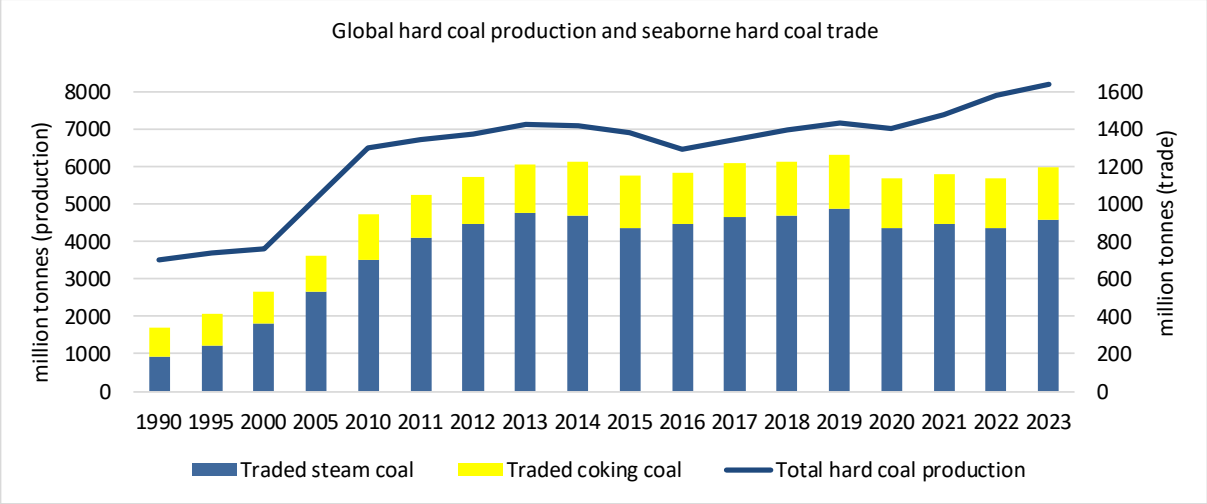
EURACOAL
European Association for Coal and Lignite
AISBL

EURACOAL Market Report 2024 no.1

April 2024

WORLD COAL MARKET DEVELOPMENTS

After a record 7.9 billion tonnes (Gt) in 2022, hard coal production grew by 3.9% to an estimated 8.2 Gt or more in 2023. Governments and agencies continue to predict "peak" coal. Some say 2023 will be the peak, but after over a decade of getting it wrong, their forecasts should be taken with a pinch of salt. Total coal trade, including cross-border trade by land, also grew, by an estimated 8.4%, although the global seabourne coal market saw smaller growth of around 2.0% to 1.2 Gt.



Sources: VDKi; McCloskey by OPIS, a Dow Jones Company

Russia stopped publishing customs data for its coal exports in February 2022, the month it invaded Ukraine. In this report, Russian coal exports are estimated by aggregating customs data from all those countries that import (and declare) Russian coal. As such, coal market data is now less reliable than in recent years.

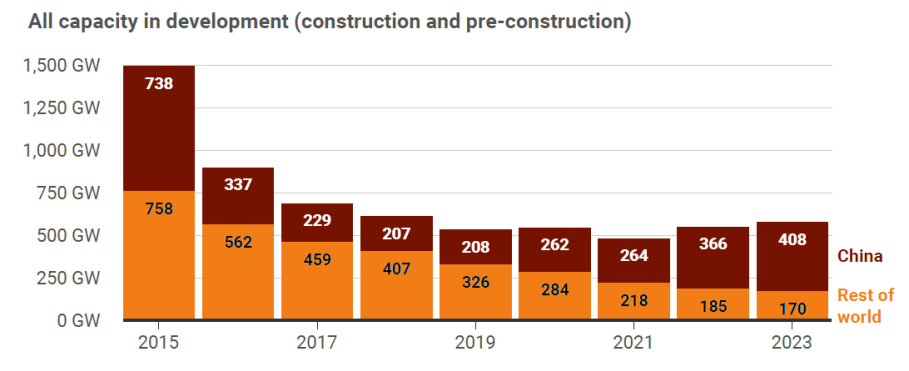
Following the invasion of Ukraine, Russian coal producers discounted their prices to induce China and India to switch away from Indonesian and Australian coal imports. By the end of 2023, discounts narrowed to just 7% compared with Australian coal. EU sanctions since August 2022 mean China became Russia's largest export market. In 2023, Russia exported 75 Mt of coal to China, a 60% increase on the previous year. However, from 1 January 2024, China reimposed tariffs of 6% on steam coal and 3% on coking coal from exporting countries with which it has no bilateral free trade agreements. These include Mongolia, Russia, South Africa, Colombia, the US and Canada. Russian exports to China did indeed dip in January 2024, but coal trade often slows over the Chinese New Year. South Korea, India and Türkiye are the other major importers of Russian coal, although the South Korean government advises buyers to source from elsewhere.

China and India together account for over two thirds of total global coal use. In 2023, coal demand in China grew by an estimated 4.9% to 4 740 Mt with steam coal accounting for most of this increase as coal power generation increased by almost 7% (see box on page 2). Coking coal demand was an

estimated 738 Mt in 2023, 2.8% up on 2022. Data from the National Bureau of Statistics show Chinese coal production reached a new monthly record in March 2023 when output was 417 Mt. Overall though, Chinese coal producers failed to keep up with rising demand, so China imported 372 Mt of seaborne steam coal in 2023, a 62% increase on the previous year. At 475 Mt, total imports of steam and coking were at an all-time historic high, with significant new volumes from Mongolia. At the same time, China ended the year with coal stocks of 533 Mt, equivalent to around 60 days' supply in places and a historic high.

Coal power grows in China – a new EU under construction

It is reported that 408 GW or 71% of all the new coal-fired power plants under development around the world are in China. This should be compared with China's current coal fleet of over 1 100 GW and the EU fleet of around 120 GW. President Xi has pledged to reach "net zero" by 2060 and to reduce coal use over the period 2026 to 2030. Despite his pledge, China is constructing many new coal-fired power plants: 47.4 GW were opened in 2023 and 140 GW are under construction according to the latest *Global Energy Monitor* report. Elsewhere, 22.1 GW of new coal plants were commissioned to give a global total of 69.5 GW while 21.1 GW old plants were closed, mostly in the US (9.7 GW), China (3.7 GW) and the UK (3.1 GW).



Source: *Boom and Bust Coal 2024*, Global Energy Monitor, April 2024

Given this construction trend, global demand for steam coal is expected to remain buoyant, led by Asia. China and India are expected to remain the largest importers, although China's increased domestic coal production and investment in renewables will likely see a decrease in coal imports which could halve. Demand for coal in India, where over 50 GW of new coal plants are under development, is expected to rise over the next five years, but higher domestic output is forecast to meet most of this demand. Other Asian markets expected to see higher or steady demand include Japan, South Korea, Vietnam, Bangladesh and the Philippines. The 6 GW of new plants under consideration in Indonesia would be fuelled by indigenous coal.

In India, coal consumption rose by 8.4% in 2023 to an estimated 1 260 Mt. Production grew strongly by 11.4% to reach 1 027 Mt, meeting the government's one-billion-tonne target. Monthly production surpassed 100 Mt for the first time in March 2023. India is expected to increase steam coal demand over the next decade, although import demand will depend on the country's ability to increase coal production and the capacity of its rail network to deliver coal from mines to consumers. In 2023, India imported 178 Mt of steam coal while imports of coking coal grew by 25% to an estimated 73 Mt.

