

Coal Mid-Year Update

July 2024



INTERNATIONAL ENERGY AGENCY

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Abstract

Coal markets are stabilising following recent years of uncertainty unleashed by the global energy crisis. Coal remains the primary global energy source for electricity generation, and increased demand for electricity continues to fuel global coal demand. Clean energy technologies such as solar, wind and hydropower are gaining traction but what impact have recent world events had on their uptake, and are we yet at the point of a structural decline in coal demand?

This Coal Market Update, which provides the latest analysis of coal demand, production, trade and prices, finds that coal demand, supply and trade volumes reached an all-time high in 2023, confirming previous forecasts. It also provides preliminary estimates for the first half of 2024 and outlooks for the full year 2024 and towards 2025, based on recent trends, data and forecasts for economic growth across regions.

Coal continues to be the largest source of carbon dioxide (CO₂) emissions and, while carbon capture, utilisation and storage technologies can help reduce coal-related CO₂ emissions, the ongoing use of coal has major implications for efforts to reach international energy and climate goals.

Overview

Demand

Global coal demand in 2023 grew by 2.6% to reach an all-time high

Driven mainly by strong growth in the People's Republic of China and Hong Kong (hereafter, "China") of 6%, or 276 million tonnes (Mt), and in India (9.2% or 105 Mt), global coal demand grew by 2.6% in 2023, to reach a new record of 8.7 billion tonnes. The increases in China and India more than offset significant declines in the European Union (-22.5% or -103 Mt) and the United States (-17.3% or -81 Mt)

Coal consumption grew in both electricity generation and industrial sectors, where the iron and steel industry is the largest consumer. Power generation from coal increased by 1.9% in 2023 to 10 690 terawatt-hours (TWh), setting a new record. As a result, coal continues to be the largest source of global electricity generation globally.

In 2024, global coal demand is expected to stay broadly flat

A recovery in hydropower in China combined with significant expansion of wind and solar is expected to slow the growth of coal power generation globally in 2024, albeit with contrasting trends across different regions. Since April, hydropower production in China has rebounded, but electricity consumption in China has grown strongly due to robust increases in demand both in the services sector and industry. At the same time, coal-intensive heavy industries in China (i.e. cement and steel) continue to struggle due to the sluggish real estate sector.

Coal demand increased in both India and Viet Nam in the first half of 2024 due to strong electricity demand and low hydropower output. Meanwhile, India's economy is growing rapidly, pushing up industrial coal consumption. However, India's coal demand growth is expected to slow in the second half of 2024, as the unusually strong increase in demand in the first half of the year was driven by exceptional weather conditions.

In the United States, where coal use has been in decline since 2008, coal demand remained almost unchanged year-on-year in the first half of 2024 due to lower switching from coal to natural gas in the electricity sector. In the European Union, after a 22% decline in coal demand in 2023, we expect a decrease of 19% in 2024,

mostly driven by the electricity sector, where the expansion of renewables continues while demand remains relatively weak.

Based on our current assumptions, we expect global coal demand to remain broadly flat for the full year. However, weather, economic activity, natural gas prices and other factors could still result in slight fluctuations. This is particularly true for China's electricity, sector which accounts for one-third of global coal demand.

In 2025, global coal demand is forecast remain on a plateau

The electricity sector accounts for two-thirds of global coal demand. In most countries, coal demand in the power sector fluctuates more significantly than in industrial sectors, largely because there are fewer substitution options for industrial coal use. As such, changes in global coal demand trends are mainly driven by the electricity sector. At the same time, the increasing impacts of unforeseen extreme weather events is making electricity demand harder to predict in the short term.

At a regional level, coal demand in advanced economies is clearly on a downward trend – while in some emerging economies, further growth in demand is very likely. This leaves China as the key variable. Given the most recent data, global coal demand is expected to remain broadly unchanged in 2025 compared with 2024, at around 8.7 billion tonnes.

Supply

Global coal production reached an all-time high in 2023, close to 9 billion tonnes

In 2023, production by the three largest coal producers, accounting for 70% of global output, grew considerably: China (3.4%), India (12%) and Indonesia (13%). As a result, global coal production reached an all-time high of 8.9 billion tonnes.

China expanded coal production to guarantee energy security and reduce price volatility. In India, energy security is also a high priority, as frequent shortages in the past have turned attention toward reducing imports. Indonesia's production, despite the increasing domestic need, is export oriented. As such, its production grew in 2023 to meet demand in international markets. In the United States, the fourth largest producer, coal output declined by 2.8%, much less than demand, due to higher exports and stock building. In the Russian Federation (hereafter, 'Russia') data show only a slight decline in production, despite exports being subject to sanctions.

Production levels in 2024 are expected to be similar to 2023

Our analysis for the first half of 2024 shows a slight decline in global coal production of 0.7% year-on-year, driven mostly by China, which recorded a decline of 1.7%. Responsible for half of global coal output, China has intensified safety checks in Shanxi province, the country's largest producing region, which accounted for 1.3 billion tonnes of coal output in 2023. Pressure to increase domestic production has declined due to slowing demand growth, healthy stocks across the supply chain, and higher imports. India continues to encourage production to avoid coal shortages and reduce imports. Meanwhile, Indonesia aims to produce 720 Mt in 2024, but has mining approvals for more than 900 Mt. Indonesia's coal production will ultimately depend on international demand, in particular, that of China.

Assuming no new safety inspection programmes, Chinese production is set to recover partially in the second half of 2024 to result in a slight decrease of 0.8%. In India, the strong push to increase production continues and even intensifies. Coal India, the cornerstone of domestic production, is increasing production at growth rates close to 10%. However, production by captive blocks and commercial mines is growing much faster. In Indonesia, we expect little growth after last year's surge.

In the United States, coal production is estimated to have declined 17% in the first half of 2024, partially due to a higher comparison base in 2023 and high stocks in power plants. Despite coal demand in the United States remaining flat in the first half of 2024 rather than decreasing, US coal production is set to continue to decline because of high stocks. In Russia, production is forecast to remain stable in 2024, with domestic demand still robust and exports expected to decline slightly. In Europe, coal production is set to decline. Against this backdrop, our analysis indicates a marginal decrease in global coal production in 2024.

Trade

Global coal trade volumes reached an all-time high in 2023

The decrease of around 50 Mt in two key importing areas, Europe and Northeast Asia (Japan, Korea and Chinese Taipei) was more than offset by growth in India, Southeast Asia and China in 2023. Chinese imports reached unprecedented levels of 480 Mt, surpassing the former record by 140 Mt or 40%. This was due to strong demand, stock building, and lower prices than in 2021-2022, which made imports more attractive despite China's boost in domestic coal production since

October 2021. This pushed the global international coal trade volume above 2019 highs, surpassing 1.5 billion tonnes for the first time. Seaborne coal trade also reached an all-time high of 1.38 billion tonnes.

All major exporters increased volumes in 2023, except for Russia, due to sanctions. Indonesia became the first exporting country to exceed 500 Mt in a year, demonstrating its unmatched flexibility to ramp up production and exports. Mongolia increased exports to 70 Mt, more than doubling the 2022 figure and more than quadrupling 2021 exports, propelled by improvements in infrastructure and the demand in China for cheap coal.

Trade volumes are expected to reach a new high in 2024

The weak coal demand in Europe and Northeast Asia will result in lower coal imports. Japan, Korea, Chinese Taipei, Germany and other countries in the European Union (EU) are among those in which coal imports, in particular thermal coal, are expected to decline. By contrast, in China, India and Viet Nam, we expect coal imports to increase. The analysis shows trade volumes in 2024 will surpass 2023 volumes marginally and hit a new record. However, this comes with an important caveat, notably the potential for volatile swings in China's import volumes if there are policy changes.

On the supply side, Indonesia, and to a lesser extent, Australia, Colombia and the United States, are expected to supply the additional volumes required to meet others' import demand and offset reduced Russian exports. Mongolian exports to China, mostly coking coal, are expected to grow.

