

Coal production and consumption statistics

Statistics Explained

Data extracted in July 2024.

Planned article update: June 2025.

"In 2023, the EU production of hard coal was 50 million tonnes, 82% less than the 277 million tonnes of 1990."

"From 2018 to 2023, the EU reduced its consumption of hard coal by 42% and of brown coal by 40%."

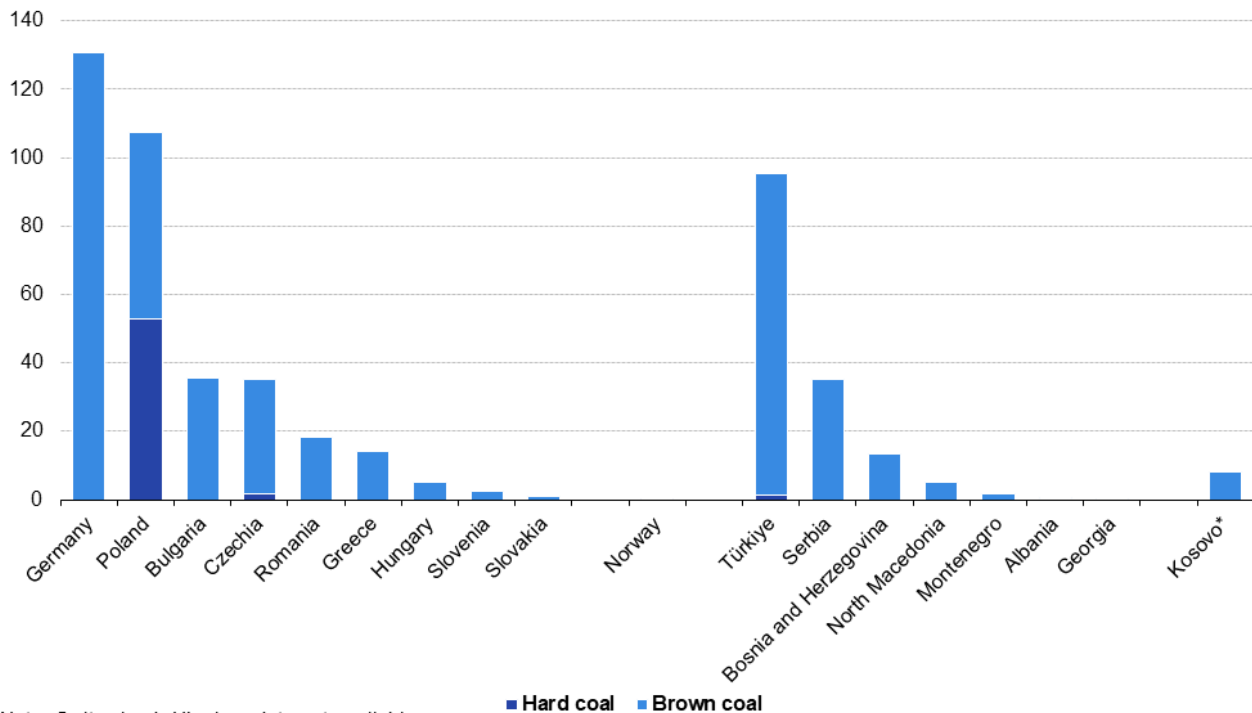
"In 2022, solar overtook hard coal as a source of electricity for the first time in the EU."

"In 2022, imports of hard coal from Russia in the EU decreased by 45% compared with 2021."

"In 2022, 60% of the electricity in the Western Balkans was produced from brown coal."

Production of hard coal and brown coal, 2022

(million tonnes)



Note: Switzerland, Ukraine: data not available.

(*) This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

Source: Eurostat (online data code: nrg_cb_sff)

eurostat 

This article explains how consumption and supply of coal in the [European Union \(EU\)](#) , the [European Free Trade Association \(EFTA\)](#) ¹ and in [candidate and potential candidate countries](#) ² (with a specific focus on Western Balkan countries³) have evolved, highlighting the trends in production and consumption of the main types of solid [fossil fuels](#) : hard coal and brown coal. In addition the article gives some figures on the supply of coke oven coke.

Consumption and production of hard coal

As illustrated in Figure 1, [inland consumption](#) of hard coal in the EU decreased steadily in the 1990s. Starting in 1999 and for almost a decade, the yearly hard coal consumption stabilised at around 300 million tonnes. After a first sharp decline in 2008 and another in 2009, hard coal consumption stabilised around a new plateau of 250 million tonnes from 2010 onwards. In 2019, another strong decline in hard coal consumption started, amplified by the COVID-19 pandemic in 2020. The 2023 hard coal consumption of the EU is estimated to have reached 128 million tonnes, 42% less than 6 years ago.

Production of hard coal in the EU has decreased almost continuously from 1990, more consistently than consumption. In 2023, the EU production was 50 million tonnes, 82% less than the 277 million tonnes of 1990. In 2023, 39% of inland consumption could be covered by production in the EU, compared with 71% in 1990. The gap between the two was mostly covered by imports (see [Import dependency of hard coal](#)). The 2023 figures are based on cumulated monthly data.

¹Data for the European Free Trade Association (EFTA) does not include Switzerland, as there is no agreement in place regarding the dissemination by Eurostat of Swiss energy statistics.

²Due to the implementation of martial law in Ukraine and following the adoption of [Law of Ukraine No 2115-IX of March 3, 2022 about protection of interests of subjects of submission of the reporting and other documents during action of warlike situation or state of war](#) , data for Ukraine is unavailable for 2022 and 2023.

³'Western Balkan countries' or 'the Western Balkans' designate the aggregate of figures from Bosnia and Herzegovina, Montenegro, North Macedonia, Albania, Serbia and Kosovo (this designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence).