The third largest coal producer, Indonesia, saw coal production rise 5.6% to an estimated 725 Mt in 2023, meeting demand for export coal as well as the needs of its industrialising economy. Indonesia maintained its position as the world's top exporter of steam coal in 2023, with exports totalling 521 Mt — a 12% increase compared with 2022. Looking ahead, with declining demand from China and elsewhere for Indonesia's low calorific value coal, and with a growing domestic market, Indonesian exports will likely decline.

After increasing by 3.0% to 539 Mt in 2022, because of demand from power plants and strong export sales, the United States saw production dip to 527 Mt in 2023, a fall of 2.2% and so a return to the long-term, downward trend driven by the availability of cheaper fossil gas for power generation in that country. US exports jumped by 23% in 2023 to 44 Mt – the highest volume in five years as US exports helped to replace Russian coal in the EU.

In Australia, the world's fifth largest producer (and second largest coal exporter after Indonesia, but top exporter by value), coal production grew by a modest 1.5% to 425 Mt in 2023. Steam coal exports increased markedly by 24 Mt or 13.2% to 202 Mt, helped by improved trade relations with China who ended its unofficial ban on Australian coal. Steam coal exports to China have recovered fully since the removal of import restrictions in early 2023. In 2022, Australia used approximately 20% of its steam coal production for domestic use, mainly power generation. The Australian Energy Market Operator's draft 2024 Integrated System Plan forecasts coal power generation will exit the east-coast energy market by 2037. If coal flows can be diverted, this could boost Australian exports, especially as the prospects for new coal mining projects are limited to replacing output from depleting mines. In June 2023, China overtook Japan to become the largest importer of Australian steam coal, but its coking coal needs are now largely met by Mongolian and Russian exports with little need for Australian coking coal. As such, Australian coking coal exports declined by 5.8% in 2023 to 151 Mt.

In Europe, the closure of the last nuclear power plants in Germany in April 2023 and uncertainty about the speed and costs of a transition to renewable energy sources must be balanced by the decline in industrial energy demand. Data for 2023 show a slump in coal and lignite demand: total coal supply shrank by 107.1 Mt or 22.7% compared with 2022 to just 367.7 Mt (including lignite). The reasons for this are many and varied, but largely self-inflicted: the high cost of EU ETS emission allowances makes coal-fired generation uneconomic (as intended), but is also driving energy-intensive industrial production away from EU member states. Moreover, high energy prices mean economic growth in Europe has been subdued. Table 4 shows that EU steel production fell 10.9% in 2023. In Germany, the most industrialised economy in Europe, energy demand fell by 8.1% in 2023 after falling 6.1% in 2022, with few signs of this trend reversing quickly.

Although still the world's fifth largest importer after China, India, Japan and South Korea, EU demand for imported coal slumped in 2023 to 94.2 Mt, 25.8% lower than in 2022 and comprising 59.1 Mt of steam coal and 35.1 Mt of coking coal. Following the EU ban on Russian coal, the US and South Africa were the primary sources to fill this gap. Exports of South African steam coal to the EU and UK increased fourfold from 2021 to 2022. Then, in 2023, these fell by almost one third as demand weakened and stocks remained from earlier over purchasing. Colombia has been an important coal exporter to the EU. However, President Petro, elected in 2022, initially imposed a ban on new coal mines and expansion projects. This was overruled by the Constitutional Court, but the environment ministry has issued another decree to prevent new open-pit mine licenses. In 2023, Colombia exported 56.4 Mt of steam coal, 4.4% more than in 2022.

Japan imported 167 Mt (−8.8%) of coal in 2023, including 40 Mt (−6.1%) of coking coal. South Korean imports of steam coal were down 5.5% to 97 Mt due to increased nuclear and solar PV generation, although coking coal imports were little changed at 22 Mt in 2023. South Korea is aiming to reduce coal's share in power generation from 33% in 2022 to 15% by 2036 and to zero by 2050. Other big importers in 2023 were Taiwan, Türkiye and the fast-developing nations of Southeast Asia. Taiwan talks of exiting nuclear by 2030 and phasing down coal. Stable coal import demand is expected from Malaysia and Thailand, whereas the Philippines, Vietnam, Bangladesh and Pakistan are expected to increase imports.

Overall, the international coal market stabilised in 2023 and was even bullish. Tables 2 and 3 show our estimates of international coal trade. The global steam coal market grew by 6.0% to 955 Mt. The coking coal market was stable, declining by just 0.2% to 270 Mt and dominated by Australia with a 56% share of international trade. However, with Mongolia and others who do not trade

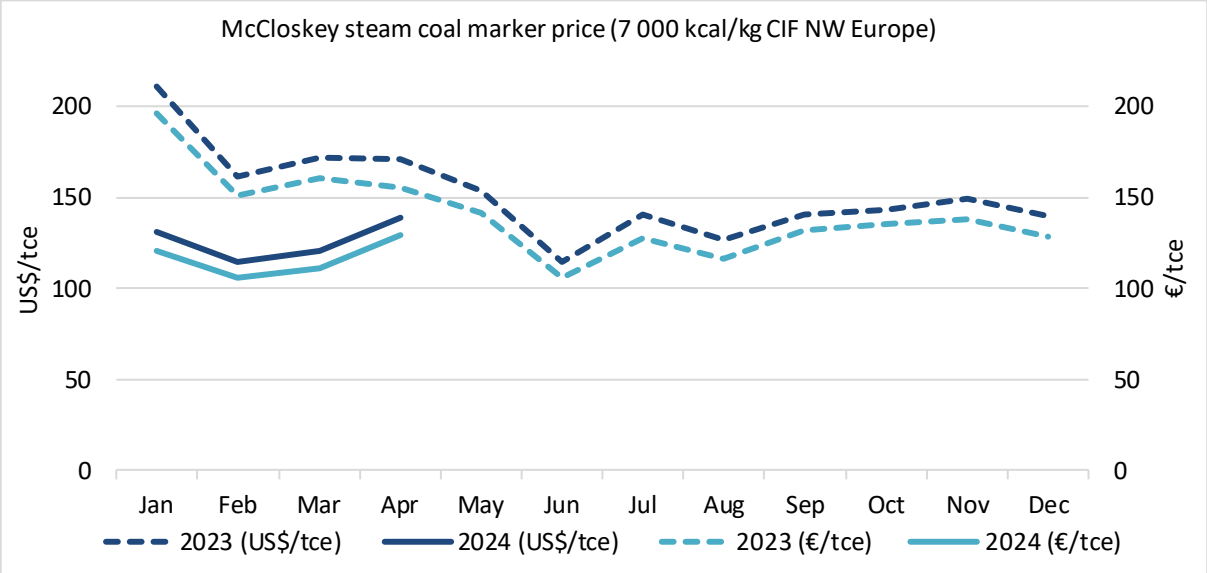
internationally, global coking coal trade was an estimated 317 Mt in 2023, 8% greater than in 2022. China and India accounted for most of this growth, notably with the additional coal supplied from Mongolia to China via recently upgraded rail links. Although China remained the biggest coking coal importer by land and sea, India overtook it to become the world's top importer of seaborne coking coal. World steel output was 1 892 Mt in 2023 according to the World Steel Association, unchanged on 2022. Steel output is expected to grow at 1.5% per year this decade, with strong additional demand for coking coal in Asia outside of China.