Prices

More stability in prices after recent volatility

The unusual market conditions of recent years, due to the Covid-19 pandemic, the economic rebound, Russia's invasion of Ukraine, and the subsequent energy crisis, have led to unprecedented energy price fluctuations. The impact on coal was significant, resulting in very high prices and volatility as well as exceptional differences between qualities and geographical regions. Since 2023, coal prices have remained higher than before the Covid-19 pandemic but remain in a normal range. During the last year, thermal coal prices have been less stable than in the 2017-2019 period. Generally, they have been slightly higher, pushed up by cost inflation and some disruption due to sanctions affecting Russia, which remains the world's third largest coal exporter.

Demand

Global coal demand saw another all-time high in 2023

In line with our estimates in [Coal 2023](#), global coal demand reached a new record of 8.70 billion tonnes (Bt) in 2023, surpassing the previous year's record by 2.6%. Once again, global coal consumption was led by Asia where more than 80% of coal consumption took place. Conversely, Europe and the United States saw significant declines in coal consumption in 2023.

China, the world's largest producer, importer, and consumer of coal, was recorded with growth in both power (8%) and non-power (2.5%) use of coal. After severe energy shortages and overall weak economic performance in 2022, electricity demand in China rebounded in 2023 growing by 7%. Despite accelerating deployment of wind and solar, most of this growth was met by coal-fired power generation due to low availability of hydroelectric plants, as coal is the main source of flexibility. Together with moderate growth in metallurgical (met) coal consumption and almost flat demand for non-power uses of thermal coal, China's coal consumption increased by 276 Mt, reaching a total of 4 883 Mt in 2023. The overall energy consumption growth rate of coal was slightly lower due to a quality deterioration following a leap in the domestic production of coal.

India has been the second largest source of growth in global coal consumption. Its strong economic performance has propelled power demand, and in turn, demand for coal in power generation (+10%). Unlike in many other parts of the world, in India, growth in renewable energy sources is unable to keep pace with the growth in power demand. Moreover, India's focus on infrastructure has led to more consumption of cement and steel, materials typically produced with coal. As a result, overall coal consumption aggregated to 1 251 Mt in 2023, an increase of 9% compared to the previous year.

Coal consumption in the United States and European Union plunged by 17% and 23% respectively in 2023, representing their most significant annual decline of this century apart from the reduction caused by Covid-19. In the United States, coal consumption decreased because of the retirement of coal plants, decreasing power demand and low gas prices. At the same time, after high coal consumption in 2022, coal demand in Europe returned to a decline, the trend for most of this century.

Beyond that, there were significant regional differences in coal demand. While coal consumption in the ASEAN region mostly increased (+38 Mt), countries like Japan, Korea and Australia saw moderate declines below 10%.

Growth in global coal demand is expected to flatline in 2024

During the first six months of 2024 we expect global coal consumption to have grown by 1.0% to a total of 4 308 Mt. This is despite consumption of coal being expected to remain unchanged in non-power applications. However, coal consumption in the power sector is expected to have grown by 1.4%. The major contributors to growth within the power sector have been India (+44 Mt) and China (+22 Mt), while the European Union is estimated to exhibit the strongest decline (-2 Mt).

In the second half of 2024, we expect a decline in coal-fired power generation to partially offset gains from the first half, resulting in coal consumption in the power sector of 5 886 Mt for the full year, up 0.5%. Together with stable consumption of coal in non-power applications in the second half of 2024, this would imply a slight increase in global coal consumption. We expect it to reach 8 737 Mt (+0.4%) for the full year 2024.

In our last publication we forecasted coal demand would decrease in 2024 with a moderate decline thereafter. However, this forecast was subject to two important caveats: a recovery of hydropower generation in China after years of low rainfall, and a slowdown in Chinese electricity demand growth. While hydropower has made a strong recovery since April 2024, growth in electricity demand in China has remained robust. In India, the second largest coal consumer, heatwaves and low availability of hydropower in the first half of 2024 have increased the use of coal for power generation and therefore, coal demand. In addition, countries like Viet Nam and the United States have contributed to the adjustment in our forecast for 2024 due to weather incidents and reduced switch to gas.

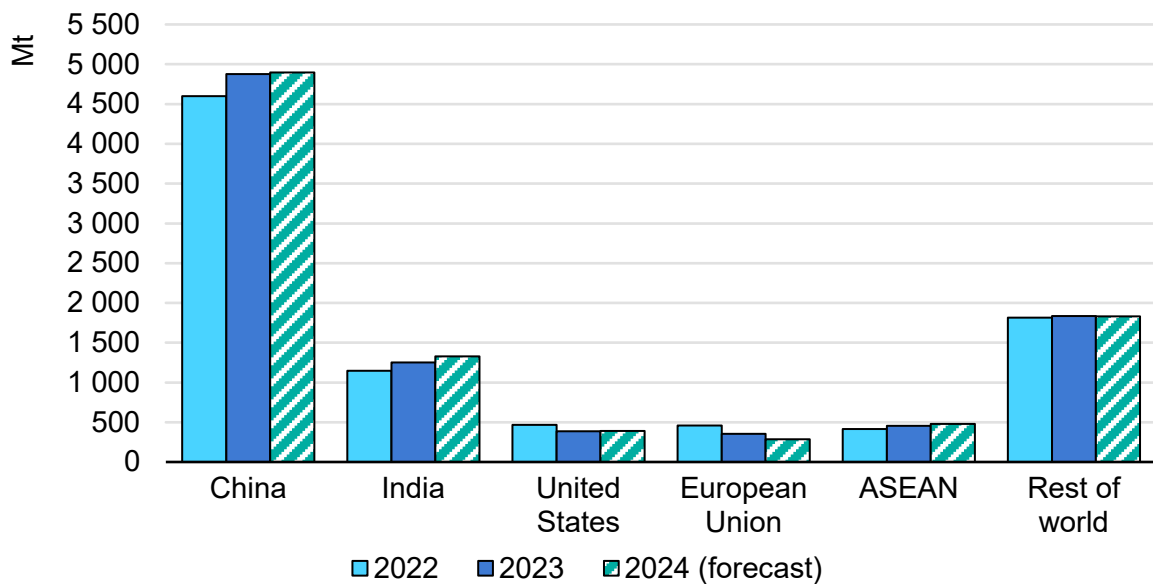
Following the EU's major drop in coal consumption in 2023, we expect the European Union to show another significant reduction in 2024. After the difficulties of the 2022 energy crisis, and despite the unprecedented rise in gas prices being largely overcome, the European Union continues to show weak industrial activity and stagnating growth in power demand. Here, the rise of renewables combined with improved performance of nuclear is expected to significantly affect coal demand. We estimate the EU's coal demand will shrink by 19% down to 287 Mt, making it the first time in IEA records that the coal demand of EU countries falls below 300 Mt. Conversely, we estimate the United States to show no significant changes in coal consumption in 2024 after last year's big decline. Last year, we forecast a decline, but the growth in power demand is higher than expected and the coal-to-gas switch has reduced.

In China, we estimate that coal-fired power generation increased about 1.5% during the first half of 2024. High precipitation starting in April 2024 increased the availability of hydroelectric power. Given the accelerating deployment of

renewables, particularly solar PV, we estimate Chinese coal demand in the power sector will grow by 0.9% in 2024. This would be the lowest growth rate since 2015. However, there is significant uncertainty concerning the availability of hydropower and the growth in power demand, which are key determinants for coal demand in China. Coal is used for many different applications beyond the power sector in China. The iron and steel industry, consuming mostly met coal, is the largest non-power consumer. Production of building materials (mainly cement) and chemicals (mostly through coal gasification) are the main consumers of thermal coal. Overall, we expect non-power demand to remain flat amid declining use in the building sector owing to a dragging real estate market, whereas consumption of coal used for coal gasification is expected to increase.