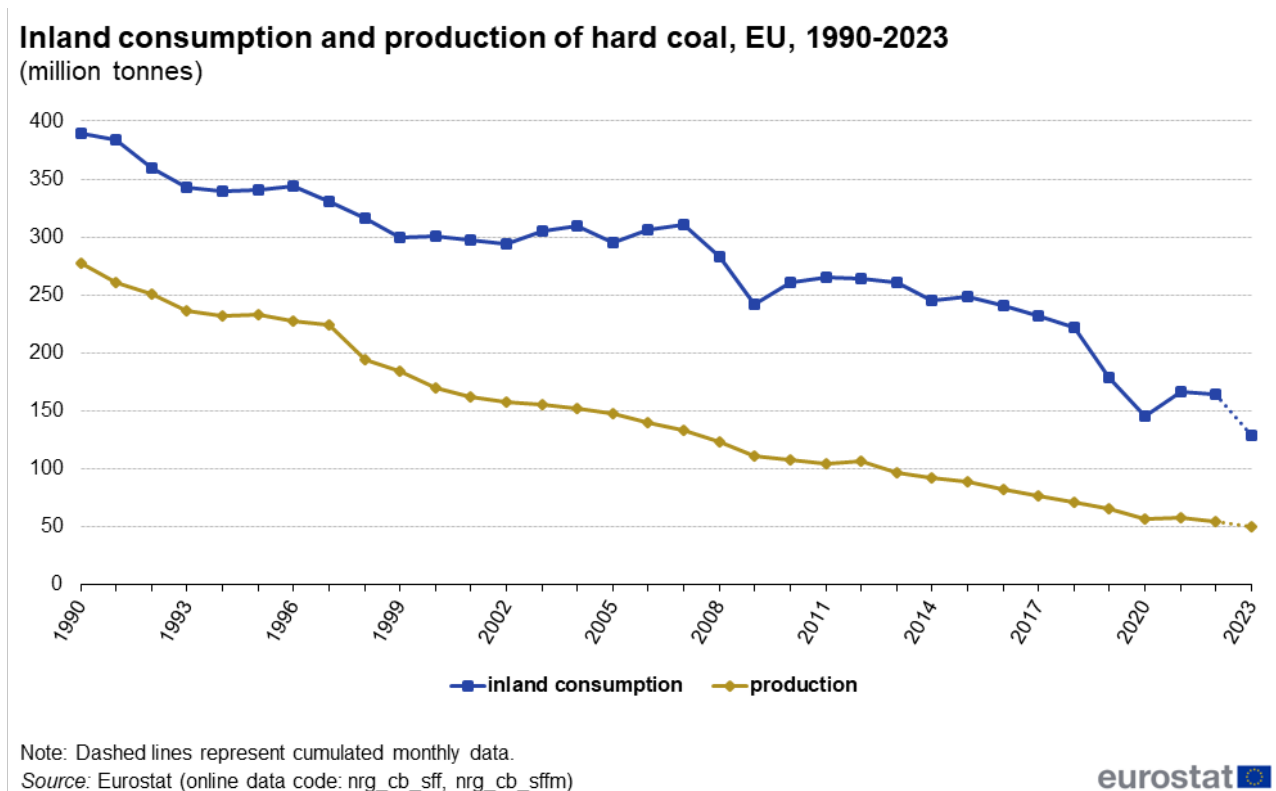


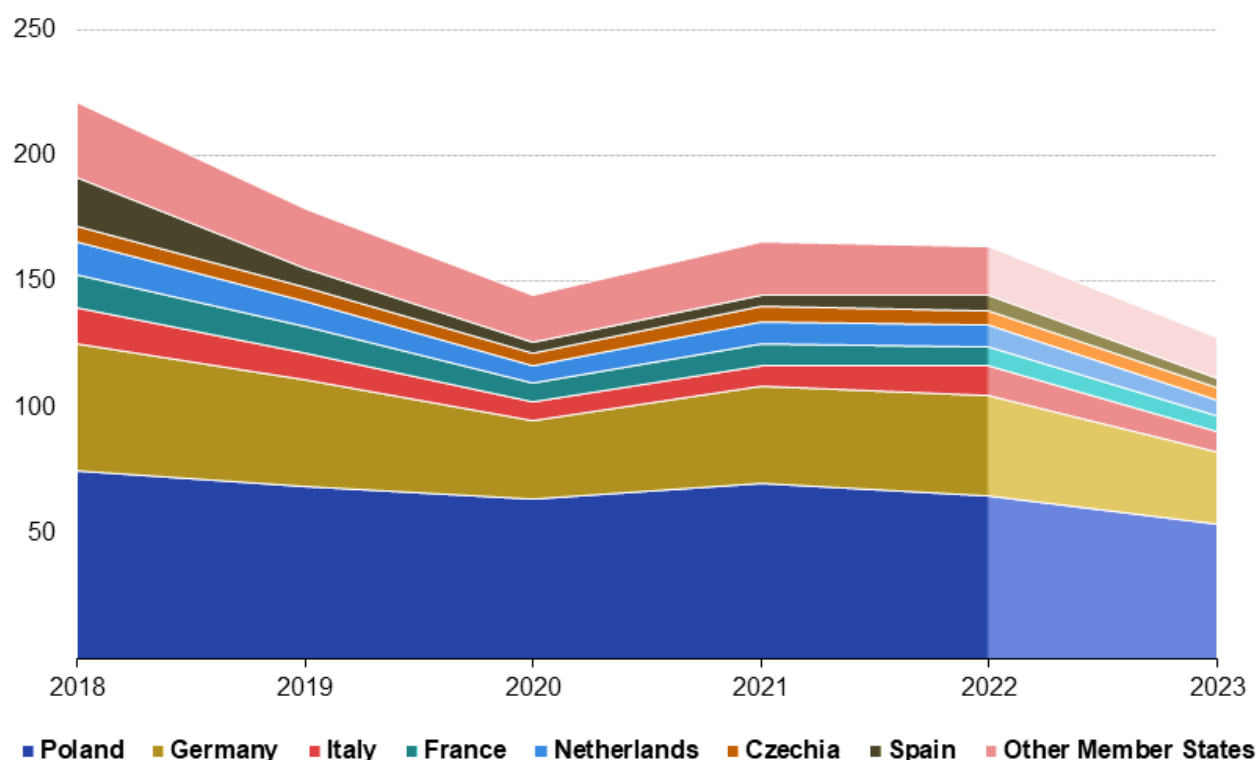
Figure 1: Inland consumption and production of hard coal, EU, 1990-2023 (million tonnes) Source: Eurostat (nrg_cb_sff), (nrg_cb_sffm)

In 1990, 13 Member States of the current EU were producing hard coal. In 2023 there were only two left: Poland and Czechia. Poland produced 48 million tonnes of hard coal (97% of the total EU production) and Czechia produced 1.4 million tonnes (3%). Compared to 2012, which was the last peak in the EU hard coal production (106 million tonnes), in 2023 Poland decreased its production by 39% and Czechia by 88%.

Poland (42%) and Germany (23%) together accounted for almost two thirds of the total hard coal consumption of the EU in 2023, followed by Italy, France, the Netherlands, Czechia and Spain (each between 3% and 6%). Figure 2 presents the hard coal consumption of the EU from 2018 to 2023 by Member State. Apart from Malta, which stopped using hard coal in 1996, every other country in the EU reports consumption of hard coal ranging from a few thousand tonnes to several million tonnes.

Inland consumption of hard coal by EU country, 2018-23

(million tonnes)



Note: Light-shaded areas represent cumulated monthly data.

Source: Eurostat (online data code: nrg_cb_sff, nrg_cb_sffm)

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Figure 2: Inland consumption of hard coal by EU country, 2018-2023 (million tonnes) Source: Eurostat (nrg_cb_sff), (nrg_cb_sffm)

One country in EFTA still produced hard coal in 2022: Norway. Stable in the 1990s around 300 thousand tonnes, Norway's hard coal production reached a peak of 4 million tonnes in 2007, before decreasing again to 117 thousand tonnes in 2022.

Consumption of hard coal by EFTA countries stayed stable around 1 million tonnes since 1990. In 2022, two EFTA countries, Norway and Iceland, reported a hard coal consumption of 1 million tonnes.

In 2022, two candidate countries produced hard coal: Türkiye and Albania. Production in Türkiye hovered between 2 and 3 million tonnes from 1990 to 2013, but then decreased to about 1 million tonnes in 2020, before going up again. In 2022, Türkiye produced 1.4 million tonnes of hard coal. Albania started producing hard coal in small quantities in 2015: in 2022, the production reached 196 thousand tonnes.