Coal Prices

Price volatility for most steam coal has eased following the extraordinary peaks of 2022. Coal prices in Europe have declined from the stratospheric levels seen in 2022 as high stocks at ports, a warm winter and lower fossil gas prices all worked against the steam coal market. Steam coal prices at ports in northwest Europe (ARA) averaged 129 US$/t CIF in 2023, falling from 181 US$/t at the start of the year to 115 US$/t at the end of December 2023 and only briefly falling below 100 US$/t in early June 2023. The market has cooled compared to the average price of 292 US$/t CIF for steam coal imported into Europe in 2022, a year when prices were sometimes above 400 US$/t.

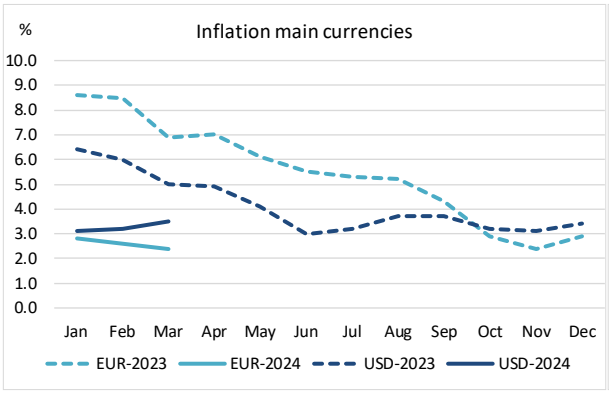
According to the Australian government's *Resources and Energy Quarterly*, steam coal spot prices are expected to fall slowly over the coming years, from 133 US$/t in 2024 to 105 US$/t (FOB) in real terms by 2029 as demand and trade slow. However, experts predict a wide range of scenarios, depending on the outturn of energy transition plans. Prices are not expected to decline below 100 US$/t given the many pressures on the industry, such as labour shortages, higher freight costs and insurance premiums, and difficulties in securing capital at sensible rates.

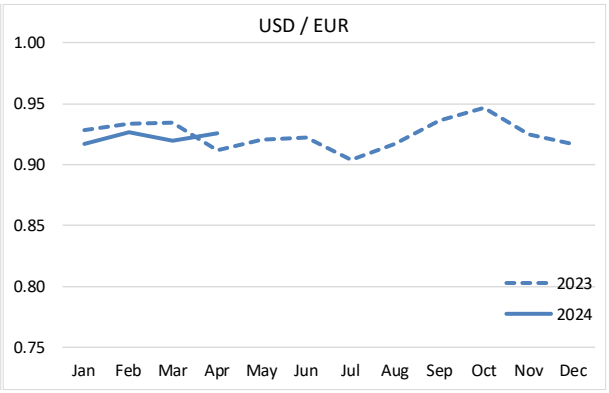
Any escalation in the Hamas-Israel conflict is unlikely to have much impact on coal prices as only about 3% of global supply is shipped through the Red Sea. However, the impact on oil, and hence LNG prices, would inevitably feed through to higher coal prices.



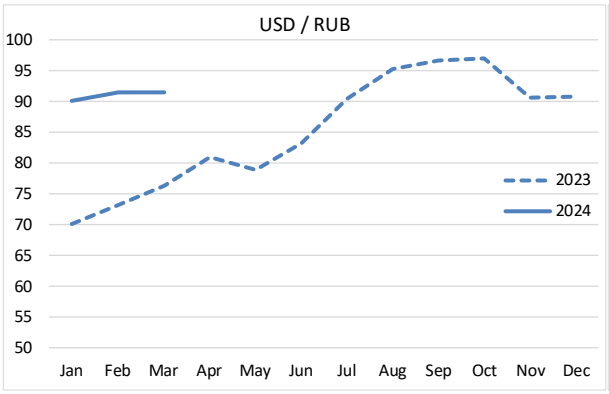
Source: McCloskey by OPIS, a Dow Jones Company (first week quotation of month, 6 000 kcal/kg converted to 7 000 kcal/kg)

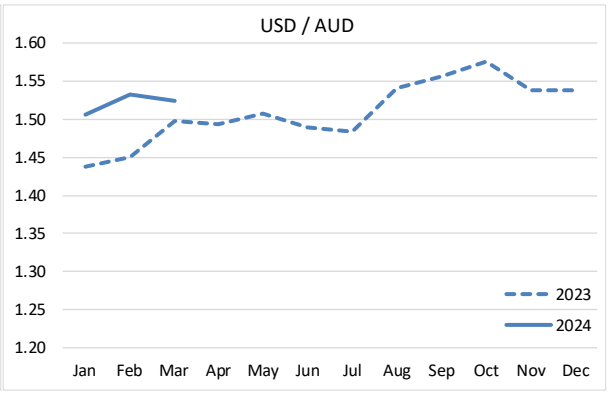
With the EU sanctions on Russian coal that came into force on 10 August 2022, no EU member state imported coal from Russia in 2023. After peaking briefly above 100 USD / RUB in 2022, the rouble exchange rate gradually rose back to this level during 2023 as the Russian economy weakened. The availability of cheaper Russian coal saw steam coal import prices at ports in South China fall below ARA prices for much of 2022, although this spread corrected at the start of 2023 as import prices in Europe and China converged.





Sources for inflation: ECB; US Bureau of Labor Statistics





Sources for exchange rates: ECB, BoE and OECD

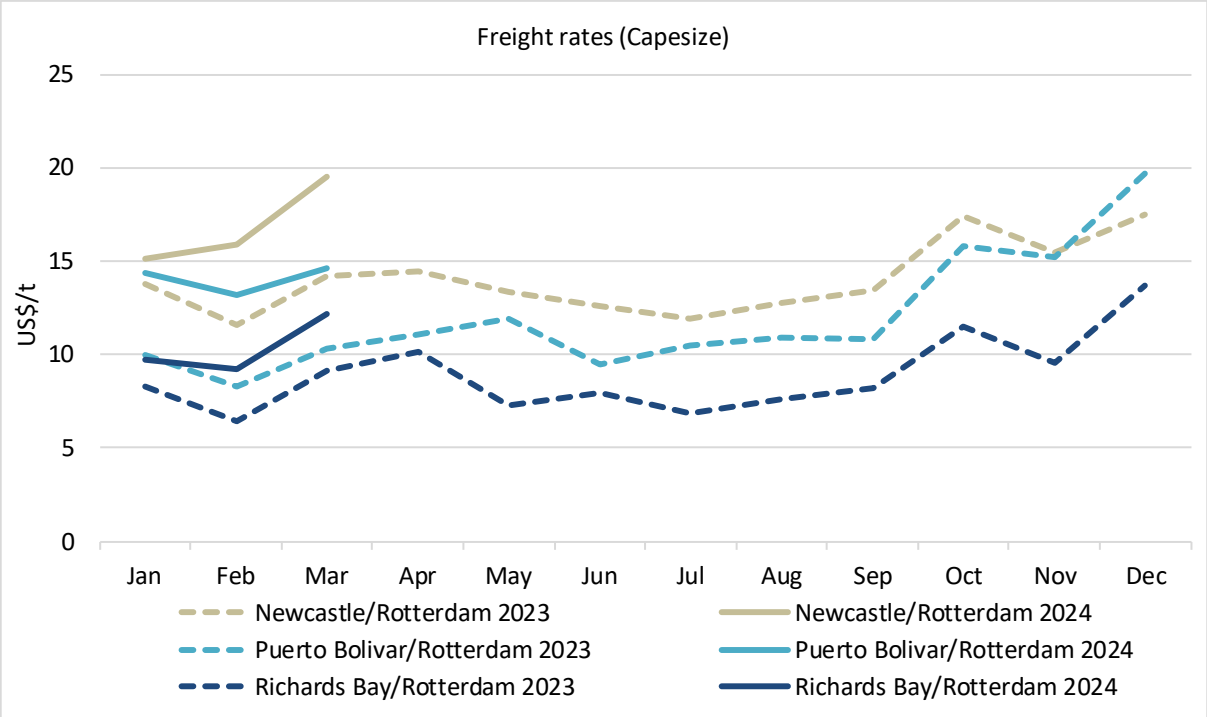
Traditionally, the coking coal trade between Australia and Japan sets price benchmarks. Coking coal hit record prices in March 2022, reaching 654 US$/t for Australian low-vol premium hard coal coking coal (FOB, weekly basis). In 2023, coking coal prices remained 65% above their pre-2019 level – averaging 294 US$/t over the year, despite a softening global economic outlook. The Australian Department of Industry, Science and Resources expects coking coal prices to ease from 277 US$/t in 2024 to 185 US$/t in real terms by 2029 (FOB).

