

# Energy production and imports

Statistics Explained

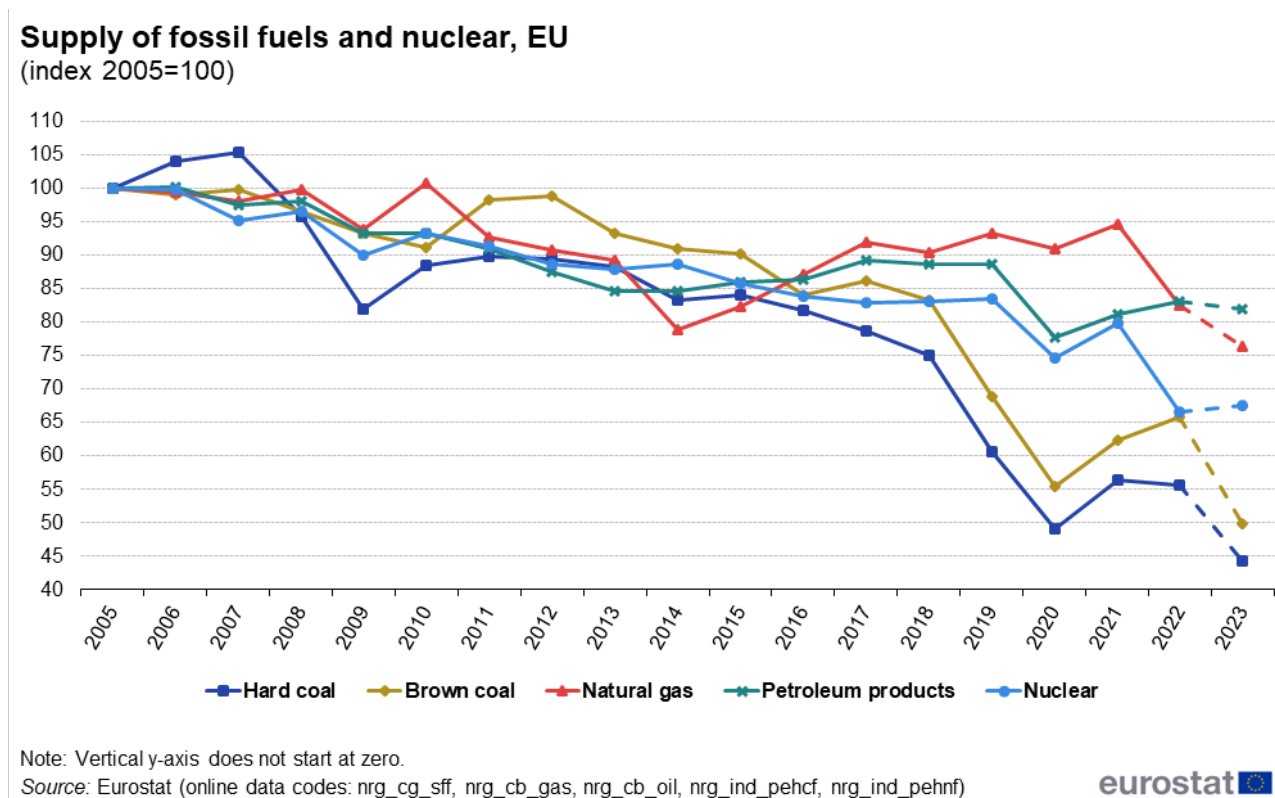
Data extracted in June 2024.  
Planned article update: 26 June 2025.

## Highlights

" Based on preliminary 2023 data for the EU, renewable energy sources were the leading source for electricity generation. "

" Based on preliminary 2023 data for the EU, more electricity was generated from wind than from natural gas. "

" Based on preliminary 2023 data for the EU, inland consumption of natural gas dropped by 7.4%. "



Supply of fossil fuels and nuclear, EU, 2005-2023, index 2005=100 Source: Eurostat (nrg\_cb\_gas), (nrg\_cb\_oil), (nrg\_cb\_gas) and (nrg\_ind\_pehnf)

In 2022, in the midst of post-COVID-19 recovery and increased energy use, the EU was hit by an energy crisis. The Russian invasion of Ukraine further increased the already high natural gas prices and gave rise to uncertainty over

gas and oil supply. An exceptionally hot and dry summer in many EU countries did not help alleviate the situation, affecting nuclear and, in particular, hydro power generation. Faced with concerns on the security of energy supply, the EU put forward the RepowerEU Plan, with the clear objective of saving energy, diversifying the energy supply, and boosting the clean energy transition. According to preliminary energy data for 2023, it seems that decisions taken in 2022 contributed to creating a significant positive impact on the EU's energy supply, which saw a remarkable increase in renewable energy and a sharp drop in fossil fuels, in particular natural gas and coal.

The figure above shows the indexed supply of fossil fuels and nuclear in the EU in the period 2005-2023. Nuclear registered a mild increase compared with 2022, while natural gas, brown coal and hard coal dropped significantly. Petroleum products registered a slight decrease.

## Natural gas

Preliminary 2023 data indicate a further decrease in the domestic production of natural gas (-15.8 % compared with 2022). Combined with these production developments, a decrease in net imports (-14.6 %) and a stock build resulted in a -7.4 % drop in the inland consumption of natural gas compared with 2022, and a -19.4 % drop compared with 2021, the period before gas saving measures were implemented (see Table 1<sup>1</sup>). Detailed data by country are available in Eurostat's [energy database](#). According to these preliminary country data, the highest decreases in inland consumption of natural gas were registered in Portugal (-20.8 %), Austria (-14.6 %), and Czechia (-13.1 %). The highest increase was reported by Finland (+28.8 %).