Apart from Montenegro, every candidate and potential candidate countries report consumption of hard coal ranging from a few thousand tonnes to several million tonnes. Consumption of hard coal in the Western Balkans never went above 3 million tonnes: in 2022, it reached 1.8 million tonnes, with Bosnia and Herzegovina representing almost three-quarters of the region's consumption.

Import dependency of hard coal

Solid fossil fuels had a lower [energy dependency rate](#) of 45.8% in 2022 compared with other fossil fuels, such as oil or natural gas (see Statistics Explained article on [Energy statistics - an overview](#)). However, this dependency rate accounts for all solid fossil fuels, including brown coal (with a high production and negligible trade) and many

secondary products where the EU is a net exporter. Hard coal is the main type of coal with a noticeable import dependency, reaching 74.4% in 2022.

In 2022, both import dependency curves reached their highest point since 1990. Both the solid fossil fuels and hard coal import dependency curves follow similar patterns (see Figure 3). Starting in 1990 at 18.7% for solid fossil fuels and 29.6% for hard coal, import dependency began to increase in the middle of the 1990s. By 2004, the rate of increase was slowing down, before reaching a temporary high point in 2018: 43.8% for solid fossil fuels and 68.3% for hard coal. After decreasing in 2020 and 2021 to around 36% for solid fossil fuels and around 58% for hard coal, import dependency jumped up by 8.5 percentage points (pp) for solid fossil fuels and 15 pp for hard coal, the largest year-on-year increases for each.

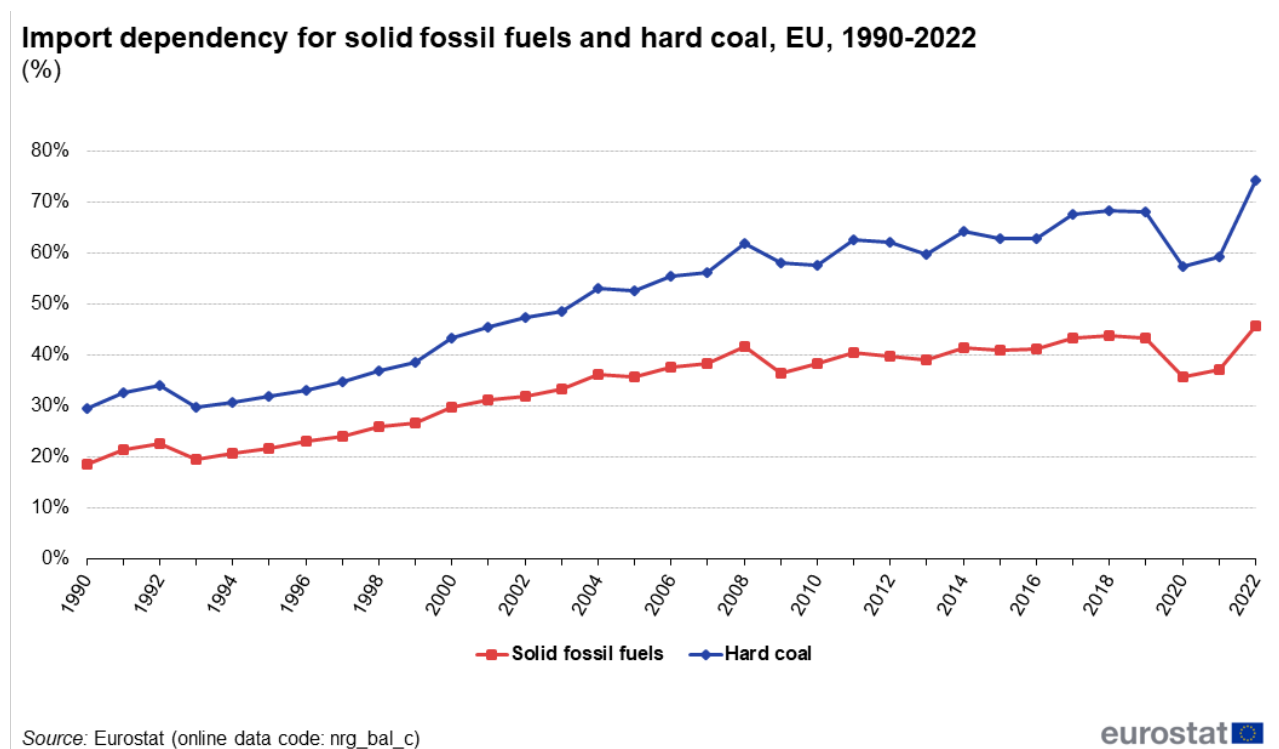


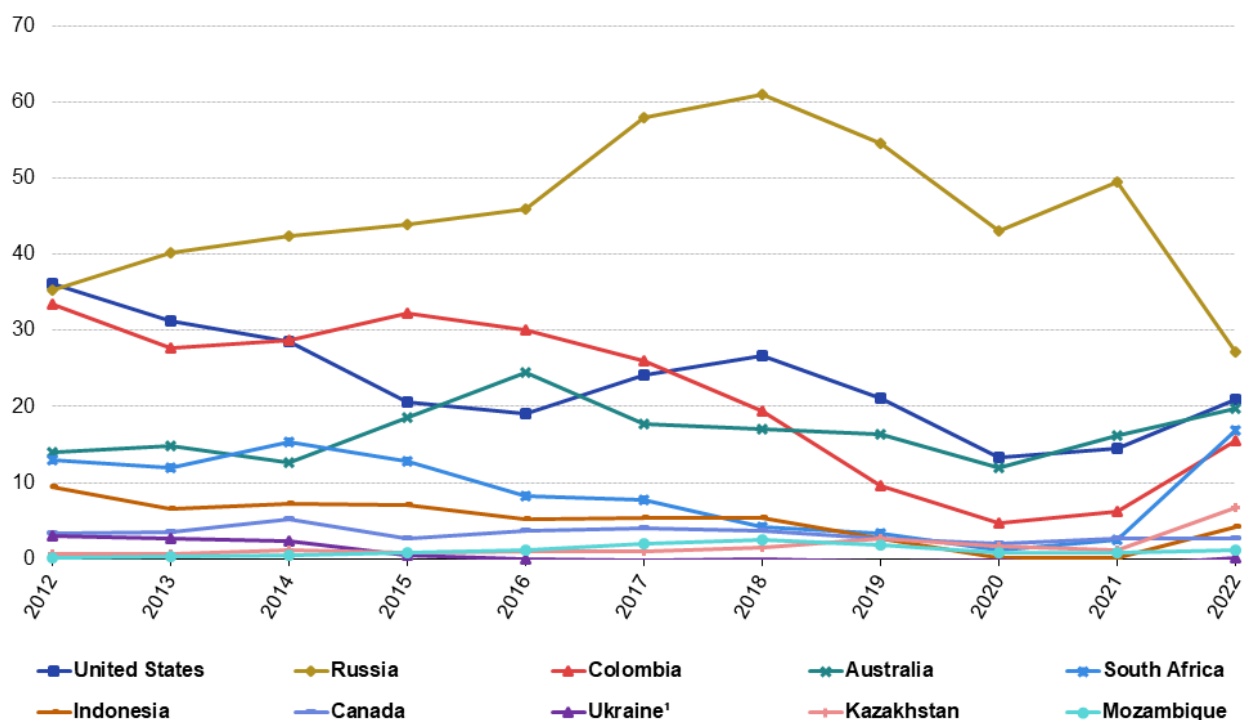
Figure 3: Import dependency for solid fossil fuels and hard coal, EU, 1990-2022 Source: Eurostat (nrg_bal_c)

The reason for the long-term increase in import dependency is that the decrease in production observed since 1990 outpaced the one in consumption, with the gap between the two mostly filled by imports. In contrast, the peaks reached in 2022 could be partly explained by the consequences of the Russian war of aggression against Ukraine.