Any price forecast depends partly on inflation rates: the US consumer prices index (CPI) fell in 2023 to a low of 3.0% in June, but has ticked up in 2024 (Table 1 and chart above). The annual inflation rate in the EU which fell to 2.4% in November 2023 after peaking at 10.6% in October 2022. Prior to November 2021, eurozone inflation had never been above 4.1%.

Freight Rates

Like coal prices, freight rates stabilised at lower levels in 2023 compared with the volatility seen in 2022. In 2023, shipping rates averaged 12 US$/t and 9 US$/t respectively on the Bolivar-Rotterdam and Richards Bay-Rotterdam routes of interest to European steam coal buyers. Importers of coking coal from Australia paid higher shipping costs, averaging 14 US$/t in 2023.

Around 12% of seaborne coal trade finds its way to European or Mediterranean countries where Germany, with 30.1 Mt, fell behind Türkiye which imported 37.7 Mt to become once again the region's biggest importer – as it was previously in 2020 when German imports collapsed due to Covid-19 pandemic.



Source: Clarksons

EU COAL MARKET[1]

	2023 (1-12) Mt	2022 (1-12) Mt
Hard coal imports	94.2	126.9
Hard coal production	49.7	54.6
Lignite production	223.8	294.3

Hard coal imports into the EU, at 94.2 Mt in in 2023, were down by a massive 25.8% compared with 2022 with the worst of the collapse taking place in the second half of the year. Germany saw the largest absolute decline – 9.8 Mt – followed by Italy (−4.6 Mt). In Poland, the government's mandate in 2022 to stock sufficient coal to ensure electricity and heat supply security during a difficult period left coal stocks high in 2023 following a warm winter and this subdued import demand which fell 15.9% to 16.9 Mt.

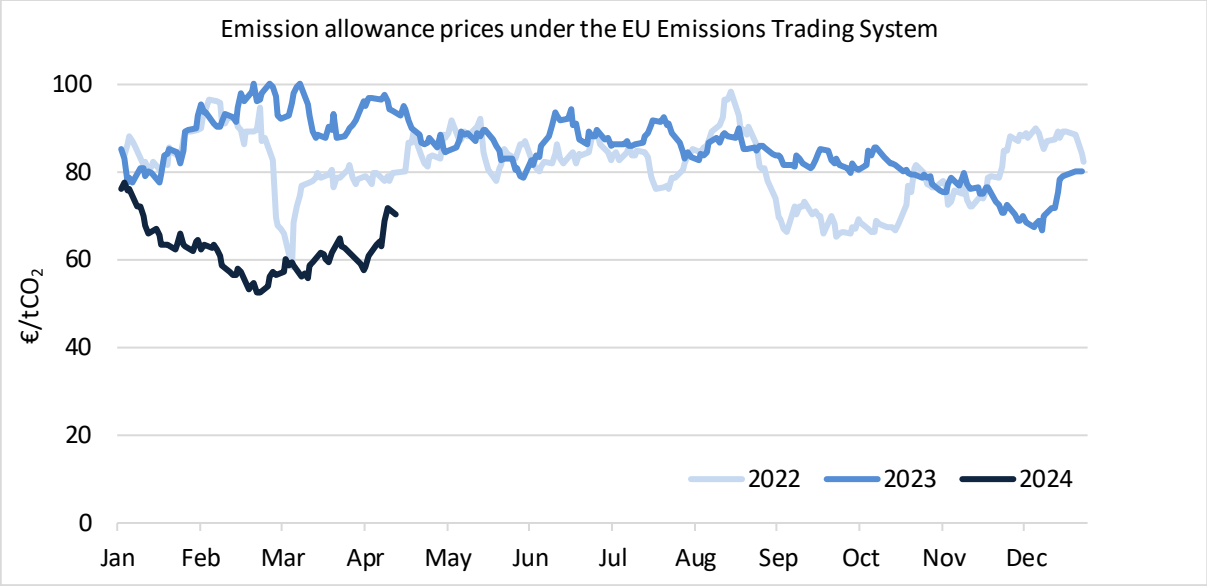
Turning to coal production, EU hard coal output fell by 9.0% in 2023 to 49.7 Mt compared with 2022. Lignite production fell dramatically, by 24.0% to 223.8 Mt in 2023 as lignite demand for power generation slumped across the whole of the EU except Slovenia. Bulgaria experienced the biggest relative fall, of 40.9%, followed by Greece, Poland, Germany and Romania. In absolute terms, the biggest decline was in Germany where lignite mines produced 28.6 Mt less than in 2022, a 21.8% drop.

Carbon Prices

In 2023, EU ETS allowance (EUA) prices averaged 85.36 €/tCO_2e, ranging from a low of 66.73 €/tCO_2e to a high of 100.29 €/tCO_2e. Compared with recent years, there was less volatility, albeit around a higher price level. On 21 February 2023, EUA prices rose above 100 €/tCO_2e for the first time ever and broke through this psychological barrier twice more in Q1 2023. Since then, prices have moderated, but remain high and unpredictable. The sustained high EU ETS prices have hit energy-

[1] All European coal production and trade data come from EURACOAL members or government sources.

intensive industry, but especially lignite-fired power generation where demand for lignite fell by a massive 26.0% across the EU in 2023. With carbon costs under the EU ETS being three to five times higher than fuel costs, lignite-fired plants in the EU have been rendered uneconomic. This outcome should not be surprising: above 100 €/tCO_2, neither coal- nor lignite-fired generation make economic sense unless rewarded with very high electricity prices.



Source: Intercontinental Exchange

Hard Coal

Producer	2023 (1-12) Mt	2022 (1-12) Mt
Czechia	1.4	1.8
Poland	48.3	52.9
EU total	**49.7**	**54.7**

Czech Republic

In 2023, Czech hard coal output was 1.37 Mt, 24.3% lower than in 2022, comprising 0.52 Mt of coking coal and 0.85 Mt of steam coal. OKD is the only hard coal producer in the Czech Republic and plans to continue mining at its ČSM mine in Karviná until H4 2025 or H1 2026 – three years longer than previously planned.

Hard coal imports fell 10.8% to 3.91 Mt in 2023, mostly from Poland: 2.14 Mt of coking coal and 1.77 Mt of steam coal. Exports were 0.73 Mt (−15%) of which 0.39 Mt coking coal and 0.34 Mt steam coal. Around 1.5 Mt (−16.8%) of hard coal were used for heat and power generation at utility plants in 2023.