### Natural gas production, trade and supply in the EU

	2018	2019	2020	2021	2022	2023 preliminary
TJ GCV Indigenous production	2 756 147	2 423 437	1 914 263	1 761 710	1 619 568	1 362 969
TJ GCV Transfer from other sources	17 939	25 399	38 527	94 341	112 510	130 182
TJ GCV Net imports	12 579 717	13 976 971	12 704 397	13 199 957	13 360 433	11 407 411
TJ GCV Change in stock	-229 451	-814 138	579 077	818 125	-1 294 013	-100 606
TJ GCV International marine bunkers	2 908	6 617	8 411	12 276	6 957	21 103
TJ GCV Inland consumption (calculated)	15 121 444	15 605 052	15 227 852	15 848 835	13 804 409	12 778 854

Notes: Data extracted on 20 June 2024

Source: Eurostat (online data code: nrg\_cb\_gas)

eurostat 

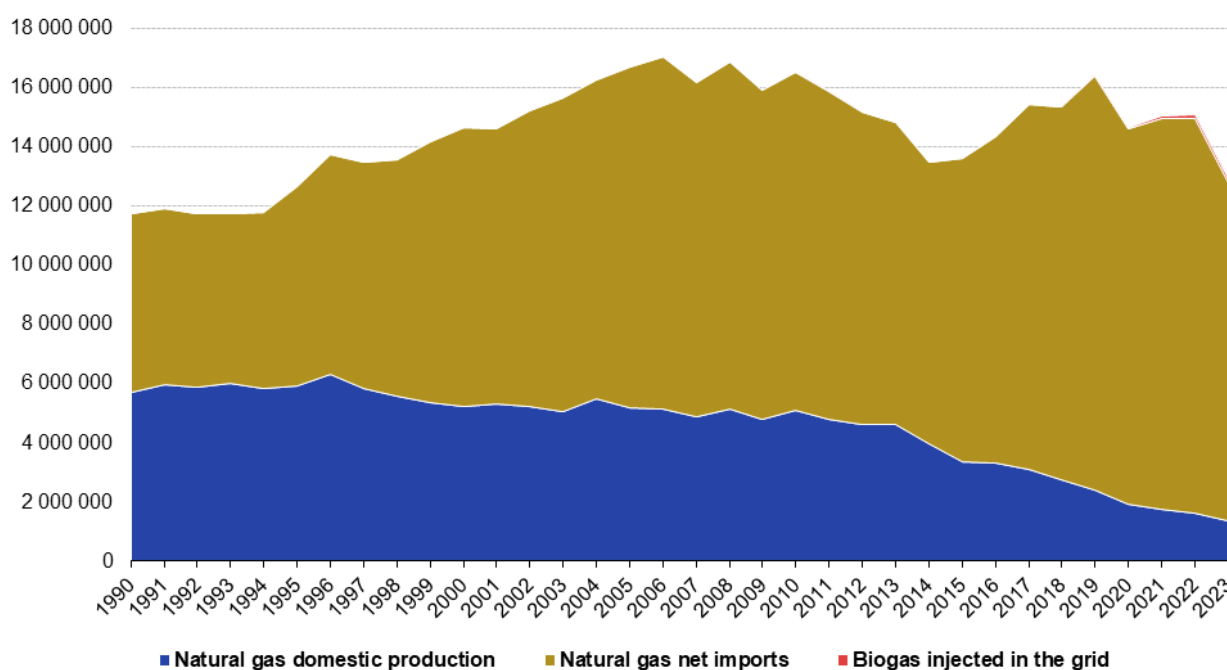
**Table 1: Natural gas production, trade and supply in the EU Source: Eurostat (nrg\_cb\_gas)**

Figure 1 shows the evolution of gas supply in the grid in the period from 1990 until 2023, broken down by natural gas domestic production, net imports, and biogas injected in the grid. It is clear that the EU has increasingly been relying on imports of natural gas, downsizing domestic production. In 2023, net imports made up as much as 88 % of gas supply in the grid. Biogas injected in the grid, although on the rise, still makes up almost a negligible portion of

the total gas supply in the grid and is therefore unlikely to compensate for any natural gas shortages in the near future.

<sup>1</sup>Natural gas quantities are expressed in Terajoules - Gross Calorific Value (TJ GCV).

## Supply of gas in the grid, EU (Terajoules - Gross Calorific Value (TJ GCV))



Source: Eurostat (online data code: nrg\_cb\_gas)

eurostat 

Figure 1: Supply of gas in the grid, EU, TJ GCV Source: Eurostat (nrg\_cb\_gas)

## Solid fossil fuels (coal) and manufactured gases

Following a generally downward path for many years, coal consumption took a reverse course in 2021 and 2022, before dropping quite significantly in 2023. Preliminary data suggest that in 2023 solid fossil fuels hit record low levels in the EU, with inland consumption even lower than in 2020.

Compared with 2022, inland consumption of lignite in the EU fell by 70.8 million tonnes (Mt) (-24.2 %), other bituminous coal dropped by 30.7 Mt (-25.8%), oil shale and oil sands by 3.5 Mt (-23.0 %). Manufactured gases, mostly produced in relation to coal consumption in the iron and steel industry, also show a decrease. In fact, Table 2<sup>2</sup> shows a clear decreasing trend for all products, without exception.

<sup>2</sup>Solid fossil fuel quantities are expressed in thousand tonnes (kilotonnes, kt), and quantities of manufactured gases in Terajoules - Gross Calorific Value (TJ GCV).