In the 2010s, imports from most of the traditionally important hard coal suppliers decreased or remained stable as consumption of hard coal in the EU decreased. The exception was Russia, for which EU countries reported an increase in imports reaching a high of 61 million tonnes in 2018. In 2021, Russia still supplied more than half (53.6%) of the EU's hard coal imports. However, on 8 April 2022, the EU agreed on a ban of imports of coal from Russia in its [fifth package of sanctions](#), with the ban entering in force in August 2022: as a result, imports of hard coal from Russia collapsed to 27 million tonnes, a decrease of 45% and the lowest import figure from Russia since 2004. Nevertheless, Russia remained the largest source of hard coal imports in 2022, with a share of 23.5%. The United States (18.0%) and Australia (17.0%) were the second and third suppliers for the EU. The next two suppliers, South Africa and Colombia, rose in importance in 2022: South Africa went from a share of 2.7% in 2021 to 14.5% in 2022, and Colombia, from 6.7% to 13.4% (see Figure 4).

Coal imports also depend on market prices and other factors, which can lead to changes in suppliers. Traditional hard coal suppliers to the EU such as Ukraine, Venezuela or Norway have seen their imports decrease in recent years; at the same time, new suppliers such as Kazakhstan, Mozambique or the United Kingdom have emerged.

Net imports of hard coal, EU, 2012-22 (million tonnes)



Note: Partner countries chosen by the average of net imports reported by EU countries during the period, and ordered based on their net imports in 2012.

(¹) From 2017 to 2021, the EU reported net exports to Ukraine.

Source: Eurostat (online data codes: nrg_ti_sff, nrg_te_sff)

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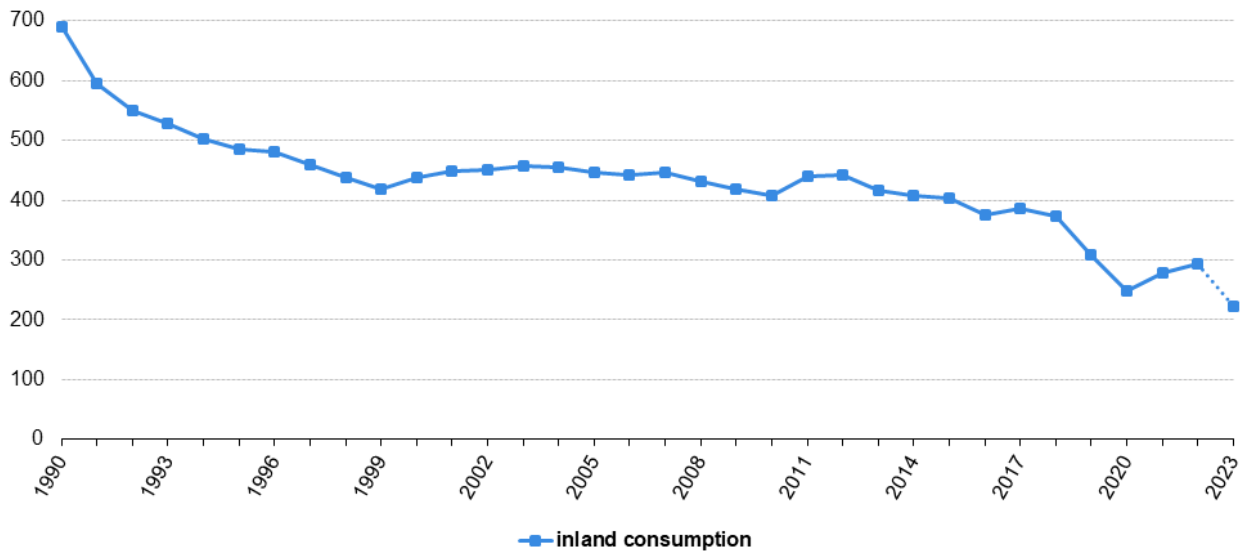
Figure 4: Net imports of hard coal, EU, 2012-2022 (million tonnes) Source: Eurostat (nrg_ti_sff), (nrg_te_sff)

Consumption and production of brown coal

The 2023 consumption of brown coal in the EU is estimated at 223 million tonnes, 40% less than in 2018. Figure 5 presents the trend since 1990. In the 1990s, the consumption decreased rapidly, broadly stagnating between 2000 and 2015 in a range of 400 to 450 million tonnes per year. From 2018 to 2020, consumption of brown coal decreased sharply, before increasing again in 2021 and 2022. With another large decrease in 2023, the EU consumption of brown coal is now estimated at a historical low, even lower than the pandemic level of 2020.

The brown coal production trend is very similar to its consumption trend; brown coal is mostly consumed in the countries where it is produced, while imports and exports are negligible. The 2023 figures are based on cumulated monthly data.

Inland consumption of brown coal, EU, 1990-2023 (million tonnes)



Note: Dashed lines represent cumulated monthly data.

Source: Eurostat (online data code: nrg_cb_sff, nrg_cb_sffm)