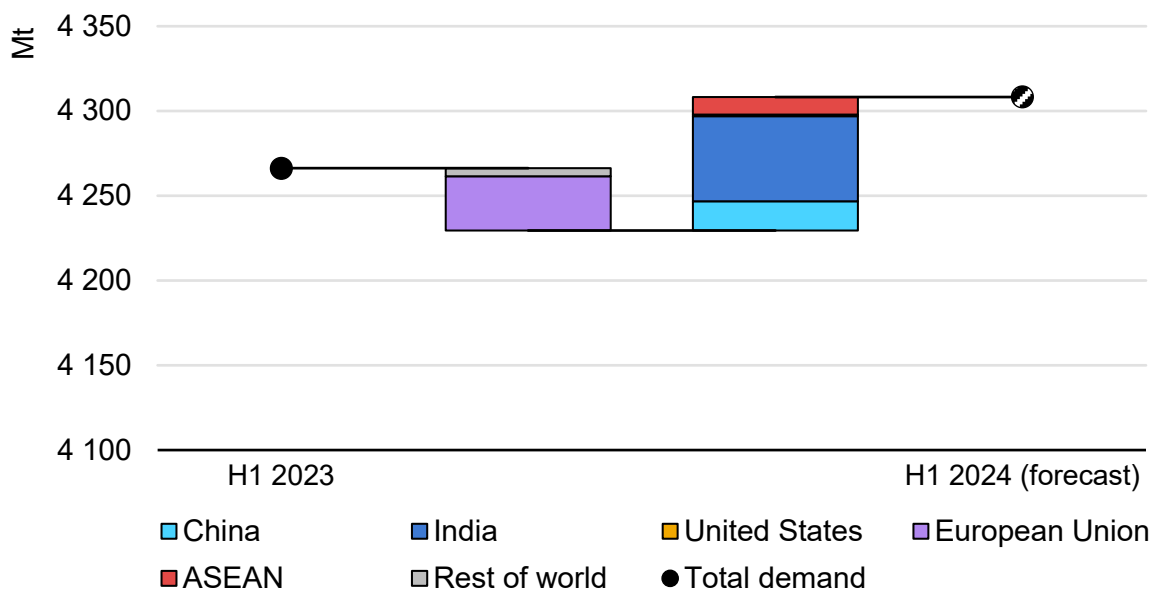
In India, for the first half of 2024 we estimate the consumption of thermal coal for power generation to have increased almost 10% and met coal consumption in India to have increased by just over 2%. Heat waves have escalated electricity demand while hydropower output has been very low. With this trend likely to decline during the second half of the year, we estimate a coal demand of 1 330 Mt in 2024, up 6% compared to 2023. Weak performance of hydropower and strong growth in power demand are also causing significant growth in coal demand in Viet Nam during 2024 (+12%).

Global coal consumption, 2022-2024



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Changes in global coal consumption, H1 2023-H1 2024



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Coal demand is estimated to decline marginally in 2025

In 2025, we estimate global coal demand to enter a trend reversal after four years of growth, decreasing slightly by 0.3% to a total of 8 714 Mt. A key reason for this is that China, which has traditionally driven coal demand growth, is likely to show its first decline in coal demand since 2016. This combined with ongoing declines in the European Union, United States, Japan, Korea, and other parts of the world, is expected to outweigh continuous growth in India and ASEAN.

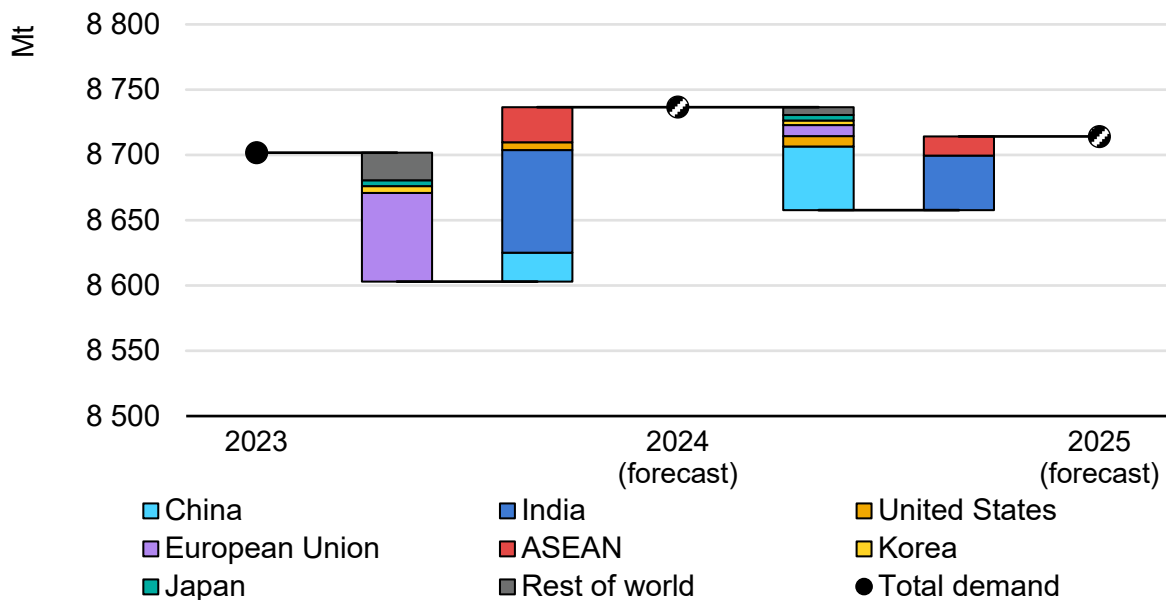
Global coal consumption is highly driven by developments in the power sector, which currently accounts for more than two-thirds of global coal use. Within the power sector, coal demand is highly affected by weather. Fluctuations in weather conditions influence both the supply and demand side, particularly relating to the growing capacities of weather-dependent renewable energy sources and ongoing electrification. Additionally, fundamental drivers, such as the production of clean energy technologies like electric vehicles or global trends like AI propelling demand from data centres, will have a significant impact on electricity demand, and in turn, coal demand in the coming years. Indeed, policies to phase out coal and reduced support for coal from institutions like banks or insurers in many parts of the world are going to put further pressure on coal demand. Regionally, the expected decline in coal demand in developed economies and the growth in some emerging countries seems certain, leaving China as the largest source of uncertainty, potentially deciding the global trend for coal demand.

For 2025, we estimate Chinese coal demand in the power sector to decline by 1.1%, since renewables are likely to outgrow power demand. However, this forecast comes with caveats regarding electricity demand, hydropower output and solar PV curtailment rates. If there are no remarkable changes in coal demand for non-power applications, China is estimated to show a reduction by 49 Mt in 2025, contributing the most to the reduction in global coal demand. On 15 July, 2024, China issued the Action Plan for Low-Carbon Coal Power Transformation (2024-2027), which supports three key technologies to reduce CO₂ emissions from coal plants: biomass, ammonia co-firing and Carbon, Capture, Utilisation and Storage. This Plan will affect coal consumption in China from 2025 onwards, but it is too early to make a detailed assessment of the impact, so it is not included in this report.

Further reductions in coal demand are estimated to occur in the United States (-8 Mt or -2.0%) and in the European Union (-9 Mt or -3.0%) given the region's ongoing efforts to phase out coal.

In India, the rise of renewables will likely not cover the growth in power demand. Therefore, we expect coal plants to capture part of the growth. Given India's rising demand for coal in industrial applications, we estimate aggregate coal demand to increase by 3.1% to 1 371 Mt in 2025. In 2024, India aims to commission 14 GW of new coal-fired capacity, more than four times the annual average in the last five years. Likewise, coal demand in ASEAN is estimated to grow by 3.0% in 2025.