## Inland consumption of solid fossil fuels and manufactured gases in the EU

Inland consumption (calculated)		2018	2019	2020	2021	2022	2023 preliminary
kt	Anthracite	4 920	3 236	2 465	2 846	2 286	1 277
kt	Coking coal	54 149	48 335	42 830	43 872	42 513	40 873
kt	Other bituminous coal	162 194	127 271	99 607	119 306	118 973	88 288
kt	Sub-bituminous coal	2 617	2 039	1 224	1 134	1 039	725
kt	Lignite	369 685	306 437	246 591	277 711	292 875	222 115
kt	Coke oven coke	34 744	32 872	28 101	32 975	31 221	28 647
kt	Patent fuel	173	102	81	87	120	65
kt	Brown coal briquettes	6 759	6 048	5 504	6 058	5 596	4 235
kt	Coal tar	1 098	1 067	899	824	791	760
TJ GCV	Coke oven gas	277 102	266 600	242 473	263 412	254 535	230 282
TJ GCV	Gas works gas	17 159	15 917	11 969	2 646	2 638	2 000
TJ GCV	Blast furnace gas	481 391	451 736	376 745	442 021	402 195	369 722
TJ GCV	Other recovered gases	53 100	52 317	45 067	45 692	45 197	41 939
kt	Peat	10 175	8 926	6 425	5 135	4 833	3 236
kt	Peat products	237	189	188	171	138	69
kt	Oil shale and oil sands	21 374	15 285	12 072	13 186	15 093	11 626

Notes: Data extracted on 20 June 2024

Source: Eurostat (online data codes: nrg\_cb\_sff, nrg\_cb\_gas)

eurostat 

**Table 2: Inland consumption of solid fossil fuels and manufactured gases in the EU Source: Eurostat (nrg\_cb\_sff)**

Tables 3 and 4 show the supply and trade data for brown coal and hard coal. These two aggregates cover the majority of fuels used. Both hard coal and brown coal supply dropped significantly. Inland consumption on hard coal dropped by 20.4 %, and of brown coal by 24.2 %. Figure 2 shows the development of brown coal and hard coal domestic production and net imports<sup>3</sup> since 1990, indicating a long-term downward trend for both aggregates, interrupted in 2021 and 2022, but continuing even more strongly in 2023.

## Hard coal production, trade and supply in the EU

		2018	2019	2020	2021	2022	2023 preliminary
kt	Indigenous production	71 297	65 056	56 531	57 185	54 513	49 722
kt	Transfer from other sources	669	578	393	371	379	287
kt	Net imports	147 022	117 503	79 404	94 062	117 963	83 420
kt	Change in stock	2 274	-4 295	8 573	14 406	-9 082	-2 991
kt	Inland consumption (calculated)	221 263	178 842	144 902	166 025	163 772	130 437

Notes: Data extracted on 20 June 2024

Source: Eurostat (online data code: nrg\_cb\_sff)

eurostat 

**Table 3: Hard coal production, trade and supply in the EU Source: Eurostat (nrg\_cb\_sff)**

<sup>3</sup>Net imports are calculated as the quantity of imports minus the equivalent quantity of exports. Imports represent all entries into the national territory excluding transit quantities; exports similarly cover all quantities exported from the national territory.

## Brown coal production, trade and supply in the EU

	2018	2019	2020	2021	2022	2023 preliminary
kt Indigenous production	368 665	307 597	244 457	274 986	294 932	224 486
kt Transfer from other sources	475	455	388	193	124	179
kt Net imports	1 296	1 572	1 207	1 026	4	-409
kt Change in stock	1 867	-1 149	1 763	2 640	-1 147	-1 416
kt Inland consumption (calculated)	372 302	308 475	247 815	278 845	293 914	222 840

Notes: Data extracted on 20 June 2024

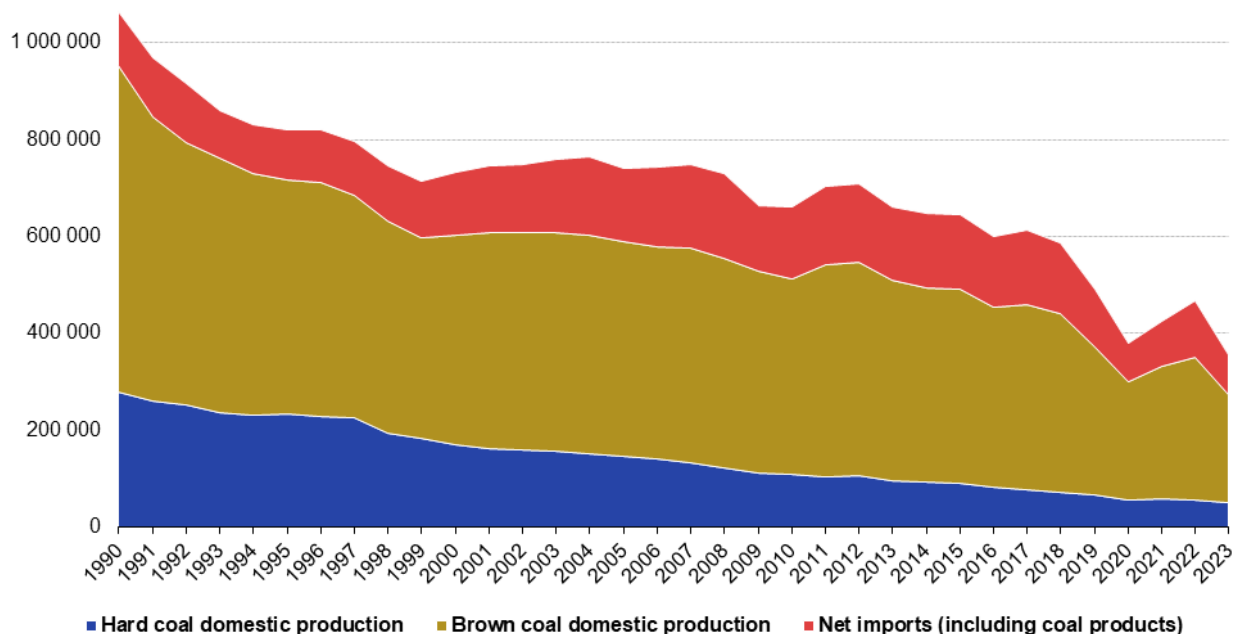
Source: Eurostat (online data code: nrg\_cb\_sff)

eurostat 

Table 4: Brown coal production, trade and supply in the EU Source: Eurostat (nrg\_cb\_sff)

## Supply of coal and coal products, EU

(kilotonnes (kt))



Source: Eurostat (online data code: nrg\_cb\_sff)

eurostat 

Figure 2: Supply of coal and coal products, EU, kt Source: Eurostat (nrg\_cb\_sff)

## Oil

Preliminary data for 2023 indicate that the demand of refineries for primary oil (such as crude oil) was on a very slight decrease, after increasing in 2021 and 2022. The calculated refinery intake dropped by 1.7 % in 2023 compared with the year before (see Table 5). A similar trend (-1.5 % in 2023 compared with 2022) was also observed for the supply of refined petroleum products from refineries (see Table 6). In 2023, gas oil and diesel oil followed by motor gasoline were the most significant oil products refined in the EU, accounting together for 58.3 % of the total refinery output.