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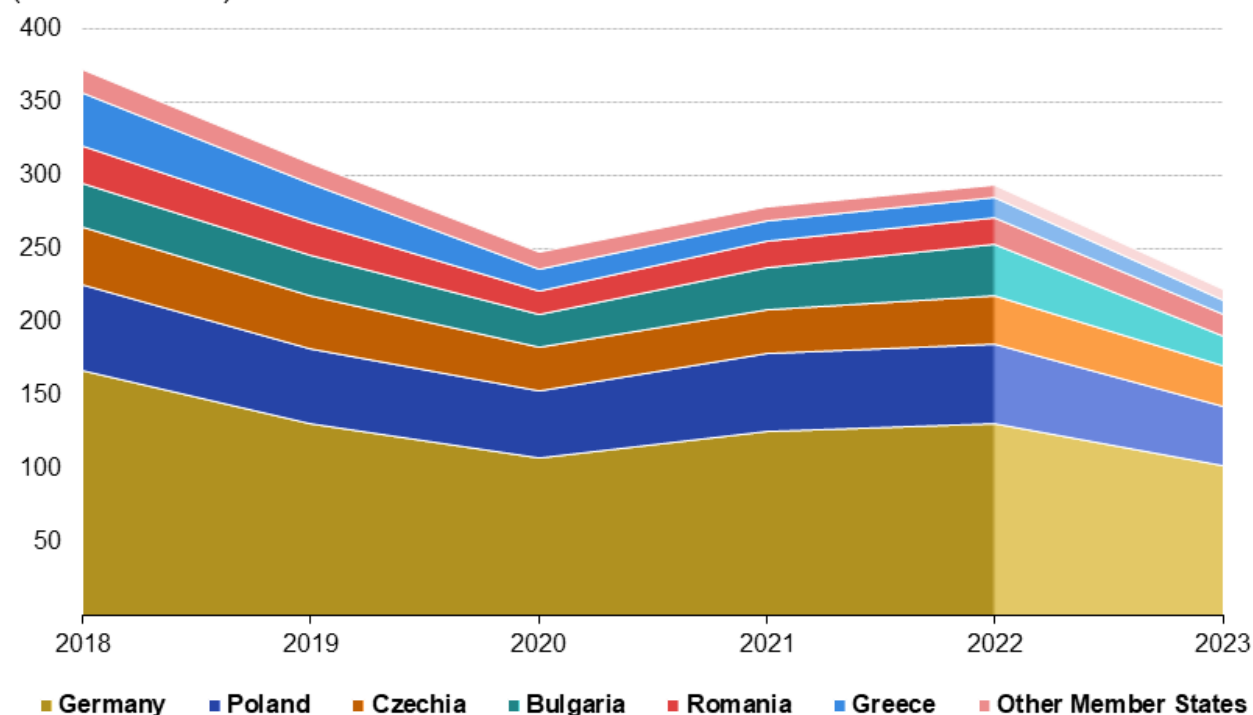
Figure 5: Inland consumption of brown coal, EU, 1990-2023 (million tonnes) Source: Eurostat (nrg_cb_sff), (nrg_cb_sffm)

Germany represented 46% of the total brown coal consumption of the EU in 2023, followed by Poland (18%), Czechia (13%), Bulgaria (9%), Romania (7%) and Greece (5%). Figure 6 presents the brown coal consumption of the EU from 2018 to 2023 by Member State.

Brown coal is absent from the EFTA countries' energy mix (production and consumption).

Inland consumption of brown coal by EU country, 2018-23

(million tonnes)



Note: Light-shaded areas represent cumulated monthly data.

Source: Eurostat (online data code: nrg_cb_sff, nrg_cb_sffm)

eurostat

Figure 6: Inland consumption of brown coal by EU country, 2018-2023 (million tonnes) Source: Eurostat (nrg_cb_sff), (nrg_cb_sffm)

Unlike in the EU, brown coal consumption increased in candidate countries. It reached 157 million tonnes in 2022, 44% higher than in 1990. Türkiye accounts for 58% of this total consumption, having almost doubled its consumption from 46 million tonnes in 1990 to 91 million tonnes in 2022. The Western Balkan countries account for most of the remaining 42% with Georgia reporting a minor consumption of 144 thousand tonnes and Moldova reporting no consumption of brown coal.

In 1990, there were three countries producing and consuming brown coal in the Western Balkans: Albania, North Macedonia and Serbia. Their combined consumption reached 54 million tonnes. From the year 2000, the three other Western Balkan countries also started producing brown coal. Western Balkan countries consumed 65 million tonnes of brown coal in 2022, an increase of a fifth compared with 1990. The largest brown coal producer and consumer in the Western Balkans is Serbia, accounting for 57% of brown coal consumption in the region. In Albania, Montenegro, North Macedonia and Kosovo⁴, the production and consumption never exceeded 10 million tonnes per year. Albania stopped its production in 2013, but started it again in 2022 in very low quantities, all of them exported.

Deliveries of coal to power plants

A slight majority of hard coal (55% in 2022) and a large majority of brown coal (93% in 2022) is used for power production. In 2022, 91 million tonnes of hard coal were delivered to power plants in the EU producing electricity

⁴This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

and heat. For brown coal, this amount was 274 million tonnes.

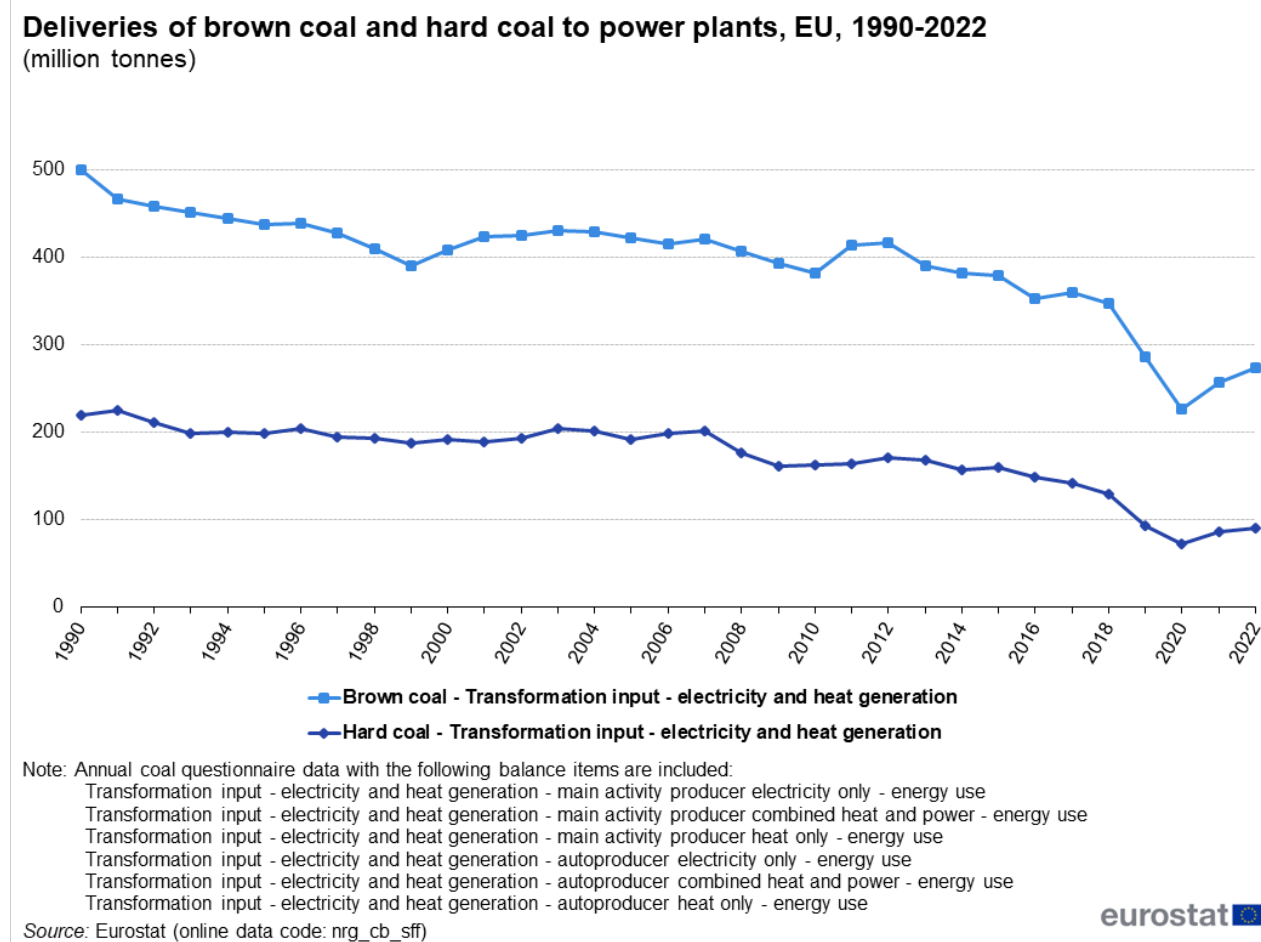


Figure 7: Deliveries of brown coal and hard coal to power plants, EU, 1990-2022 (million tonnes) Source: Eurostat (nrg_cb_sff)