Changes in coal consumption by country, 2023-2025



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Supply

Global coal production in 2023 grew close to 9 Bt

Global coal production in 2023 grew by 3.1% to 8 970 Mt, an all-time high, driven by a push from the top three coal producers China, India and Indonesia. Their combined total coal output increased by about 356 Mt, compared to 2022, resulting in a share of 72% of global coal production. At the beginning of this century, this share stood at slightly more than a third of global production, underscoring the substantial shift in global coal production over the last two decades.

After supply shortages in 2021, Chinese officials called for a boost in production, which resulted in a significant increase in 2022, and continuous growth throughout 2023. Nonetheless, the rise in production came with a higher rate of mine accidents and a notable deterioration of quality. Given China's growing coal output and growing import volumes, it has shown a total supply of coal totalling more than 5 Bt, which dramatically exceeds any other country or region.

In Indonesia, production reached 775 Mt, significantly exceeding the production target of close to 700 Mt for 2023. Growth in domestic requirement as well as demand from China and other importers in that region have propelled the surge in Indonesian coal production.

As expected in our previous forecast, India has surpassed the mark of 1 Bt of coal production in 2023, showing a growth of 12% or 116 Mt. In India, recent investment in infrastructure and in mine expansions has supported increased coal production.

In 2023, Australian production grew by about 3.8% to 450 Mt. In Australia, a change in weather pattern from La Niña to El Niño during 2023 improved overall mining conditions, although bushfires and labour shortages diminished the favourable conditions. In the United States, production declined by 2.8% in 2023, as domestic demand slipped amid low gas prices. However, that decline is much lower than demand, owing to higher exports and strong stock building. Likewise, a slight decrease in coal output has been observed in Russia (-1.1%), where sanctions are affecting exports.

Global coal production is expected to flatten in 2024

We expect global coal production in 2024 to decrease very slightly by 0.3% to 8 939 Mt. At a regional level, we expect growth in India and Indonesia, which are overcompensated by declines in China and in the United States.

In China, security issues in mining in the Shanxi region and subsequent stricter security checks reduced the production of coal in the first half of 2024. Shanxi is the largest coal producing region in China, surpassing 1.3Bt, and therefore, producing more than any country. However, we expect the decrease of 1.7% in the first six months to be moderated in the second half, as security checks are relaxed. For the full year of 2024, we expect a moderate decrease of 38 Mt to a total of 4 572 Mt in Chinese coal production. June 2024 already recorded a year-on-year increase of 3.6%. Given an anticipated slowdown in Chinese coal demand growth in the second half of 2024, we note that a recovery in production will have implications for imports and already ample stocks.

In Indonesia, we expect coal production to show slight growth during 2024. Indonesia's Ministry of Energy and Mineral Resources has raised the coal production quota for 2024, also known as RKAB, by nearly 30% to 922 Mt. However, this number assumes operation at full capacity and typically producers reach usage of around 80%. Despite heavy rains in Sumatra and South Kalimantan in the first quarter of 2024, coal production in the first four months of 2024 has already gained 8.6%. In addition, domestic demand for coal is expected to increase, fuelled by electricity, the nickel industry and others. Nonetheless, close to 30% of Indonesian production is consumed in China, whose demand is estimated will flatten for the rest of the year. Against this background, we estimate a production of around 800 Mt in Indonesia for the full year 2024, growing by 2.9%.

In the United States, coal production in the first six months of 2024 was down 17% compared to the first half of 2023. Despite a slight increase in demand in 2024, coal production is expected to decrease by 12% down to 463 Mt in 2024, due to strong stock building in US power plants in 2023.

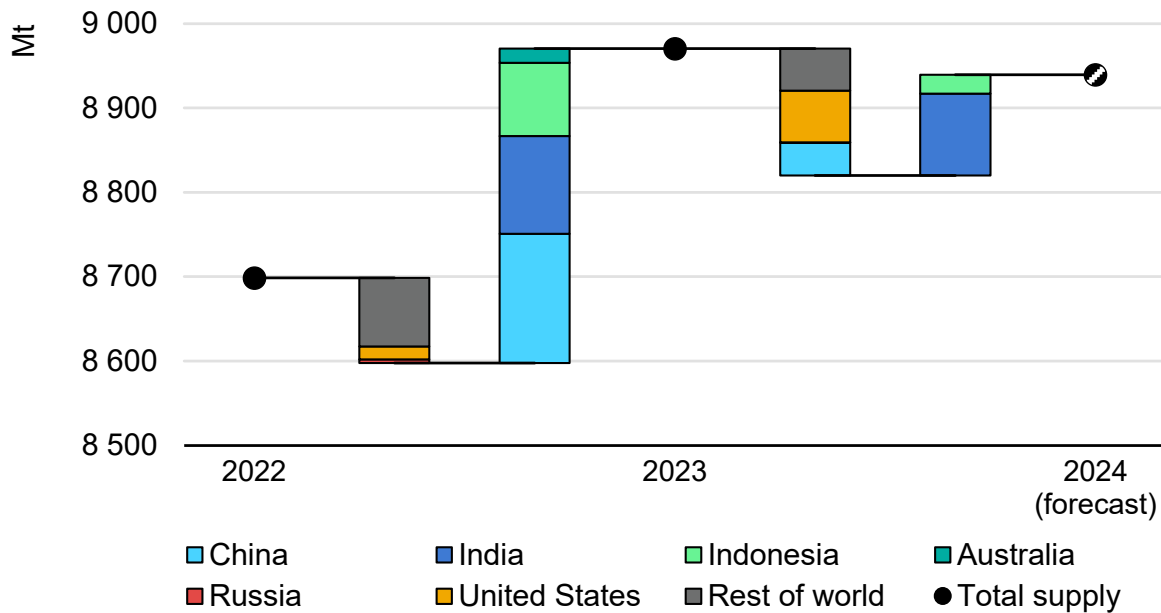
Aggregate coal production in Russia shows no sign of significant change in 2024. Nonetheless, there is some shift between producers within Russia. For example, Elga showed a growth of 31% during the first five months in 2024 to more than 10 Mt, but Russia's biggest producer SUEK, currently under US sanctions, records a reduction of 4%. It is worth noticing that Elga was included in the US sanction list in June 2024, so it is yet to be seen how this impacts its production.

India continues to push coal production, as highlighted by a growth of almost 10% in the first half of 2024, with June exhibiting an outstanding growth of more than 14% compared to the same period in 2023. Given India's intensified efforts to overcome energy shortages and, at the same time, reduce import quantities, we

expect its production to gain 9% for the full year. Thus, India is expected to contribute the most to global coal production growth, under the assumption that China will not trigger its production in the second half.

Coal production in Australia showed no significant variation in the first quarter of 2024 compared to the first quarter of 2023. In June 2024, an underground fire in the Grosvenor mine reduced the production of met coal, however, we do not expect this to significantly affect Australia’s annual output. Thus, we expect Australian production to remain flat in 2024 at about 450 Mt.

Changes in coal production by country, 2022-2024



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Trade

Global coal trade was at an all-time high in 2023

Following significant shifts in trade flows during 2022, global coal trade saw a new record in 2023 with growth in both thermal (+7%) and met coal (+15%) exports. Both seaborne trade, which stood at about 1.38 Bt in 2023 and total trade, slightly surpassing the mark of 1.5 Bt, reported historical highs. Indonesia has once again driven the growth in thermal coal exports, largely catering to rising demand in China. Despite high stock inventories and significant growth in domestic production, Chinese imports from Indonesia surged by 29%, reaching approximately 220 Mt, equivalent to about 15% of global coal trade. As Indonesian exports to its second largest buyer, India, remained rather flat, almost all the growth in Indonesian exports can be attributed to Chinese imports.