Gross inland deliveries of all petroleum products to the EU market show an decrease in 2023 (-1.3 %) compared with 2022. While the gross inland deliveries of many individual products registered a decrease, some of them increased, for example kerosene-type jet fuel (+11 %).

## Oil and petroleum products production, trade and supply in the EU

kt	2018	2019	2020	2021	2022	2023 preliminary
Crude oil, NGL, refinery feedstocks, additives and oxygenates and other hydrocarbons (including biofuels)						
+ Indigenous production	24 573	22 755	21 445	20 209	18 839	19 068
+ Transfer from other sources	20 656	21 244	21 917	22 639	22 409	22 877
+ Backflows	14 435	14 873	14 847	14 847	15 842	14 464
+ Products transferred	25 020	27 907	25 299	30 387	29 370	24 264
+ Imports	539 187	530 343	464 311	473 685	507 110	497 041
- Exports	14 803	13 461	13 198	13 996	12 292	14 414
- Direct use	30 293	30 581	31 684	33 567	33 667	34 378
+ Change in stock	913	-2 918	-957	5 710	-5 698	4 009
= Refinery intake - calculated	579 688	570 163	501 980	519 914	541 913	532 932
+ Primary product receipts	26 306	26 904	27 622	28 538	28 875	27 897
+ Refinery output	573 793	563 103	496 266	511 992	534 944	526 862
+ Recovered and recycled products	1 132	1 237	1 186	1 199	1 294	1 150
- Refinery fuel	25 050	24 505	22 402	23 695	26 667	26 481
+ Imports	317 538	316 629	280 821	297 074	301 753	287 417
- Exports	331 454	312 602	278 437	304 428	301 360	297 786
- International maritime bunkers	44 412	43 977	39 520	41 184	42 714	39 488
+ Interproduct transfers	1 660	1 782	1 703	2 796	2 333	2 798
- Products transferred	25 020	27 907	25 299	30 387	29 370	-24 264
+ Change in stock	2 864	-2 912	-5 970	13 933	-3 043	1 981
= Gross inland deliveries - calculate	497 357	497 751	435 970	455 837	466 046	460 086

Notes: Data extracted on 20 June 2024

Source: Eurostat (online data code: nrg\_cb\_oil)

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Table 5: Oil and petroleum products production, trade and supply in the EU Source: Eurostat (nrg\_cb\_oil)

## Refinery gross output in the EU, kt

	2018	2019	2020	2021	2022	2023 preliminary
Gas oil and diesel oil	227 276	228 028	210 795	214 234	217 501	208 838
Motor gasoline	102 321	99 955	87 263	93 095	96 190	98 240
Fuel oil	71 804	61 150	48 811	51 951	57 337	53 874
Naphtha	41 907	40 651	38 265	38 045	38 667	39 884
Kerosene-type jet fuel	33 299	33 037	15 838	16 295	26 880	30 221
Refinery gas	18 654	18 564	16 531	17 188	19 118	17 824
Liquefied petroleum gases	14 124	14 287	12 481	13 676	12 341	12 384
Petroleum coke	9 938	10 283	9 765	9 542	10 392	10 143
Other kerosene	11 242	10 943	8 749	9 319	10 414	10 419
All other oil products (including non-specified output)	43 228	46 204	47 767	48 648	46 105	45 035
Refinery output	573 793	563 103	496 266	511 992	534 944	526 862

Notes: Data extracted on 20 June 2024

Source: Eurostat (online data code: nrg\_cb\_oil)

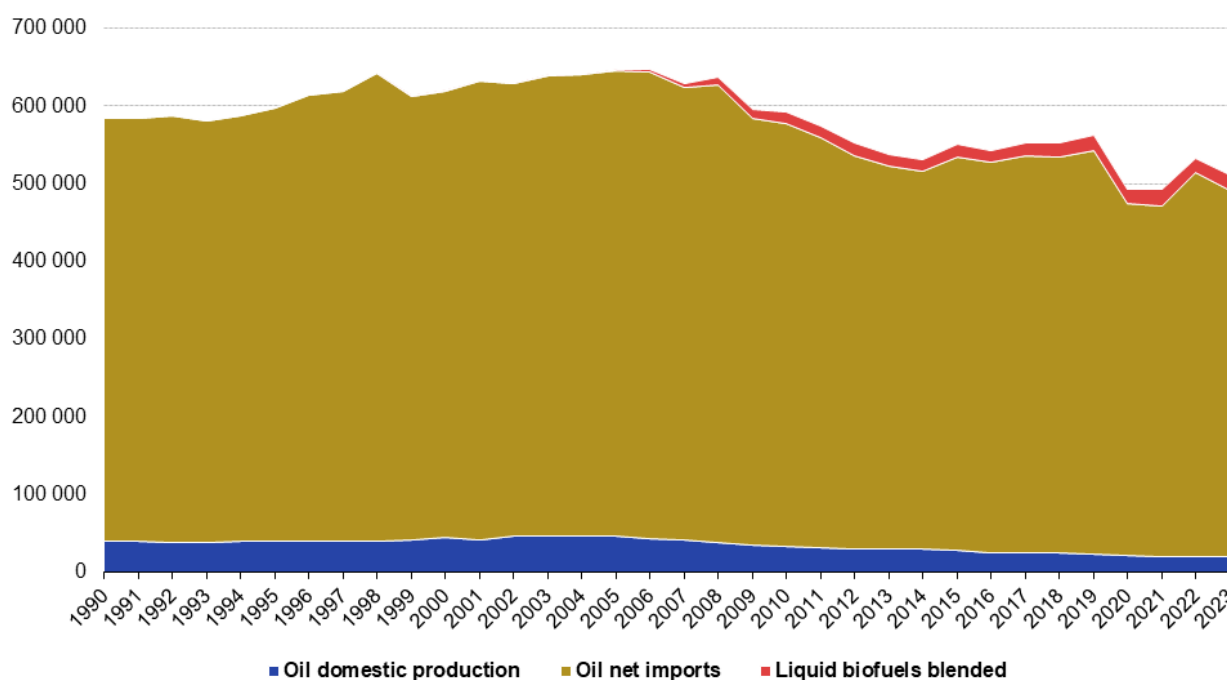
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Table 6: Refinery gross output in the EU, kt Source: Eurostat (nrg\_cb\_oil)