Figure 7 shows that from 2013 to 2020, hard coal deliveries for power production showed a declining trend, which accelerated in 2019 and 2020, before reversing in the last two years. Likewise, brown coal deliveries to power plants showed a declining trend since 2013, plummeting in 2020, with a sharp turnaround afterwards. From 2021 onwards, deliveries of both hard coal and brown coal to power plants rose for the first time in almost a decade, although the figures are still lower than in 2019.

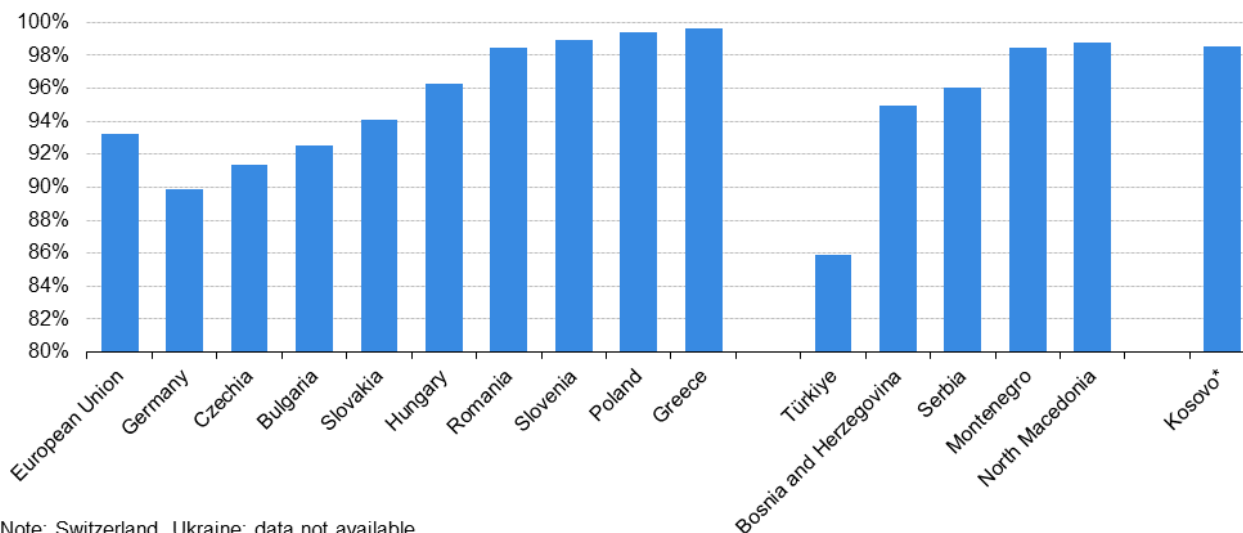
In EFTA countries, deliveries of hard coal to power plants hovered around 30 thousand tonnes between 1990 and 2021; they only represented a marginal use of hard coal (2% in 2022) as EFTA countries use hard coal mainly in their industry sector. In candidate and potential candidate countries, deliveries of hard coal to power plants, mainly by Türkiye and Moldova, reached 24 million tonnes, representing 60% of the use of hard coal. Like in the EU, a large majority of brown coal used in candidate countries was delivered to power plants: 142 million tonnes, or 90% of brown coal consumption. An even higher percentage of 96% was observed in Western Balkan countries.

Brown coal has a low energy content, and does not have a lot of potential uses besides electricity and heat generation. In all EU countries using brown coal in 2022, at least 90% of brown coal was used to produce electricity and heat (see Figure 8). In Greece, Poland, Slovenia, Romania, North Macedonia, Montenegro or Kosovo⁵, this share reached more than 98%. In countries where the shares were less, like in Germany, Czechia, Bulgaria or Türkiye, brown coal was also used to produce other energy products such as brown coal briquettes, and sometimes

⁵This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

by households to heat their homes. Contrary to brown coal, hard coal has a wide variety of applications in the industry sector, for example in coke ovens (see Figure 12). Hard coal has a high energy content and thus can produce electricity and heat more effectively than brown coal. However, because of its environmental and health issues, countries replace it more and more with natural gas and renewable energy sources.

Proportion of brown coal used for electricity and heat generation, 2022 (%)



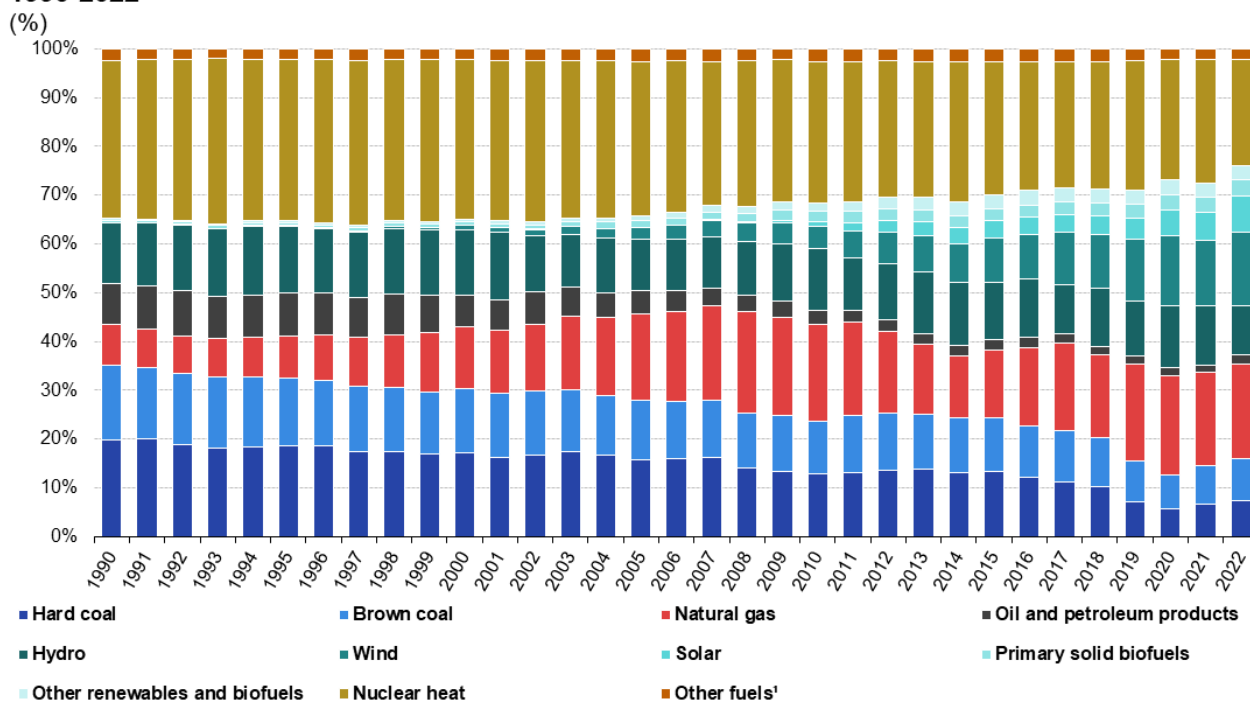
Note: Switzerland, Ukraine: data not available.
 Countries using no brown coal in their electricity and heat generation are excluded.
 The y-axis does not start at zero.
 (*) This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.
 Source: Eurostat (online data code: nrg_cb_sff)



