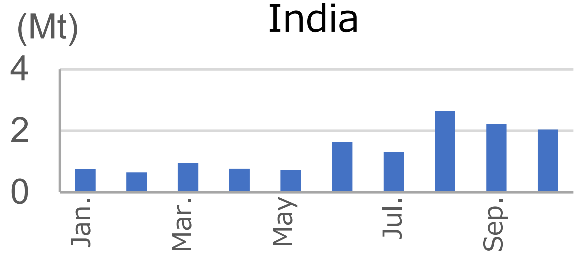
Russian coal imports in 2022

China



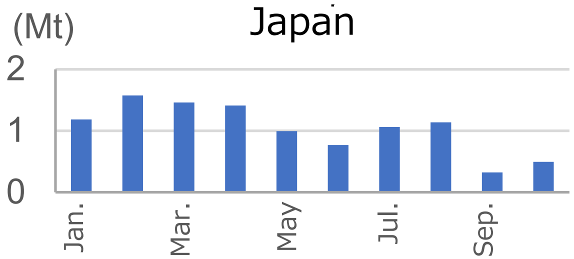
Source: The TEX Report

India



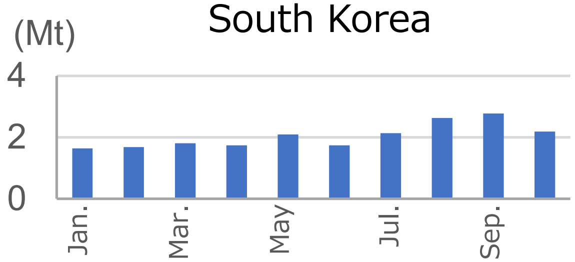
Source: Trade Statistics

Japan



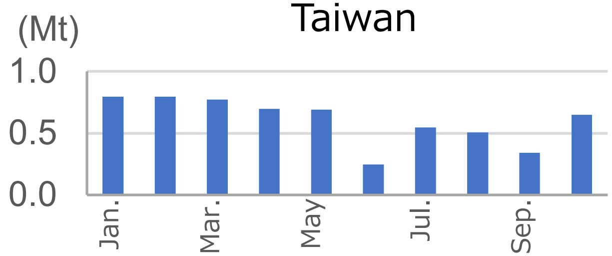
Source: Trade Statistics

South Korea



Source: The TEX Report

Taiwan



Source: Bureau of Energy, Ministry of Economic Affairs, *Energy Statistics*

Coal Market in 2023

【Demand】

- China, India, and Southeast Asia: expected to increase.
- EU: Demand increased in 2022 and will remain flat in 2023.
- Overall, demand, which declined during the COVID-19 pandemic, is expected to increase more than in 2022 due to the economic recovery.

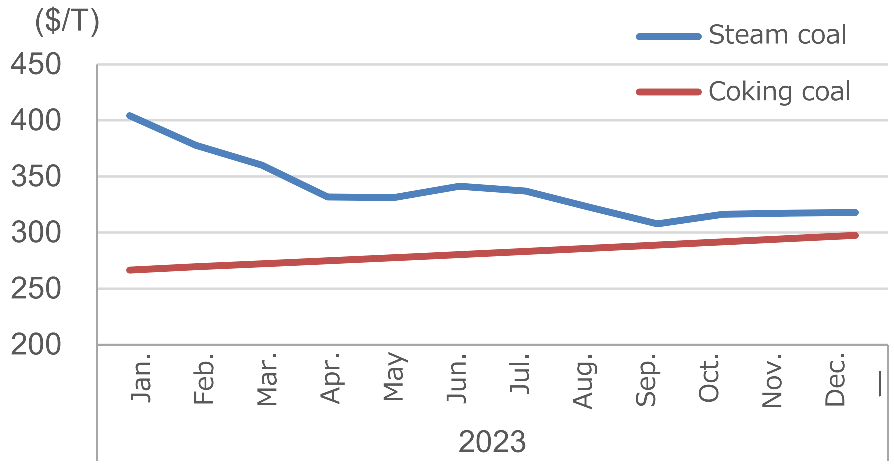
【Supply】

- With high prices, production is expected to increase to meet demand.

Price outlook for 2023 (average annual price)

	Estimated average FOB price for 2022	Average FOB price forecast for 2023
Steam coal price	$360/ton, (fluctuating between $150–$450)	$340/ton
Coking coal price (hard coking coal)	$360/ton (fluctuating between $200–$600)	$280/ton

Price outlook for 2023



- Steam coal prices, which have been unusually high, are expected to fall from the current $400/ton, albeit with seasonal fluctuations.
- Coking coal prices are expected to rise moderately from the current mid-$200/ton range.
- Comparing the average LNG import price of $16.8/million btu and the average steam coal import price of $355/ton in 2023 on a calorie basis, LNG is 6.67 cents/thousand kcal, while steam coal is 5.70 cents/thousand kcal. This makes LNG price just 1.17 times the price of steam coal.

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