Figure 3 shows the development of the supply of oil and blended biofuels in the period 1990-2023, broken down by domestic production, net imports and biofuels blended. Similarly to natural gas, we can see that domestic production follows a decreasing trend, while any rising demand needs are typically met by increasing imports. The total supply has been slowly decreasing over the years, with the exception of the post-pandemic recovery year of 2022.

## Supply of oil and blended biofuels, EU

(kilotonnes (kt))



Source: Eurostat (online data code: nrg\_cb\_oil)

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Figure 3: Supply of oil and blended biofuels, EU, kt Source: Eurostat (nrg\_cb\_oil)

## Electricity

The total electricity supply in the EU decreased by 3.1 % compared with 2022. Preliminary data indicate significant annual variations between various individual fuel sources used for electricity generation. Looking at fuel groups, however, Figure 4 shows a strikingly divergent trend between electricity produced from fossil fuels and electricity coming from renewable energy sources. Preliminary 2023 data for electricity show a record high reliance on renewables (1 214 Terawatt hours (TWh) ) and a record low use of fossil fuels (882 TWh). Although the traditional dominance of fossil fuels in electricity generation was interrupted once before, in 2020, this is the first time that the difference is so strongly in favour of renewables. In fact, preliminary data suggest that 44.7 % of electricity in then EU was produced from renewable energy (38.7 % in 2022), and only 32.5 % from fossil fuels (39.4 % in 2022). The remaining portion (619 TWh or 22.8 %) is nuclear power, which saw a very mild recovery in 2023 compared with the record-low levels registered in 2022.

The fossil fuel drop is largely driven by the decrease in electricity produced from natural gas (-72.9 TWh or -13.5 %), as well as from other bituminous coal (-64.0 TWh or -31.2 %) and lignite (-62.9 TWh or -26.1 %). To replace these fuels, the EU turned to renewables, with wind electricity increasing by 56.5 TWh or 13.4 %, and electricity from solar photovoltaic energy by 38.8 TWh or 18.9 %. Hydro power also witnessed a significant increase compared with 2022 (+53.9 TWh or 17.5 %), however 2022 was to some degree an outlier for hydro, and the preliminary 2023 values come very close to those registered before 2022 (-2.4 % compared with 2018). Electricity from solar photovoltaic energy, on the other hand, increased by as much as 126.3 % in the period from 2018 to 2023, and wind electricity by 49.0 %. In the same five-year period, electricity generated from natural gas dropped by 4.6 %, from other bituminous coal by 50.8 % and from lignite by 38.9 %.

On the level of individual fuels, nuclear continued to be the most important contributor to the EU electricity generation system (619 TWh or 22.8 %). For the first time wind took over the second place from natural gas, with 477.8 TWh of wind electricity (17.6 %) and 468.0 TWh of electricity generated from natural gas (17.2 %). (Table 7 and Figure 4<sup>4</sup>).

<sup>4</sup>The unit of measurement used is Gigawatt hours (GWh) .

## Gross electricity production in the EU, GWh

	2018	2019	2020	2021	2022	2023 preliminary
Anthracite	4 013	680	715	636	605	440
Coking coal	8 805	13	81	64	52	203
Other bituminous coal	286 489	205 413	154 121	189 936	205 036	141 034
Sub-bituminous coal	2 394	1 554	572	389	367	384
Lignite	291 771	241 439	195 401	226 547	241 205	178 272
Brown coal briquettes	2 132	1 799	1 510	1 594	1 485	1 147
Coke oven gas	7 201	7 156	6 235	6 117	5 778	5 139
Gas works gas	1 803	1 734	1 250	142	203	150
Blast furnace gas	20 859	19 461	16 350	19 915	17 888	17 086
Peat	5 922	5 161	3 137	2 502	2 469	1 391
Oil shale and oil sands	9 380	4 318	2 247	3 444	5 077	1 977
Natural gas	490 793	569 377	560 931	553 673	540 877	467 983
Refinery gas	7 199	6 969	6 634	6 180	8 013	5 810
Liquefied petroleum gases	237	232	147	240	215	234
Gas oil and diesel oil	9 707	10 271	10 087	10 610	11 993	10 643
Fuel oil	25 614	24 894	21 345	23 286	24 900	18 914
Petroleum coke	1 577	621	517	430	488	379
Solid biofuels	76 229	80 567	82 951	92 672	88 035	75 843
Biogases	55 096	54 991	55 766	54 913	54 312	50 945
Industrial waste (non-renewable)	2 839	2 940	2 639	2 511	2 419	2 159
Renewable municipal waste	19 335	19 011	18 872	19 557	19 326	19 488
Non-renewable municipal waste	18 838	18 584	18 334	18 781	18 511	18 594
Hydro	370 234	345 643	375 486	374 839	307 523	361 436
Pure hydro power	326 819	306 478	331 708	330 748	265 508	316 138
Mixed hydro power	27 044	23 276	25 838	27 915	23 337	27 057
Mixed hydro power - pumping	9 981	9 494	10 367	10 355	12 607	12 674
Pumped hydro power	16 372	15 889	17 940	16 177	18 679	18 241
Geothermal	6 655	6 726	6 717	6 538	6 428	6 254
Wind	320 616	367 118	397 983	386 720	421 317	477 835
Solar thermal	4 867	5 683	4 992	5 176	4 536	5 165
Solar photovoltaic	108 079	118 010	139 803	159 073	205 713	244 547
Tide, wave, ocean	480	499	509	503	513	461
Nuclear	761 943	765 338	683 512	731 701	609 255	619 431
Heat from chemical sources	1 099	1 038	1 089	1 105	829	785
Other fuels (including non-specified)	20 823	19 839	19 555	15 892	18 943	16 820
<b>Total (excluding pumped hydro)</b>	<b>2 916 675</b>	<b>2 881 695</b>	<b>2 761 180</b>	<b>2 889 157</b>	<b>2 793 028</b>	<b>2 720 035</b>