Australia's thermal coal exports rose by more than 10% during 2023, after China ended its unofficial ban of Australian coal and the end of La Niña improved mining conditions. In contrast, Australian met coal exports faced a decline after operational problems in some mines. Thermal and met coal exports from the United States have grown by 17% on aggregate in 2023, despite international coal prices falling since 2022. The decline in domestic coal consumption left the opportunity for some thermal coal to be sold in international markets.

The surge in global met coal trade was largely driven by Mongolia, which more than doubled its exports during 2023 to around 54 Mt. China is almost the only buyer of Mongolian met coal, although other countries are exploring the possibility of receiving Mongolian coal. A new railway between Talvan Tolgoi in southern Mongolia and Gashuunsukhait-Gantzmod at the border with China commenced operation in late 2022 and supported Mongolia's rising exports to China.

Developments in Russia are less clear since its invasion of Ukraine. However, based on the changes in importer's demand and rearranging trade routes, we estimate Russian met coal exports to have recovered from 2022, while thermal coal exports have likely decreased.

In conclusion, all major exporters including Colombia and South Africa have increased their exports during 2023, except Russia.

Trade in 2024 will set another record if Chinese demand continues

Global coal trade in 2024 is projected to see a modest increase of 1.0%. However, this forecast is highly sensitive to developments in China, which is the destination of almost every third tonne of coal traded globally. In the first six months of 2024, Chinese imports grew by 12% despite healthy stocks, which is remarkable considering that imports in 2023 were 140 Mt higher than the former record. Nonetheless, for the remainder of the year, we expect Chinese imports to remain flat as a recovery in hydropower is expected to reduce growth in coal demand and an increase in production is likely once safety inspections in Shanxi have been relaxed, resulting in a small annual growth.

India, the second largest importer globally, showed a remarkable growth of about 21% in seaborne coal imports during the first four months of 2024. India extended the obligation to blend imported coal in plants designed to use domestic coal until at least October 2024, despite significant growth being observed in the domestic production of coal. This underscores India's goal to guarantee security of supply amid fast growing demand. In addition, the extension of the blending obligation is another indication that strong imports by India will persist throughout 2024. Even though India seeks to reduce the quantity of imports, new routes are being established such as the railway from Russia to India via Iran, and a trial of met coal deliveries from Mongolia.

Japan, Korea and Chinese Taipei recorded decreasing imports in 2023 and are expected to continue to lower their imports slightly during 2024. Conversely, Viet Nam exhibits a remarkable change in coal imports, growing 43% in the first four months of 2024 owing mainly to low hydropower availability and strong and continuing growth in power demand. However, this increase is expected to flatten for the rest of the year.

Considering significant demand for imports in China, India and other countries in the region such as Viet Nam, we expect Indonesia to meet a large proportion of the additional demand. In 2024, we forecast Indonesia to export 534 Mt, growing 3% year-on-year. Against this background, Indonesia is set to account for almost half of global thermal coal exports in 2024. This share is lower when measured in energy terms, as the share of low calorific value (CV) coal in Indonesia's exports is larger than the other major exporters.

We expect the biggest decline in coal exports to take place in Russia in 2024 (-16 Mt). After sanctions following Russia's invasion of Ukraine, Russia faces further difficulty because of US bans on major Russian producers which, in turn, signalled other importers with trade relations with the United States, to reduce Russian coal imports. Russian producers are also encountering national railway transport

issues in the east and export duties that can limit their international competitiveness given their price sensitive buyer base.

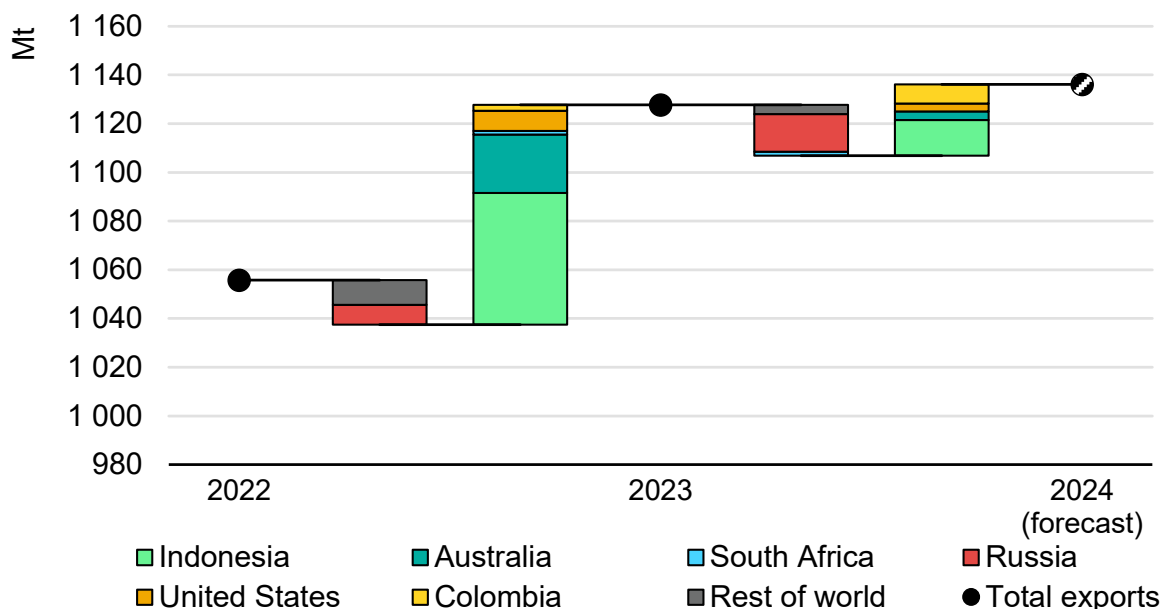
Australia, the largest exporter of met coal and second largest exporter of thermal coal, is expected to see modest growth of 1.8% in 2024. In the first five months of 2024, Australia showed growth of about 5% compared to the same period last year. Nonetheless, in anticipation of moderate demand from most of its major importers, we expect Australian exports to flatten for the rest of the year.

We expect Mongolian met coal exports to continue to grow in 2024 to a total of 58 Mt. As a result, Mongolia is likely to become the second largest exporter of met coal and the fifth largest exporter of coal, surpassing Colombia and South Africa.

In the United States, the decrease in coal demand has outpaced the reduction in coal production in 2023, leaving surplus for more exports. In 2024, this is expected to switch, owing to abundant stocks in US power plants. Moreover, some coal exports from the United States have been restricted owing to the collapse of Francis Scott Key Bridge in Baltimore in March 2024.

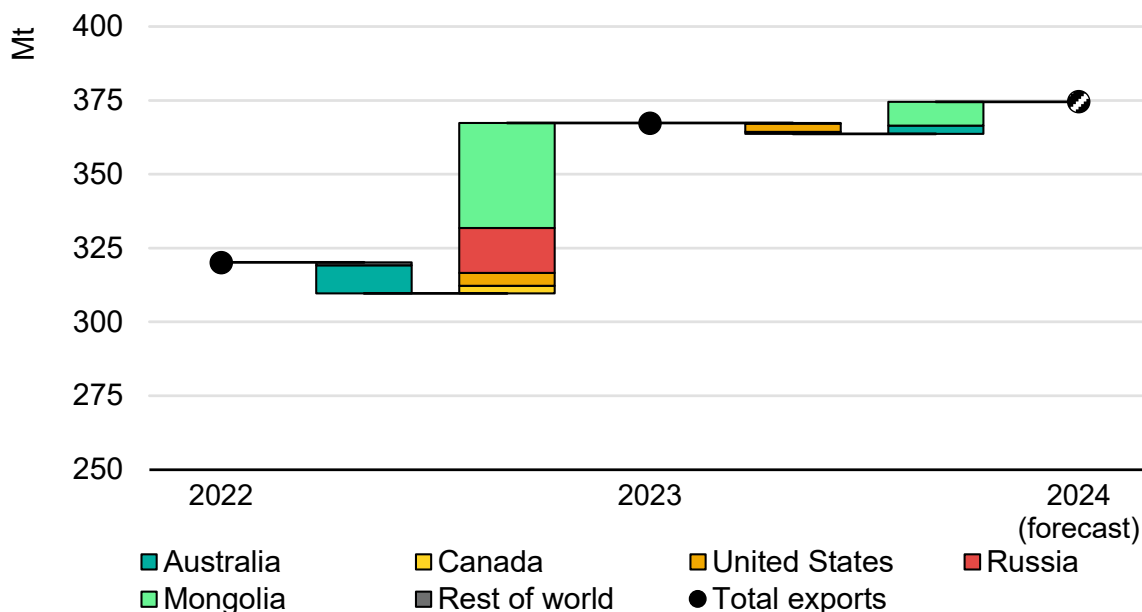
In summary, global trade in both thermal and met coal are expected to show a slight increase gaining 0.7% and 2.0% respectively in 2024.