Germany

Germany imported 30.1 Mt of hard coal in 2023, a collapse of 24.6%. 18.6 Mt of imports were steam coal and 11.5 Mt were coking coal. Since summer 2022, importers in Germany have shifted completely away from Russia in favour of the US (28%), Australia (27%) and Colombia (15%). Despite the closure of the country's remaining three nuclear power plants in April, the ongoing trend of de-industrialisation outweighed this loss of power supply, resulting in a further decrease in coal-fired electricity generation: hard coal deliveries to power plants fell 28.5% from 21.8 Mt in 2022 to 15.6 Mt in 2023. Hard coal accounted for 41 TWh or 7.9% of total power generation in 2023.

The Netherlands

Following the Dutch election on 22 November 2023, little changed in terms of climate and energy policy: the country continues to use less fossil gas and the share of RES in primary energy supply grows. According to Statistics Netherlands, nearly half of the electricity produced in the country is now renewable with roof-top solar PV and onshore wind continuing to grow strongly. In recent years, the Netherlands has been a net exporter of electricity.

Coal imports in 2023 were 6.5 Mt with demand from power generation (2.9 Mt) being less than from the iron and steel industry (2.5 Mt for coke ovens and 1.0 Mt PCI for blast furnaces) – as was the case in 2020. The court decision of 2020 in a case brought by Urgenda limits coal-fired power generation to 35% of the total. Imports were split between 3.6 Mt of coking coal and 2.9 Mt of steam coal.

Plans for new nuclear power plants, electrification, CCS and the greater use of hydrogen could see the Dutch energy mix further transform in the future towards net-zero greenhouse gas emissions.

Poland

Hard coal production in Poland decreased to 48.3 Mt in 2023, an 8.7% drop compared with 2022. Coal imports fell by 15.9% to 16.9 Mt, of which 14.8 Mt were steam coal and 2.1 Mt were coking coal. Coal stocks had grown in 2022 to ensure energy security, but a warm winter left these available in 2023 and reduced the need for further imports. The main exporting countries to Poland were Colombia at 5.2 Mt and Kazakhstan at 4.8 Mt, followed by Australia (1.6 Mt), South Africa (1.4 Mt), Indonesia (1.2 Mt) and the United States (1.1 Mt). Polish coal exports fell by 0.5 Mt (−11%) to 4.2 Mt in 2023 compared with 2022. In February 2024, 76 052 people worked in the Polish hard coal sector.

Lignite

Producer	2023 (1-12) Mt	2022 (1-12) Mt
Bulgaria	21.0	35.5
Czechia	28.7	33.4
Germany	102.3	130.8
Greece	9.7	13.7
Hungary	4.1	4.9
Poland	40.1	54.6
Romania	14.8	18.2
Slovakia	0.8	0.9
Slovenia	2.4	2.3
Total	**223.9**	**294.3**

Bulgaria

Mini Maritsa Iztok EAD (MMI) operates a total installed power generation capacity of 3 422 MW in Bulgaria, fired with lignite from mines having an annual output capacity of 35 Mtpa. In 2023, production by MMI and other, smaller producers totalled 21.0 Mt, a 40.9% reduction on 2022. Lignite-fired generation was down 44% to an estimated 13.0 TWh, of which 10.5 TWh were generated by plants owned by MMI. This downward trend continued in Q1 2024 with production of 3.3 Mt, 55% lower than in Q1 2023. Lignite exports to Serbia continued in 2023 at 1.1 Mt and are expected to continue through 2024.

The sharp decline of the lignite sector was partly caused by a 20.8% reduction in power generation in Bulgaria in 2023, to 40.0 TWh, while the collapse of net electricity exports to 3.3 TWh from 12.2 TWh in 2022 has continued in Q1 2024. In 2023, coal and lignite had a one third share in Bulgarian electricity production compared with 43.1% in 2022, a drop that was not balanced by higher output

from other sources, although wind and solar PV together grew by 50% to 4.5 TWh. From July 2024, the household electricity market will no longer be regulated, and the National Electricity Company (NEK) will lose its role as a public supplier. During the transition to a fully liberalised market, electricity prices for households should not change.

The rapid growth in solar PV has continued in Q1 2024 (+142% year-on-year) with huge production from around 3 GW even during these colder months. As a result, balancing the power system has become more difficult and will be tested further during the summer months. Large price swings on the power exchange, from close to zero during the day to over 150 €/MWh in the evening, point to the need for actions such as constraining RES generation at certain times.

Territorial Just Transition Plans for three Bulgarian coal-mining regions, which are an eligibility requirement to receive support from the EU Just Transition Fund, were presented in September 2023 and approved with a budget of €1.2 billion by the European Commission in December 2023. Land restoration in readiness for alternative economic activities and investment support for SMEs are key elements of the plans. In February 2024, an agreement was signed between the European Investment Bank (EIB) and the Bulgarian Ministry of Energy concerning the investment needed for transition at the Mini Maritsa Iztok complex. With EIB assistance, an analysis of the region's competitive advantages will be prepared to identify the most promising new economic activities in what should be a carbon-neutral industrial hub.

An update of Bulgaria's National Energy and Climate Plan will be finalised in 2024 after public consultation. Local authorities seek to participate in the process. The Ministry of Energy reports that the update is in line with the current energy situation in Europe, with the best outcomes for energy sector development and energy security.

In January 2024, Bulgaria and Greece signed an MoU on co-operation in the field of energy, notably electricity, gas and hydrogen transmission networks. During the same month, a tripartite declaration between Bulgaria, Greece and Romania envisages the assessment and development of offshore wind in the Black Sea and the Aegean Sea. Also in January 2024, and following a decision of the National Assembly on 18 December 2023, "Kozloduy NPP – New Builds" EAD called for expressions of interest for the construction of Kozloduy Unit 7 using Westinghouse AP1000 technology – a call underpinned by an intergovernmental co-operation agreement between Bulgaria and the US signed in February 2024. This would be followed by Unit 8. It is planned to commission new capacity before 2035.

Czech Republic

In 2023, Czech brown coal production fell to 28.7 Mt, a 14.1% decrease compared with 2022. Imports were insignificant while exports totalled 0.72 Mt. The decline in output was partly due to a 9% drop in overall electricity generation to 76.6 TWh, compared with 2022. 22.5 Mt of brown coal were delivered to utility scale power plants, 17.5% less than in 2022. For the first time, 2023 saw the share of nuclear generation, at 39.9% (30.8 TWh), overtake that of hard and brown coal which had a combined share of 39.4% (30.5 TWh) being 17.1% lower than 2022. Fossil gas contributed 4.6% of the electricity mix while renewables including hydro stood at 14.5%, despite a 5% fall in solar PV.

The Czech draft National Energy and Climate Plan for 2021-2030 with an outlook to 2050 foresees a coal phase-out for heat and power by 2033 and the construction of four new nuclear reactors by 2041 at the Dukovany and Temelín nuclear power plants, with the first new unit operational at Dukovany in 2036. Westinghouse has been excluded from the bidders' list, leaving EdF and the Korea Hydro & Nuclear Power Co. Ltd. Discussion continues on a 30% renewables target in final energy consumption for 2030 (European Commission requires 33%) and the phase-out of fossil fuels. Submission of a final version of the plan to the cabinet of ministers is scheduled for June 2024. Legislation is expected by June 2025 with a specific end date for coal. Then, by the end of 2025, instruments to ensure electricity system security will be specified – a deadline which for predictability reasons the coal industry would like brought forward, ideally to autumn 2024 to avoid premature plant closures.

Germany

Energy consumption in Germany fell by 8.1% in 2023 compared with 2022 to a new low of 366 Mtce. Coal and lignite accounted for 17.0% of this total, although both suffered from falling demand in 2023: an 18.5% drop in lignite consumption and 23.4% less coal than in 2022. High energy prices, demand destruction – especially in industry, warm weather, and the closure of the last nuclear power plant in April, together led to a 5% decrease in electricity consumption in 2023. Power generation in Germany fell by 11.1% to 513.7 TWh with coal and lignite accounting for one quarter. All sources of generation declined, except renewables which grew by 7%. For the first time since 2002, Germany was a net importer of electricity.