Notes: Data extracted on 20 June 2024

Source: Eurostat (online data codes: nrg\_ind\_pehcf, nrg\_ind\_pehnf)

eurostat 

**Table 7: Gross electricity production in the EU, GWh Source: Eurostat (nrg\_ind\_pehcf) and (nrg\_ind\_pehnf)**

We can see in Table 8 that there have not been any significant developments in terms of trade and that exports are always almost the same as imports. On the level of the EU, trade in electricity serves mostly the purpose of grid balancing. While some countries are net importers, the EU as whole has sufficient electricity generation capacities to meet its electricity demand.



## Electricity production, trade and supply in the EU, GWh

	2018	2019	2020	2021	2022	2023 preliminary
<b>Gross electricity production</b>	2 943 028	2 907 079	2 789 487	2 915 689	2 824 314	2 750 950
- Own use	140 779	131 199	122 004	126 509	123 152	115 311
<b>Net electricity production</b>	2 802 249	2 775 880	2 667 483	2 789 180	2 701 162	2 635 639
+ Imports	372 348	369 432	381 009	401 426	422 412	405 260
- Exports	363 498	366 488	367 047	394 108	409 450	406 891
- Used for pumped storage - pure	22 151	21 598	24 196	22 919	25 870	24 396
- Used for pumped storage - pure	14 075	13 407	14 552	14 526	17 624	17 869
- Electric boilers	560	687	1 221	1 316	1 458	3 220
- Electrically driven heat pumps	1 612	1 603	1 821	2 051	1 903	2 479
<b>Inland demand</b>	2 772 702	2 741 530	2 639 649	2 755 659	2 666 554	2 586 044
- Distribution losses	31 588	30 812	29 961	35 061	123 763	171 519
<b>Available for final consumption</b>	2 589 729	2 562 590	2 464 047	2 572 371	2 492 046	2 414 525

Notes: Data extracted on 20 June 2024

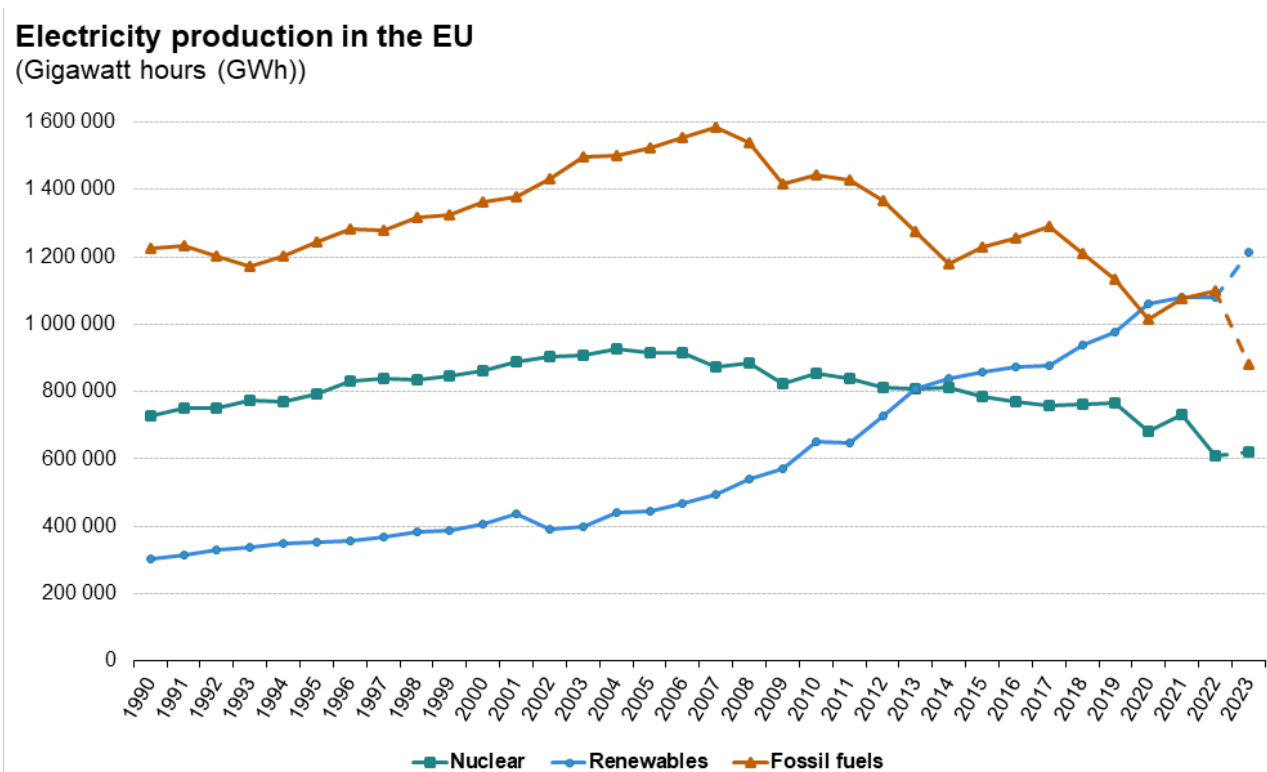
Source: Eurostat (online data code: nrg\_cb\_e)

eurostat 

**Table 8: Electricity production, trade and supply in the EU, GWh Source: Eurostat (nrg\_cb\_e)**

Figure

4 shows the developments in electricity production from nuclear, renewables and fossil fuels in the period 1990-2023.