Figure 8: Proportion of brown coal used for electricity and heat generation, 2022 (percentages) Source: Eurostat (nrg_cb_sff)

Since 1990, the importance of coal in electricity production decreased almost continuously, with slight rebounds in 2011 and 2021 (see Figure 9). The share of hard coal in electricity generation in the EU was overtaken by natural gas in 2005, by both hydro and wind in 2018, by brown coal in 2019 and by solar (in particular solar photovoltaic) in 2022. In 1990, hard coal and brown coal were respectively the second and third largest source of electricity production in the EU, with respectively 20% and 15% of the gross production. In contrast in 2022, 7% of total gross electricity produced in the EU was based on hard coal and 9% on brown coal, representing respectively around 206 000 GWh and 242 000 GWh (see Figure 10): they were respectively the seventh and fifth source of electricity generation, behind nuclear heat, natural gas and renewable fuels.

Evolution of the proportion of fuels in total electricity production, EU, 1990-2022



(*) Other fuels: Secondary coal products, Manufactured gases, Peat and peat products, Oil shale and oil sands, Non-renewable w
 Source: Eurostat (online data code: nrg_bal_peh)

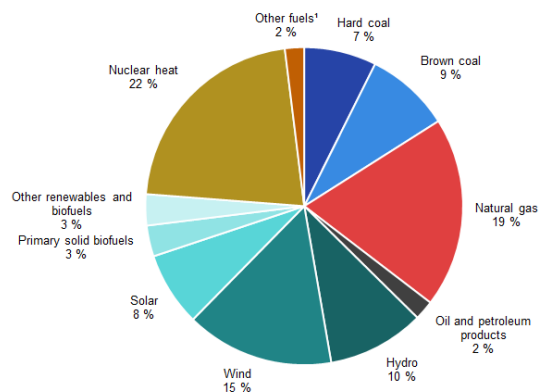
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Figure 9: Evolution of the proportion of fuels in total electricity production, EU, 1990-2022 (percentages)
 Source: Eurostat (nrg_bal_peh)

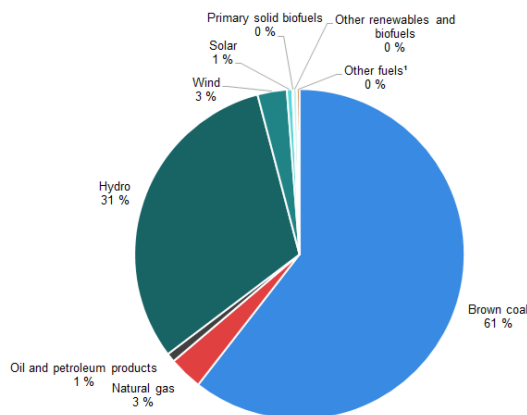
In candidate and potential candidate countries, coal plays a much more important role in electricity generation. In these countries, the shares of hard coal and brown coal in the production of electricity reached 15% and 22% respectively in 2022, comparable with hydro (24%) or natural gas (19%). It is particularly striking in Western Balkan countries, where brown coal is the single largest source of production of electricity: with around 45 000 GWh of production, brown coal provides 60% of the electricity consumed in the Western Balkans, far ahead of hydro with 31% (see Figure 10).

Fuels in total gross electricity production, 2022

Fuels in total gross electricity production, EU, 2022 (%)



Fuels in total gross electricity production, Western Balkans, 2022 (%)



Note: Western Balkans includes Bosnia and Herzegovina, Montenegro, North Macedonia, Albania, Serbia, Kosovo*.
 (*) Other fuels: Secondary coal products, Manufactured gases, Peat and peat products, Oil shale and oil sands, Non-renewable waste, Other fuels n.e.c.
 (*) This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.
 Source: Eurostat (online data code: nrg_bal_peh)

eurostat

Figure 10: Fuels in total gross electricity production, EU and Western Balkans, 2022 (percentages) Source: Eurostat (nrg_bal_peh)

In 2022, twenty EU Member States used hard coal in their production of electricity. The only EU Member State where hard coal plays a significant role in electricity generation is Poland: with a share of 43%, hard coal is the first source of electricity of the country, with brown coal being the second with 27%. In other EU countries, the share of hard coal does not get over 15% of electricity production.

Brown coal is used in electricity generation in the nine EU Member States producing it, as well as in five Western Balkan countries. In contrast to hard coal, brown coal is sometimes a major source of electricity production: brown coal supplies more than 40% of electricity in Czechia, Bulgaria (both 41%), Montenegro, North Macedonia (both 47%), Serbia (66%), Bosnia and Herzegovina (67%) and Kosovo⁶(91%) (see Figure 11).