Changes in thermal coal exports, 2022-2024



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Changes in metallurgical coal exports, 2022-2024



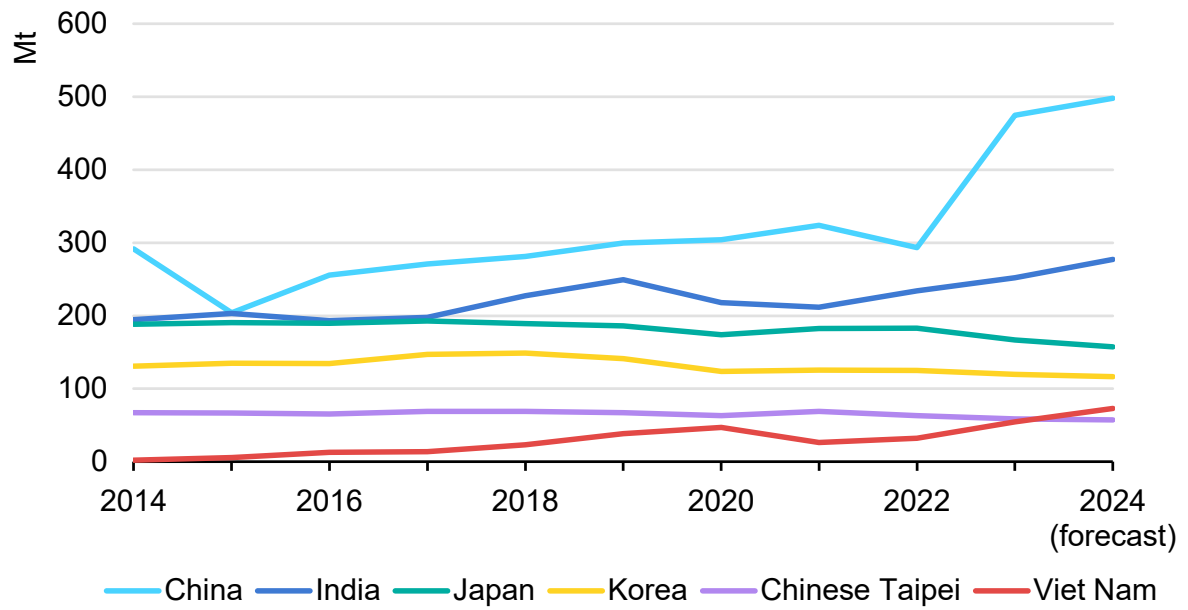
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Viet Nam is set to join the top five global coal importers

For the last ten years, China, India, Japan, Korea and Chinese Taipei consistently ranked as the world's top five coal importers in that order, highlighting Asia's dominant role in global coal trade. This period witnessed notable economic growth in China and India which fuelled coal imports. Simultaneously, coal imports in Japan, Korea, and Chinese Taipei remained relatively stable. Now, Viet Nam, which recorded remarkable growth in imports in 2023, is set to surpass Chinese Taipei as the fifth largest coal importer in 2024. Its growing demand for coal is primarily driven by developments in the power sector. In the short term, low availability of hydroelectric plants and strong growth in power demand drive the need for coal. While Viet Nam is traditionally reliant on seaborne coal, it has intensified coal imports from Laos over the past two years and plans to further increase this trade. Looking ahead to 2030, Viet Nam aimed to build five new coal-fired power plants that could further increase the demand for coal. However, the announced cancellation of the Song Hau 2 project casts doubt over the others.

Contrary to growing imports in Asia, monthly coal imports into the European Union and United Kingdom have declined to their lowest level of the 21st century. In 2024, we expect Türkiye, which only recently surpassed Germany as the largest importer outside the Asia Pacific region, to import more coal than the European Union, emphasising Europe's decreasing involvement in global coal trade.

Coal imports of select countries, 2014-2024



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Note: Viet Nam imports until 2018 are based on exports.

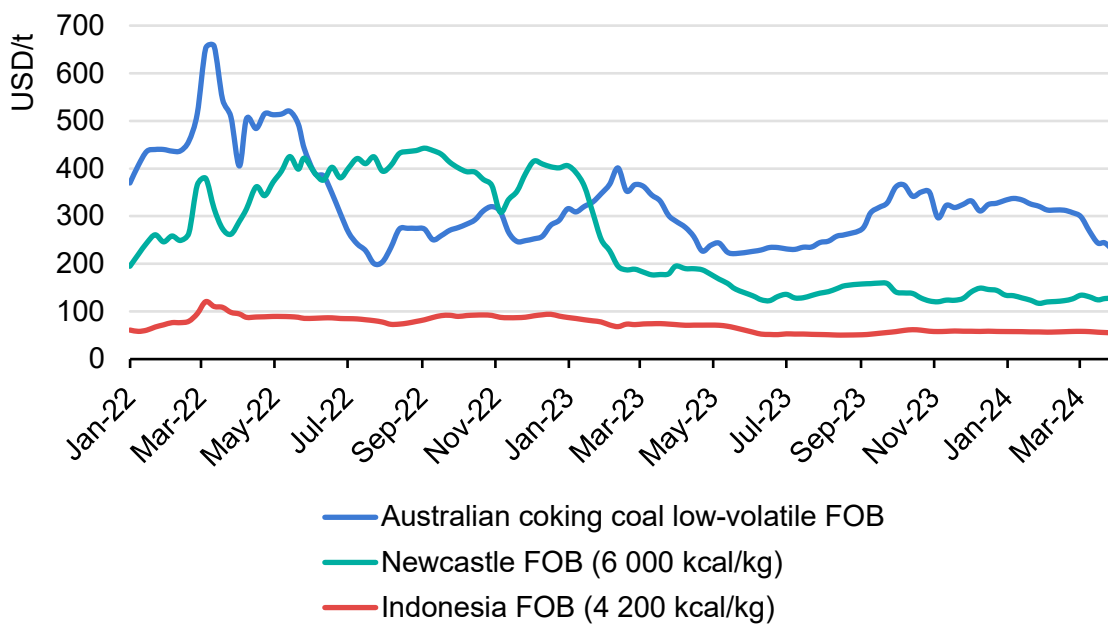
Source: IEA analysis based on McCloskey (2024), [Coal Price Data and Indexes](#).

Prices

The met and thermal coal price relationship shows a return to normal conditions

During the energy crisis in 2022, thermal coal traded at much higher prices than ever before, pushed by tight fundamentals, very high prices of the main competing fuel (natural gas), and a war premium. Prices of several thermal coal price markers surpassed the USD 400/t threshold, significantly above former highs. Additionally, for more than half a year, thermal coal prices were above coking coal prices, which was unprecedented. With coal markets easing in 2023, in line with other energy commodities, the coking coal price returned to being higher than that of thermal coal, and the average annual premium increased to USD 120/t, in line with historical levels. Thus, the relationship between different coal prices shows a return to normal conditions in the market, with fluctuations based on fundamentals. For example, an elevated price for met coal between September 2023 and March 2024 was observed because of weak supply from Australia. Likewise, the price of Indonesian low-grade thermal coal had been slightly higher during 2022 and approached moderate territory during 2023 and the first half of 2024, but overall shows lower price volatility.