Source: Eurostat (online data codes: nrg\_ind\_pehcf, nrg\_ind\_pehmf)

eurostat 

**Figure 4: Electricity production in the EU, GWh Source: Eurostat (nrg\_ind\_pehcf) and (nrg\_ind\_pehmf)**

## Heat

The total derived heat supply in the EU in 2023 is estimated to have decreased by 2.3 % compared with 2022. This refers only to heat that was sold – autoconsumed heat is not reflected in these figures. Contrary to electricity generation trends, natural gas as the most important fuel for heat production in the EU remained quite stable compared with 2022 (+0.1 % or 0.4 petajoules (PJ) . Compared with 2018, however, it decreased by 22.5 %. Solid biofuels, the second largest contributor to heat production, increased by 0.3 % or 1.4 PJ (+13.0 % compared with 2018), whereas heat from other bituminous coal decreased by 13.7 % or 44.4 PJ (-29.7 % compared with 2018). Heat from wastes increased by 4.0 % from 2022 to 2023 (+13.4 % compared with 2018). Other sources contribute significantly less to the total heat production, and preliminary data indicate mixed trends (Table 9).

### Gross heat production in the EU, TJ

	2018	2019	2020	2021	2022	2023 preliminary
Anthracite	5 096	1 915	1 915	1 636	1 083	1 317
Coking coal	12 431	1 003	1 111	1 272	1 063	1 111
Other bituminous coal	397 261	377 281	319 924	344 334	323 585	279 100
Sub-bituminous coal	5 246	4 443	4 096	4 212	3 991	3 146
Lignite	101 910	94 726	87 994	91 906	86 866	78 499
Brown coal briquettes	10 128	7 797	6 874	7 103	6 862	5 775
Coke oven gas	13 407	13 577	10 762	11 995	10 185	5 995
Blast furnace gas	19 900	18 855	18 870	17 350	15 112	16 376
Peat	33 182	30 434	23 537	19 233	17 153	12 252
Oil shale and oil sands	2 271	1 958	1 207	1 696	1 782	1 223
Natural gas	826 410	806 390	787 239	765 830	640 202	640 618
Refinery gas	40 151	39 784	36 979	20 918	21 980	18 411
Liquefied petroleum gases	902	1 157	919	959	1 358	1 758
Gas oil and diesel oil	9 656	8 910	8 077	15 538	26 639	21 558
Fuel oil	15 718	12 329	12 423	10 683	12 225	14 678
Solid biofuels	455 999	476 248	472 435	542 912	513 891	515 336
Biogases	35 765	40 089	42 212	25 081	25 414	24 844
Industrial waste (non-renewable)	12 774	14 547	11 697	13 390	12 968	12 954
Renewable municipal waste	114 859	120 694	124 041	130 481	125 964	132 850
Non-renewable municipal waste	111 075	116 000	119 438	124 575	121 329	124 814
Geothermal	11 871	12 945	13 386	14 079	14 658	14 152
Solar thermal	2 267	2 462	2 843	2 490	2 939	3 579
Ambient heat (heat pumps)	21 508	22 140	23 457	25 651	24 192	30 072
Nuclear	4 119	3 980	3 686	3 913	3 688	3 789
Electricity	1 954	2 398	4 335	4 640	5 146	11 285
Heat from chemical sources	37 127	38 037	38 338	38 030	31 343	27 991
Other fuels (including non-specified)	75 045	75 059	77 978	73 228	68 287	80 699
<b>Total</b>	<b>2 378 031</b>	<b>2 345 158</b>	<b>2 255 775</b>	<b>2 313 134</b>	<b>2 119 905</b>	<b>2 084 183</b>

Notes: Data extracted on 20 June 2024

Source: Eurostat (online data codes: nrg\_ind\_pehcf, nrg\_ind\_pehnf)

eurostat 

**Table 9: Gross heat production in the EU, TJ Source: Eurostat (nrg\_ind\_pehcf) and (nrg\_ind\_pehnf)**

As shown in Table 10, imports and exports of heat are virtually non-existent in the EU and heat supply relies exclusively on domestic heat production.

## Heat production, trade and supply in the EU, TJ

	2018	2019	2020	2021	2022	2023 preliminary
<b>Gross heat production</b>	2 378 031	2 345 158	2 255 775	2 313 134	2 119 905	2 084 183
- Own use	50 517	40 850	40 449	42 879	40 315	42 496
<b>Net heat production</b>	2 327 514	2 304 308	2 215 326	2 270 255	2 079 590	2 041 687
+ Imports	241	227	223	235	232	236
- Exports	76	74	69	74	42	37
- Used for electricity generation	23 644	21 881	21 516	21 224	19 236	18 433
<b>Inland demand</b>	2 304 035	2 282 580	2 193 964	2 249 192	2 060 545	2 023 453
- Distribution losses	236 958	225 540	218 655	244 063	104 371	227 371
<b>Available for final consumption</b>	2 067 077	2 057 040	1 975 309	2 005 129	1 838 107	1 796 081

Notes: Data extracted on 20 June 2024

Source: Eurostat (online data code: nrg\_cb\_h)

eurostat 

Table 10: Heat production, trade and supply in the EU, TJ Source: Eurostat (nrg\_cb\_h)

## Renewables and wastes

Tables 11 and 12 do not feature renewables energies that are used exclusively for electricity generation, such as hydro, wind and solar PV. However, renewables that produce heat (geothermal and solar thermal) are shown, and some of that energy is used also to produce electricity/heat, as indicated in the previous sections.