In 2023, a total of 102.3 Mt of lignite were mined in Rhineland, Lusatia and Central Germany, 89.9 Mt of which were delivered to power plants to produce 88 TWh of electricity (for a 17.0% share) while the remainder was used for industrial products and households. The output of refined lignite products fell to 4.3 Mt in 2023, with demand now concentrated on lower-value products. The 21.8% reduction in lignite output (−26% in Rhineland, −14% in Lusatia and −28% in Central Germany) was in line with the phase-out plans agreed with the German federal government in 2020 and the NRW state government in 2022. The remaining 1 800 MW strategic lignite reserve continued to operate in 2023 but is scheduled to be discontinued in 2024. By 2038, all lignite plants will have been closed, as early as a planned 2030 in the Rhenish area. Gas-fired peaking plants with a capacity of 24 GW are envisaged to secure power supplies when renewables are unavailable.

At the end of 2023, the number of employees in the German lignite sector was 17 201, including 973 trainees and 3 858 at public power plants.

Greece

Of Greece's two lignite mining centres – Megalopolis and Western Macedonia – most production activities are now concentrated in the Ptolemais mines of Western Macedonia where the new 660 MW Ptolemais V power plant is located. In 2023, Greek lignite production fell 28.9% to 9.7 Mt, of which Public Power Corporation (PPC) produced 9.5 Mt – some 41.4% below the planned output which had been fixed at the start of the year under very different conditions.

Electricity consumption in the interconnected system was 49.8 TWh in 2023, 1.8% less than 2022, with only 8.8% or 4.4 TWh supplied from lignite power plants. Renewables output of 21.4 TWh took a 42.9% share, little changed from 2022, followed by fossil gas at 15.0 TWh (30.1%) with the balance from hydro (7.9%) and imports (10.4%).

The Greek lignite sector now concentrates on post-mining plans such as solar PV parks, pumped hydro storage, battery energy storage, and the return of land to the public sector for redevelopment, including industrial estates and recreational areas with the creation of new lakes.

Hungary

Hungary saw lignite production fall by 17.4% in 2023 to 4.1 Mt. Lignite is used mostly for power generation at the 880 MW Mátrai Erömü power plant. This plant is expected to retire once a replacement 650 MW gas-fired CCGT becomes operational in the late 2020s. Hungary imports only small volumes of coal: 368 thousand tonnes in 2023.

Poland

Polish lignite production in 2023 fell sharply to 40.1 Mt, a 26.6% decline on 2022. The largest production was at the PGE GiEK Bełchatów lignite mine with 30.0 Mt (77.4%) followed by PGE GiEK Turów (7.8 Mt, 20.2%) and PAK Konin (0.9 Mt, 2.4%). Production at the PAK Adamów mine ended in 2023. Total Polish electricity generation was down 8.6% in 2023 to 163.4 TWh of which an estimated 43.0% came from hard coal and 20.8% from lignite.

On 13 December 2023, a new coalition government led by Prime Minister Donald Tusk began to make changes in the energy sector. An update of the country's National Energy and Climate Plan is anticipated. The earlier plan to establish a new state-owned National Energy Security Agency (NABE) to integrate all lignite- and hard coal-fired power plants and related lignite mines has been put on hold. To ensure secure energy supply, modernisation measures at existing lignite-fired generation units will be considered.

Romania

The output of lignite mines in Romania was 14.8 Mt in 2023, an 18.8% decline compared with 2022. Complexul Energetic Oltenia is by far the largest lignite producer and as well as mines it also owns lignite-fired power plants with an installed gross capacity of 2 295 MW. 15.0 Mt of lignite was delivered for power generation in 2023, including some imported lignite.

Romania's National Recovery and Resilience Plan foresees the phase-out of coal- and lignite-fired electricity production by 2032, with some flexibility in the short term to increase production as required.

Slovakia

Lignite production in Slovakia fell 12.1% in 2023 to 765 thousand tonnes compared with the previous year. With additional imported coal, 1.2 Mt if coal were delivered to power plants.

On 20 December 2023, the Nováky coal mine was closed, ending over one hundred years of mining history in Slovakia. The Nováky power plant, the country's last coal power station, was disconnected on the same day. In 2023, coal accounted for around 2% of total Slovak electricity generation of 29 TWh which has increased with the commissioning of unit 3 at Mochovce nuclear power station 50 kilometres from Nováky.

Slovenia

In 2023, Slovenia's only lignite mine at Velenje produced 2.4 Mt, an increase of 6.9% compared with 2022 after geotechnical problems at the mine were overcome. This output was supplemented by imports of 0.3 Mt mostly from Indonesia. Imported coal is mixed with domestic lignite before being used at the 1 029 MW Termoelektrarna Šoštanj (TEŠ) power plant and Termoelektrarna Toplarna Ljubljana (TE-TOL) which supplies the capital city's district heating. Premogovnik Velenje mine is planned to closure in 2033 which has already led to a decrease in employees and production.

Slovenia enjoys balanced shares of hydro, nuclear and fossil fuels for power generation. Lignite usually covers around one third of electricity production, but up to one half when annual precipitation and hence hydro output are low. Despite the 2033 coal phase-out date, several open questions remain on the future of the new 600 MW TEŠ 6 unit and construction of a new unit at the country's only nuclear power plant at Krško.

NON-EU COAL MARKET

Bosnia and Herzegovina

Lignite in Bosnia and Herzegovina fell by 7% to an estimated 12.3 Mt in 2023, most of which was delivered to power plants.

With one of Europe's newest coal plants at Stanari, Bosnia and Herzegovina's draft National Energy and Climate Plan does not envisage the construction of any more new coal power plants. On Miners' Day, 21 December 2023, the Prime Minister abandoned plans to build a new Tuzla 7 unit which had attracted the attention of Chinese investors. Earlier, in July 2023, development of the new Ugljevik 3 coal power plant was suspended by the Republic of Srpska awaiting a decision of the supreme court

on the validity of an environmental permit previously granted by the Ministry of Energy and Mining. Instead of new coal plants, the government plans to focus on modernising the country's existing coal-fired power plants and a deal to export electricity to Slovenia was signed by RiTE Ugljevik in January 2024.

Türkiye

Türkiye's annual inflation rate in 2023 was 65%, one of the highest worldwide, due to low interest rates in H1 2023. The central bank pivoted in June and aggressively hiked rates from under 9% to more than 42% in H2 2023. The resulting weakness of the Turkish lira made energy imports more difficult and energy sector investments uncertain.

In 2023, lignite production in Türkiye declined by 31.0% to 55.9 Mt, despite electricity generation from coal and lignite hitting a record 118 TWh – second only to Germany. At the start of 2023, hard coal-fired power plant capacity was 10.4 GW and the capacity using domestic lignite was 11.4 GW. During 2023, coal and lignite accounted for over one third of Turkish electricity generation.

Turkish hard coal production at 1.1 Mt in 2023 is not significant at the national level and fell by 24.4% compared with 2022 following the tragic accident at Amasra mine on the Black Sea coast in October 2022.

Coal imports into Türkiye reached 37.7 Mt, a year-on-year increase of 8.7% and placing Türkiye ahead of Germany as the largest coal importer in the European region. Given the sanctions imposed by the EU, the UK and others against Russia, 2023 saw Russian coal deliveries to Türkiye increase by 41.6% to 27.9 Mt at favourable prices to take a share of 74% in total imports of steam and coking coal. This, in combination with high gas prices, increased the competitiveness of coal-fired electricity generation in Türkiye.