Marker prices for different qualities of coal, 2022-2024



Note: FOB = free on board.

Source: IEA analysis based on data from Argus Media group. All rights reserved.

International thermal coal prices have stabilised

Following high volatility that sent coal prices soaring to historic highs in all key markets in October 2021, Russia's invasion of Ukraine further increased prices and volatility. However, 2023 marked a significant downturn in global thermal coal prices because of supply outgrowing demand, easing gas prices, diminishing energy security concerns, and trade flows having adjusted to Russian sanctions following its invasion of Ukraine.

The Amsterdam Rotterdam Antwerp (ARA) thermal coal price marker started its downward trend from late 2022 onwards. The decline in Newcastle free on board (FOB) prices lagged European prices owing to adverse weather conditions in mining and overall tight supply. The difficulty of substituting high quality Australian coal in certain neighbouring markets supported this price level for longer. The South China CFR 5 500 kcal/kg price marker historically correlates with its European and Australian equivalent. However, during the energy crisis the Chinese prices were less affected amid ample domestic supply, stabilising mostly under USD 200/t.

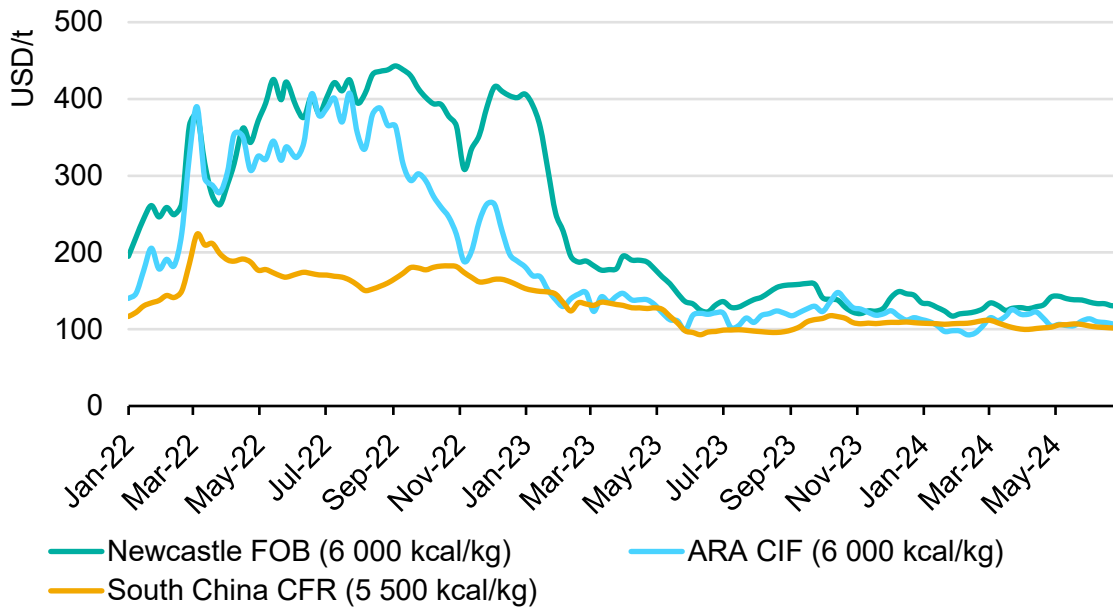
Compared to the preceding period, thermal coal prices remained stable from mid-2023 to mid-2024. The highest prices for thermal coal were observed at Australian ports at around USD 160/t, whereas the lowest were recorded at European ports at USD 93/t. The premium for Newcastle FOB 6 000 kcal/kg came down to USD 20/t in that period compared to an average of about USD 90/t from July 2022 to July 2023.

With European coal-fired energy generation cheaper than gas in the second half of 2023, ARA CIF price markers increased close to USD 150/t in October, overtaking Newcastle FOB. However, this did not last long as prices decreased during the mild winter. Since then, prices have been stable despite supply disruptions in a few exporting countries, including rail collisions in South Africa, rail transport interruptions in Colombia and the collapse of Francis Scott Key Bridge in Baltimore. A short-lived rise in European and Australian thermal coal prices occurred from February 2024, following US sanctions on Russian producers SUEK and Mechel, although the increase in gas prices during the same period suggests that other factors were driving the increase rather than the sanctions. While traditionally Europe shows lower demand for thermal coal during its summer season reducing prices, Australian price markers saw an increase in May 2024 when heatwaves in Southeast Asia boosted demand. At the same time, Japan was in negotiations for a term contract of Australian high CV coal which supported Australian prices.

Prices for high CV thermal coal showed moderate volatility in the second half of 2023 and the first half of 2024, as indicated by the standard deviation in prices

which was slightly above those observed between 2017 and 2019. This supports the finding that coal markets have re-entered a period of stability unknown for some years.

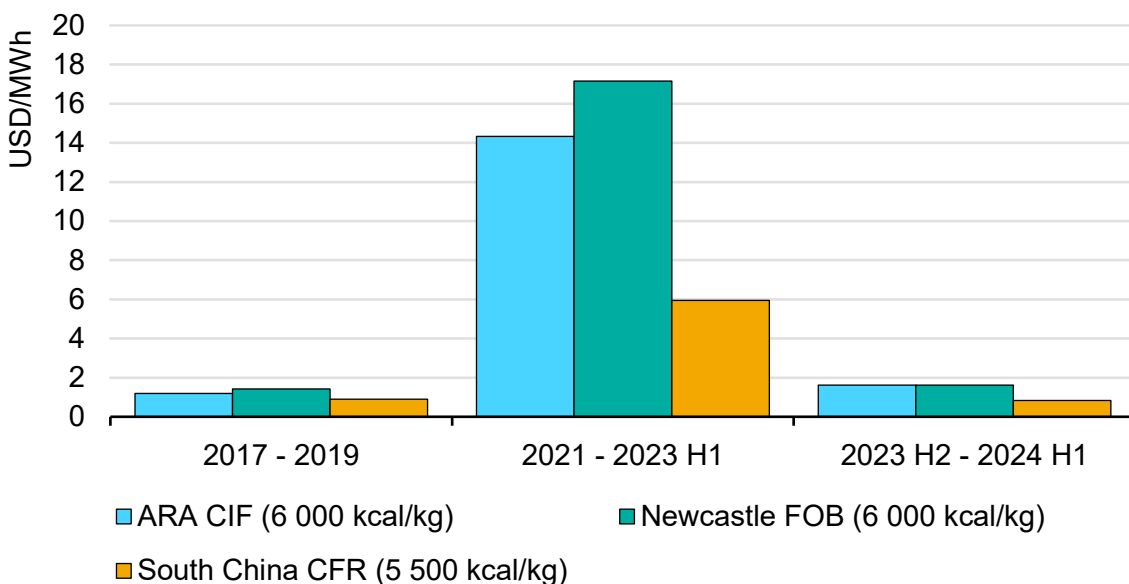
Thermal coal price markers, 2022-2024



Note: ARA = Amsterdam Rotterdam Antwerp. FOB = free on board. CIF = cost, insurance and freight. CFR = cost and freight.