⁶This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

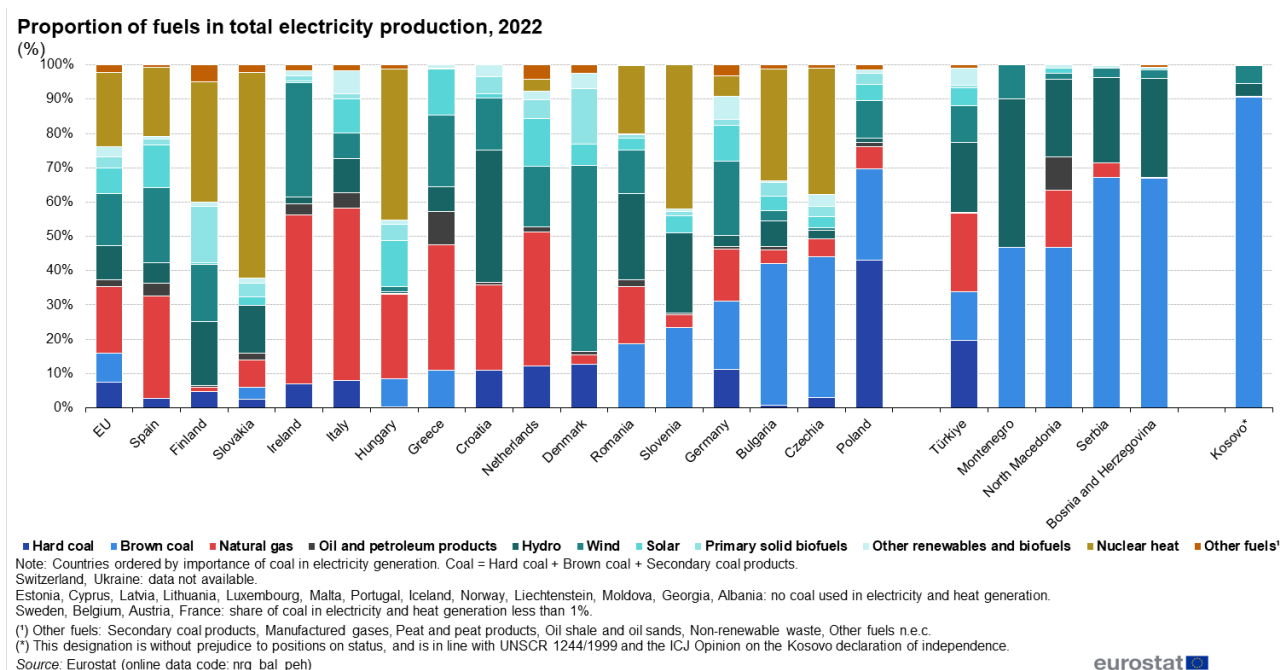


Figure 11: Proportion of fuels in total electricity production, 2022 (percentages) Source: Eurostat (nrg_cb_sff)

In much smaller quantities, hard coal and brown coal still play a role in the production of heat. In 2022, 15% of total gross heat produced in the EU based on hard coal (around 90 000 GWh) and 4% on brown coal (around 25 000 GWh); compared with 1990, their respective shares lost 20% and 12%. In 1990, hard coal was the first source of heat production in the EU, but it has been progressively replaced by natural gas and primary solid biofuels.

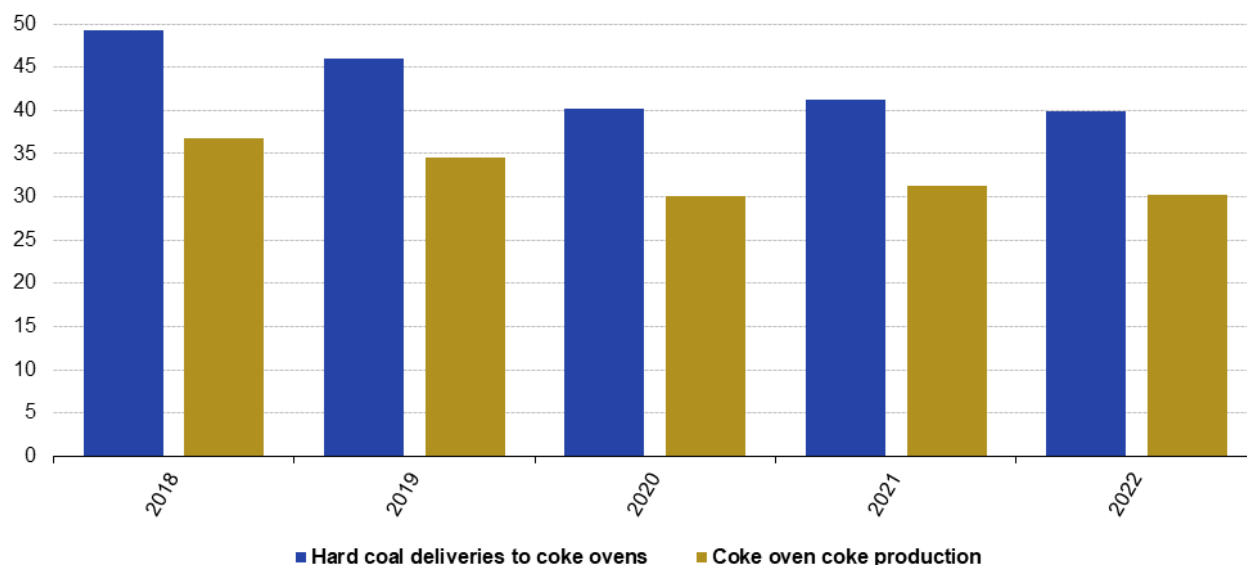
Deliveries of coal to coking plants and coke oven coke production

Hard coal (more specifically coking coal) is essential to produce coke oven coke for the steel and iron industry. In 2022, coke ovens in 13 EU countries consumed 40 million tonnes of coking coal to produce 30 million tonnes of coke oven coke. Coke oven activity was stable until 2019, when it started to decline (see Figure 12).

No activity for coke ovens was recorded in EFTA countries. In candidate and potential candidate countries, two countries reported an activity for coke ovens in 2022, using 7 million tonnes of coking coal to produce 5 million tonnes of coke oven coke.

Hard coal deliveries to coke ovens and coke oven coke production, EU, 2018-22

(million tonnes)



Source: Eurostat (online data code: nrg_cb_sff)

eurostat 

Figure 12: Hard coal deliveries to coke ovens and coke oven coke production, EU, 2018-2022 (million tonnes)
Source: Eurostat (nrg_cb_sff)

Source data for tables and graphs

- [Download Excel file](#)

Data sources

The reporting of coal statistics is based on [Energy statistics Regulation \(EC\) No 1099/2008](#) on energy statistics. The production and consumption data of hard coal, brown coal and coke oven coke between 1990 and 2022 are based on annual statistics (Annex B of the Regulation). The data related to electricity production and the share of coal in it are based on data from the annual electricity and heat questionnaire. For the latest available 2023 data, cumulative monthly data was used (Annex C of the Regulation). These cumulative monthly data could be considered as provisional/estimates of annual statistics.

Methodological notes

The article highlights figures around hard coal (anthracite, coking coal and other bituminous coal) and brown coal (lignite and sub-bituminous coal). 'Coal' refers to the sum of hard coal, brown coal and secondary coal products (coke oven coke, patent fuel, coal tar, brown coal briquettes) – it excludes manufactured gases and other solid fossil fuels (peat and peat products, oil shale and oil sands). 'Solid fossil fuels', when it is mentioned, refers to the aggregate of coal, peat and peat products and oil shale and oil sands – it excludes manufactured gases.

The methodologies and data used for the calculations presented in this article do not make it possible to specifically identify the contribution of the 2020 COVID-19 pandemic or the 2022 Russian war of aggression against Ukraine compared with the existing trends from the data. Future data will allow Eurostat to ascertain whether the observed trends are maintained during and after recent events.

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- [Energy - detailed datasets \(nrg\)](#) , see:

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Production of electricity and derived heat by type of fuel (nrg_bal_peh)

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- [Energy statistics - quantities](#) - ESMS metadata file (nrg_quant_esms)
- [Energy statistics - supply, transformation, consumption \(monthly\)](#) - ESMS metadata file (nrg_10m_esms)
- [Trade by partner country](#) - ESMS metadata file (nrg_t_esms)

Legislation

- [Regulation \(EC\) No 1099/2008](#) of 22 October 2008 on energy statistics
- [Summaries of EU legislation: Common system for the production of energy statistics](#)

Publications

- [Shedding light on energy in the EU — A guided tour of energy statistics — 2024 edition](#)