The devastating 6.4 magnitude earthquake in February 2023 damaged several power plants including the 1 440 MW Afşin-Elbistan B which was offline for three months. Elsewhere, the Yunus Emre plant was still not fully operational at the end of 2023 and some other plants have struggled to meet environmental permit conditions. Unit 2 at Yunus Emre is the only unit under construction although 4.8 GW of new coal plants are proposed in Türkiye, more than in any other OECD country.

The Turkish government's 11th Development Plan 2019-2023 puts a strategic priority on expanding lignite production and lignite-fired power generation, as well as exploiting indigenous fossil gas reserves, constructing new nuclear power plants, and deploying more renewable energy sources.

Ukraine

Many of Ukraine's coal mines and power plants have been occupied or destroyed by Russian forces and so the coal sector operates under extremely difficult conditions. All mines in the Luhansk region and some in the Donetsk region are closed. Those that remain are at risk of missile attacks, especially the group of mines near Pavlograd in the Dnipropetrovsk Region due to their proximity to the frontline. Output from state-owned mines fell by 14% to 1.9 Mt in 2023, whereas private mines increased their volume enough to maintain total production at an estimated 21.2 Mt (26.1 Mt run of mine), almost unchanged from 2022. In 2023, 66% of coal production came from DTEK mines, despite the high risks to miners under constant missile threat. DTEK accounted for 85% of thermal coal production, concentrated in one small area of the Dnipropetrovsk Region and attention is given to the security of that supply.

Coal imports in 2023 totalled 667 thousand tonnes, far below the 4.6 Mt imported in 2022 and 19.5 Mt in 2021. Imports were split roughly equally between coking and steam coal, coming mostly from Australia, the US and Poland. At the same time, 671 thousand tonnes of coking coal were exported in 2023 to India via safe ports in third countries and overland to Slovakia, Hungary and elsewhere. Exports of other coal grades were banned in 2023.

Just over two thirds or 11.4 Mt of the 16.7 Mt national coal demand in 2023 came from the electricity sector, one quarter from steel making and the remainder from other industries (cement, sugar, *etc.*). To help meet demand, DTEK contracted 357 thousand tonnes of coal from Poland for supply between December 2023 and March 2024.

Total power demand declined by around 30% in 2023 compared with 2022. Power plants with a capacity of over 21 GW have been occupied or damaged since the start of Russia's full-scale invasion, and Ukraine continues to suffer attacks on its energy infrastructure through to 2024. DTEK suffered 9 245 separate attacks in 2023 during which 10 883 pieces of equipment were damaged. The company has adapted to these threats by installing mobile generators at power plants and mines, stationary and mobile shelters for workers, and gabions with anti-drone nets to protect transformer substations.

To be well prepared in the short term, Ukraine has built up sufficient coal stocks and fossil gas reserves in underground storage sites. It might also have to rely on imported electricity to cover any possible deficits caused by Russian attacks. In the longer term, Ukraine plans to gradually transition from thermal generation to renewable energy sources and green hydrogen production. This strategy is being executed even in time of war with completion of the first turbines (115 MW) of the 500 MW Tyligulska wind power plant in spring 2023.

United Kingdom

In 2023, hard coal production in the UK was 0.5 Mt, almost entirely from one surface mine. Imports totalled 3.5 Mt, a collapse of 45.2% compared with 2022 as the country switched almost completely away from coal power generation and the steel industry declined, especially pig iron output from blast furnaces. Imports of coking coal fell from 1.7 Mt in 2022 to 0.9 Mt in 2023.

In March 2019, West Cumbria Mining was granted planning permission for Woodhouse colliery, a new coking coal drift mine with a potential output of 3 Mtpa. The UK government confirmed this permission in December 2022 and, despite ongoing legal challenges, project development continues.

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TABLE 1

Evolution of world market prices for coal, freight and crude oil

McCloskey steam coal marker price (7 000 kcal/kg)

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
steam coal	**2023**	211.33	161.57	172.29	170.99	153.90	114.87	141.00	126.81	141.02	143.45	149.36	139.94
(US$/tce CIF NW Europe)	**2024**	131.39	114.33	121.10	139.38								
steam coal	**2023**	196.24	150.79	160.94	155.89	141.60	105.97	127.51	116.24	131.99	135.81	138.18	128.35
(€/tce CIF NW Europe)	**2024**	120.48	105.92	111.39	129.04								

Source: McCloskey by OPIS (first week quotation of the month, basis 6 000 kcal/kg converted to 7 000 kcal/kg)

Freight rates (US$/t)

Richards Bay/Rotterdam	**2023**	8.31	6.43	9.15	10.15	7.29	7.92	6.88	7.65	8.22	11.50	9.54	13.66
(Capesize)	**2024**	9.69	9.19	12.20									
Queensland/Rotterdam	**2023**	13.75	11.58	14.22	14.44	13.31	12.60	11.93	12.75	13.46	17.39	15.49	17.50
(Capesize)	**2024**	15.13	15.88	19.50									
Puerto Bolivar/Rotterdam	**2023**	10.01	8.33	10.31	11.05	11.89	9.46	10.48	10.91	10.78	15.76	15.25	19.69
(Capesize)	**2024**	14.39	13.20	14.60									

Source: Clarksons (monthly averages from weekly data)

Currency rates

USD / EUR	**2023**	0.929	0.933	0.934	0.912	0.920	0.923	0.904	0.917	0.936	0.947	0.925	0.917
	2024	0.917	0.926	0.920	0.926								
USD / RUB	**2023**	70.1	73.1	76.3	80.9	79.0	83.1	90.4	95.3	96.6	97.0	90.6	90.8
	2024	90.2	91.4	91.5									
USD / AUD	**2023**	1.44	1.45	1.50	1.49	1.51	1.49	1.48	1.54	1.56	1.58	1.54	1.54
	2024	1.51	1.53	1.52									

Sources: ECB Euro foreign exchange reference rates; Bank of England database; OECD.Stat Monthly Monetary and Financial Statistics (MEI) dataset

Crude oil (US$/barrel)

crude oil	**2023**	81.62	81.88	78.45	84.13	75.82	75.19	81.06	87.33	94.60	91.78	84.92	79.00
	2024	80.04	81.23	84.22	89.81								

Source: OPEC Reference Basket (ORB) price

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International coal trade

TABLE 2

Steam coal				
exporting country	**2023 (1-12)**	**YoY change *c.f.* 2022**		**2022 (1-12)**
	Mt	**Mt**	**%**	**Mt**
Australia	202.2	23.6	13.2%	178.7
Canada	8.0	-0.3	-3.4%	8.2
China	4.1	0.4	9.4%	**3.7**
Colombia	56.4	2.4	4.4%	54.0
Indonesia*	379.7	19.4	5.4%	360.3
Russia	170.9 e	-0.5	-0.3%	171.4 e
South Africa	73.9	1.7	2.3%	72.3
USA	44.0	8.2	22.9%	35.8
others	15.6			16.7
total	**954.8**	**53.7**	**6.0%**	**901.1**

n.b. steam coal data includes anthracite
* excluding lignite

revised 2022 figures shown in **bold**

Source: McCloskey by OPIS and own calculations

TABLE 3

Coking coal				
exporting country	**2023 (1-12)**	**YoY change *c.f.* 2022**		**2022 (1-12)**
	Mt	**Mt**	**%**	**Mt**
Australia	151.2	-9.3	-5.8%	160.6
Canada	30.6	2.6	9.2%	28.1
China	0.4	0.1	43.8%	0.3
Russia	37.4 e	1.8	5.0%	35.6 e
USA	46.5	4.4	10.4%	42.2
others	4.3			**4.4**
total	**270.4**	**-0.6**	**-0.2%**	**271.0**