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Standard deviation of select coal price markers, 2017-2024



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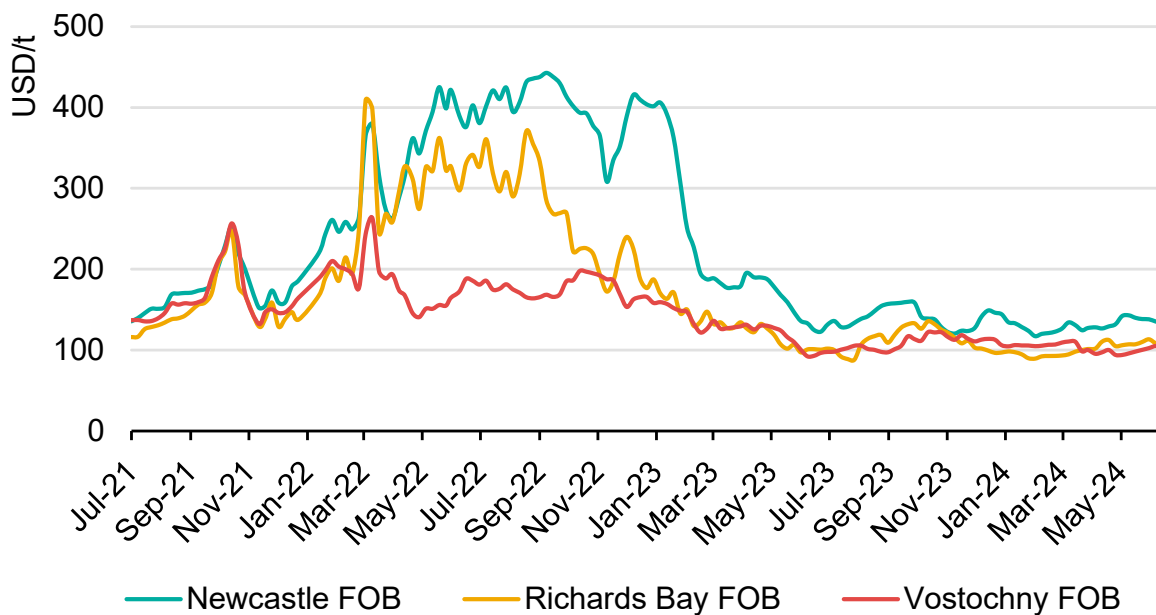
Notes: ARA = Amsterdam Rotterdam Antwerp. FOB = free on board. CIF = cost, insurance and freight. CFR = cost and freight. Standard deviation has been computed based on weekly average prices. For 2017-2019 average annual standard deviations have been used.

With lower prices, the Russian coal discount shrinks

Historically, thermal coal prices from Australia and South Africa have been generally aligned with Russian prices. This correlation altered, following Russia’s invasion of Ukraine, when numerous western countries enacted sanctions against Russia. Coal markets responded quickly, since the exclusion from international payment system SWIFT and overall uncertainty associated with Russia put a risk premium on Russian coal, resulting in significant discounts compared to coal prices from other origins.

As prices started to recover in the final quarter of 2022, price spreads narrowed, and the Russian discount at its eastern ports vanished. There was a reshuffling of trade routes during 2022 in response to sanctions. Volumes which had typically been bought by countries like Japan, found other buyers in that area, causing prices for coal from Russia’s East (Vostochny) to stabilise. Some Russian producers face challenges regarding profitability because of the discounts and lower prices, and the export duty introduced by the Russian government from 1st October 2023, removed on 31st December and reintroduced on 1st March 2024. The relationship between the price of Russian and Australian coal is also a result of quality preferences, location, supply tightness in Australia and war-induced premiums. Prices at Russia’s Black Sea ports exhibit stronger discounts, being on average USD 60/t lower than Newcastle FOB and USD 40/t lower than Richards Bay FOB between mid-2023 and mid-2024. High CV thermal coal price markers for select origins, 2021-2024

High-calorific value thermal coal price markers for select origins, 2021-2024



Note: FOB = free on board.

Source: IEA analysis based on data from Argus Media group. All rights reserved.

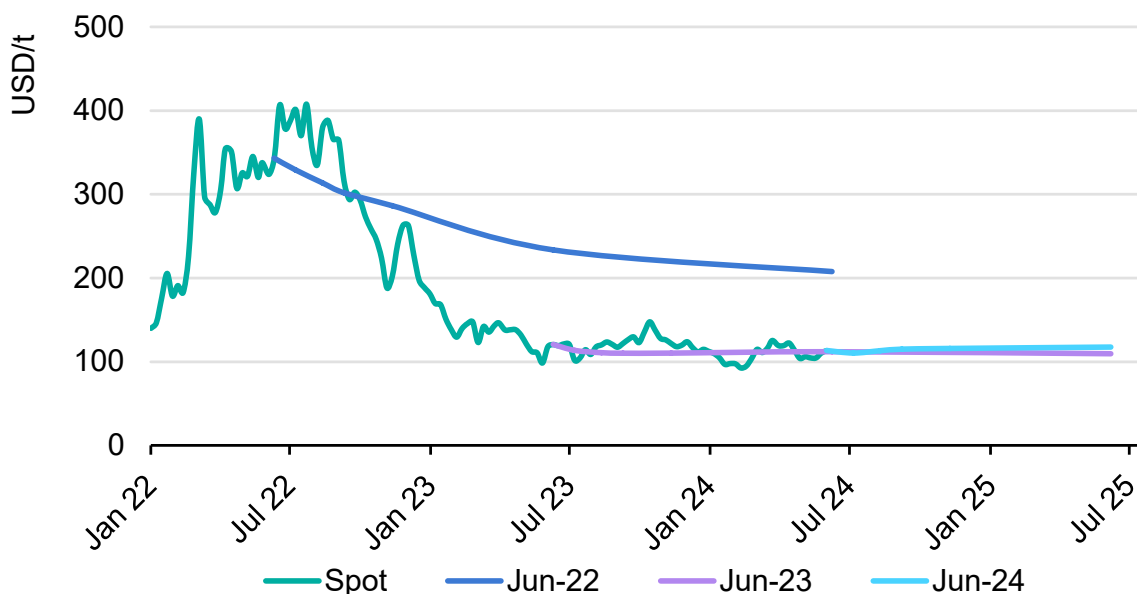
Forward prices indicate stable future market conditions

During 2022, API2 Spot prices (a price index for coal deliveries to Europe, CIF) experienced significant volatility at an extremely high level. Market tightness together with high-risk premiums associated with Russia’s invasion of Ukraine and subsequent rearrangement of trade routes, caused high levels of uncertainty in the short term. However, coal markets anticipated an easing of this situation, which is evident in future prices taking a downwards trajectory. This backwardation (when spot prices are higher than future prices) could be observed throughout 2022.

With spot prices approaching levels driven by fundamentals in early 2023, backwardation vanished. Instead, the expectation was for future API2 prices to remain rather flat, slightly over USD 100/t. This did not change significantly until June 2024, when the forward curve showed a slight increase over the next two years. In summary, following the tumultuous conditions of recent years, the financial market now shows stability similar to the physical market.

However, given the close connection between coal and gas markets, and the influence of third parties that are not part of the physical market, such as hedge funds and others, any episode of volatility in the gas market will to some extent be mirrored in the coal market.

API2 spot prices and forward curves, 2022-2025



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Note: API = Argus/McCloskey’s Coal Price Index.

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For questions and comments, please contact Carlos Fernández Alvarez (Carlos.Fernandez@iea.org).

General annex

Abbreviations and acronyms

API	Argus/McCloskey's Coal Price Index
ARA	Amsterdam, Rotterdam, and Antwerp
ASEAN	Association of Southeast Asian Nations
CFR	cost and freight
CIF	cost, insurance and freight
CV	calorific value
EIA	Energy Information Administration (United States)
EU	European Union
FOB	free on board
GDP	gross domestic product
IEA	International Energy Agency
met	metallurgical
OECD	Organisation for Economic Co-operation and Development
US	United States
USD	United States dollar
y-o-y	year-on-year

Glossary

bt	billion tonnes
GW	gigawatt
kcal	kilocalorie
kg	kilogramme
km	kilometre
kt	kilotonnes
Mt	million tonnes
Mtpa	million tonnes per annum
MW	megawatt
t	tonne
TWh	terawatt hours

International Energy Agency (IEA)

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