revised 2022 figures shown in **bold**

Source: McCloskey by OPIS and own calculations

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TABLE 4

European crude steel production

COUNTRY	2023 (1-12) Mt	YoY change *c.f.* 2022	2022 (1-12) Mt
Austria	7.1	-5.0%	7.5
Belgium	5.9	-16.6%	7.0
Bulgaria	0.5	1.5%	0.5
Croatia	0.2	25.4%	0.2
Czechia	3.4	-21.1%	4.3
Finland	3.8	7.7%	3.5
France	10.0	-17.4%	12.1
Germany	35.4	-3.9%	**36.9**
Greece	1.2	-23.5%	1.5
Hungary	0.5	-44.3%	0.9
Italy	21.1	-2.5%	21.6
Luxembourg	1.9	1.3%	1.9
Netherlands	4.7	-23.9%	6.1
Poland	6.4	-13.2%	7.4
Portugal	2.0	10.0%	1.9
Romania	1.6	-38.2%	2.6
Slovakia	4.4	13.0%	3.9
Slovenia	0.5	-12.5%	0.6
Spain	11.4	-1.2%	**11.6**
Sweden	4.3	-3.3%	4.4
unspecified		:	
EU-27	**126.3**	**-10.9%**	**136.4**
Belarus	2.3	11.1%	2.1
Bosnia & Herzogovina	0.6	-5.1%	**0.7**
Moldova	0.5	-10.7%	0.6
North Macedonia	0.3	19.4%	0.2
Norway	0.7	-2.0%	0.7
Serbia	1.5	-13.1%	1.7
Switzerland	1.2	-0.5%	1.2
Türkiye	33.7	-4.0%	35.1
Ukraine	6.2	-0.6%	6.3
UK	5.6	-5.8%	**6.0**

Sources: World Steel Association, Eurofer and own estimates

revised 2022 figures shown in **bold**

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TABLE 5

Hard coal and lignite production and consumption

	Hard coal production			Hard coal deliveries for power generation	
COUNTRY	**2023 (1-12) Mt**	**YoY change *c.f.* 2022**	**2022 (1-12) Mt**	**2023 (1-12) Mt**	**2022 (1-12) Mt**
Czechia	1.4	-24.3%	1.8	1.5	**1.8**
Germany	0.0	:	0.0	15.6	21.8
Poland	48.3	-8.7%	52.9	32.3	37.8
other EU	0.0	:	0.0	11.5	23.1
EU-27	**49.7**	**-9.0%**	**54.7**	**60.8**	**84.5**
Norway	0.1	6.8%	0.1	0.0	0.0
Türkiye	1.1	-24.4%	1.4	24.8	21.2
Ukraine	21.2	-0.3%	**21.2**	n.a.	n.a.
UK	0.5	-22.3%	0.7	1.5	2.3

	Lignite production			Lignite deliveries for power generation	
COUNTRY	**2023 (1-12) Mt**	**YoY change *c.f.* 2022**	**2022 (1-12) Mt**	**2023 (1-12) Mt**	**2022 (1-12) Mt**
Bulgaria	21.0	-40.9%	35.5	19.8	34.9
Czechia	28.7	-14.1%	33.4	22.5	27.3
Germany	102.3	-21.8%	130.8	89.9	116.9
Greece	9.7	-28.9%	13.7	n.a.	n.a.
Hungary	4.1	-17.4%	4.9	4.0	4.8
Poland	40.1	-26.6%	54.6	40.6	54.4
Romania	14.8	-18.8%	18.2	15.0	**17.7**
Slovakia	0.8	-12.1%	0.9	1.2	1.3
Slovenia	2.4	6.9%	2.3	2.1	2.4
EU-27	**223.8**	**-24.0%**	**294.3**	**195.0**	**259.7**
Bosnia and Herzogovina	12.3 e	-7.1%	13.3	10.4 e	10.8
Georgia	0.1	1.1%	0.1	0.0	0.0
Kosovo	6.9	-16.4%	8.3	6.9	8.1
Montenegro	1.9	8.1%	**1.7**	1.6	**1.5**
North Macedonia	4.0	-21.5%	**5.1**	5.3	**5.7**
Serbia	31.9	-9.1%	35.1	34.3	35.7
Türkiye*	55.9	-31.0%	80.9	46.0	66.1

* Asphaltite is included within lignite.

revised 2022 figures shown in **bold**

Sources: EURACOAL members and Eurostat

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TABLE 6

Hard coal imports

	Coking coal imports		Steam coal imports		Total hard coal imports		
COUNTRY	**2023 (1-12) Mt**	**2022 (1-12) Mt**	**2023 (1-12) Mt**	**2022 (1-12) Mt**	**2023 (1-12) Mt**	**YoY change *c.f.* 2022**	**2022 (1-12) Mt**
Austria	1.9	**2.0**	0.7	**0.6**	2.5	-0.8%	2.6
Belgium	2.2	2.3	1.0	1.6	3.2	-17.9%	3.9
Bulgaria	0.0	0.0	0.4	1.2	0.5	-63.4%	**1.2**
Croatia	-	-	0.6	0.7	0.6	-9.8%	0.7
Czechia	2.1	2.5	1.8	1.9	3.9	-10.8%	4.4
Denmark	-	-	1.3	1.9	1.3	-31.2%	1.9
Finland	0.0	1.3	1.6	2.7	1.6	-59.3%	**4.0**
France	3.0	3.5	3.4	5.6	6.4 e	-29.1%	9.1
Germany	11.5	11.5	18.6	28.4	30.1	-24.6%	39.9
Greece	-	-	0.0	0.1	0.0	-46.2%	0.1
Hungary	0.2	0.7	0.2	0.1	0.4	-51.6%	0.8
Ireland	-	-	0.6	1.5	0.6	-58.2%	**1.5**
Italy	2.4	2.8	4.8	9.0	7.2	-39.1%	11.8
Netherlands	4.0 e	4.2	2.5 e	4.8	6.5	-28.1%	9.0
Poland	2.1	3.0	14.8	17.1	16.9	-15.9%	20.1
Portugal	-	-	0.0	0.0	0.0	-36.6%	0.0
Romania	-	-	0.3	0.6	0.3	-48.8%	0.6
Slovakia	2.4	2.6	0.4	0.3	2.8	-6.5%	3.0
Slovenia	-	-	0.3	0.4	0.3	-23.5%	0.4
Spain	2.0	1.7	4.8	8.2	6.8	-31.3%	9.9
Sweden	1.3	1.1	0.7	0.8	2.0	6.8%	**1.9**
EU-27	**35.1**	**39.3**	**59.1**	**87.6**	**94.2**	**-25.8%**	**126.9**
Bosnia and Herzogovina	1.0	1.3	-	-	1.0	-20.1%	1.3
Serbia	-	-	3.9	2.0	3.9	90.6%	2.0
Türkiye	4.6	5.2	33.2	29.5	37.7	8.7%	34.7
Ukraine	0.4	2.8	0.2	1.8	0.7	-85.5%	4.6
UK	0.9	1.7	2.6	4.7	3.5	-45.2%	**6.4**

revised 2022 figures shown in **bold**

Sources: EURACOAL members, McCloskey by OPIS, national government statistics, Eurostat, IEA