Preliminary 2023 data indicate different trends for different renewable fuels and wastes. For example, inland consumption of charcoal increased slightly compared with 2022 (+3.0 %), following primarily an increase in indigenous production. Inland consumption of liquid biofuels increased by 1.4 %, despite a small decrease in net imports. A drop in both production and net imports of primary solid biofuels led to a decrease of -3.4 % in consumption, whereas wastes remained stable (see Table 11).

## Renewables production, trade and supply in the EU

		2018	2019	2020	2021	2022	2023 preliminary
Charcoal [kt]	Indigenous production	119	122	122	122	115	136
	Net imports	557	490	450	414	368	360
	Change in stock	0	-3	-3	4	-2	0
	Inland consumption (calculated)	676	609	569	539	481	496
Liquid biofuels [kt]	Indigenous production	17 648	18 665	18 033	18 566	18 026	18 133
	Net imports	2 082	2 069	2 859	2 914	4 115	3 899
	Change in stock	312	-97	60	455	33	454
	Inland consumption (calculated)	20 042	20 638	20 951	21 935	22 174	22 485
Primary solid biofuels [TJ]	Indigenous production	3 919 017	3 973 823	3 905 003	4 222 243	4 104 015	3 988 039
	Net imports	105 299	96 098	128 289	144 015	104 450	82 220
	Change in stock	-9 558	-2 699	-8 188	10 209	-7 139	-13 051
	Inland consumption (calculated)	4 014 758	4 067 222	4 025 104	4 376 467	4 201 327	4 057 208
Wastes [TJ]	Indigenous production	934 830	951 156	965 897	974 634	955 324	954 001
	Net imports	36 641	35 987	34 027	43 584	41 684	42 214
	Change in stock	-307	24	39	235	-563	-85
	Inland consumption (calculated)	971 165	987 167	999 963	1 018 452	996 445	996 130

Notes: Data extracted on 20 June 2024

Source: Eurostat (online data code: nrg\_cb\_rw)

eurostat 

**Table 11: Renewables production, trade and supply in the EU** Source: Eurostat (nrg\_ind\_pehcf) and (nrg\_cb\_rw)

Table 12 shows the developments for inland consumption of individual products. The most notable increase is registered for ambient heat (heat pumps) (+10.0 % compared with 2022 and +55.2 % compared with 2018).

## Renewables inland consumption (calculated) in the EU

		2018	2019	2020	2021	2022	2023 preliminary
TJ	Geothermal	284 082	288 813	288 822	284 301	282 555	276 932
TJ	Solar thermal	180 510	195 455	188 469	163 186	163 646	170 183
TJ	Ambient heat (heat pumps)	492 991	527 674	559 583	640 584	695 913	765 339
TJ	Biogases	580 275	592 268	614 839	653 699	666 910	659 925
kt	Biogasoline	4 128	4 367	4 366	4 846	5 344	5 353
kt	Biodiesels	14 532	14 771	15 101	15 727	15 739	16 114
kt	Bio jet kerosene	0	0	0	0	33	53
kt	Other liquid biofuels	1 382	1 499	1 484	1 363	1 058	966
TJ	Primary solid biofuels	4 014 758	4 067 222	4 025 104	4 376 467	4 201 327	4 057 208
kt	Charcoal	676	609	569	539	481	496
TJ	Renewable municipal waste	389 902	394 981	399 538	409 511	398 805	401 426
TJ	Non-renewable municipal waste	385 526	390 092	394 142	399 404	389 354	389 822
TJ	Industrial waste (non-renewable)	195 738	202 095	206 283	209 537	208 286	204 882

Notes: Data extracted on 20 June 2024

Source: Eurostat (online data code: nrg\_cb\_rw)

eurostat 

**Table 12: Renewables inland consumption (calculated) in the EU** Source: Eurostat (nrg\_cb\_rw)

## Source data for tables and graphs

- [Energy production and imports: tables and figures](#)

## Data sources and methodology

This article includes final annual data up to 2022 and preliminary 2023 data for energy commodities, focusing on the developments regarding energy production and imports. Annual energy data are transmitted to Eurostat in line with Regulation (EC) No 1099/2008 on energy statistics. Final official energy annual data (the European statistics on energy) are published in a harmonised form of commodity/energy balance by Eurostat 12-13 months after the end of the reference period. As of 2018, Eurostat is also publishing preliminary annual supply-side data of the commodity balances, transmitted by countries 5 months after the end of the reference period. Prior to reference year 2022, countries were reporting preliminary annual energy data on a voluntary basis. This reporting is mandatory as of reference year 2022. Data collection (including possible estimation) is done at the national level by the respective National Statistical Institutes or Other National Authorities transmitting data to Eurostat. Eurostat does not publish any estimates for values not transmitted by individual reporting countries. Preliminary data may overestimate categories like "other", "other sources" and "non-specified"; and underestimate certain product groups (for example for electricity and heat generation). Data reported 5 months after the reference year should be considered as preliminary; these are not final data for policy evaluation or official monitoring of developments towards legally binding targets.

## Context

[Energy Union](#) is one of the main policy instruments to deliver the EU's [energy strategy](#). The first State of the Energy Union report stated the following: "In order to track progress, a transparent monitoring system has to be put in place based on key indicators as well as on Member States' biannual reports concerning progress made on their national plans. The Commission intends to assess collective progress made at the EU level in its annual State of the Energy Union and, if necessary, propose policy actions and measures to ensure the delivery of the Energy Union objectives". Using reliable high quality data to monitor the progress made to achieve EU targets will enhance the credibility of the EU energy policy. Therefore, official statistics need to contribute to this process to remain relevant and aligned to the needs of our policy-makers and society. The energy data presented in this article support this monitoring.

## Notes

### Explore further

#### Other articles

- [All articles on energy](#)
- [All energy articles](#) in alphabetical order

## Database

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

Energy statistics - quantities (nrg\_quant)

Energy statistics - quantities, annual data (nrg\_quant\_a)

Supply, transformation and consumption - commodity balances (nrg\_cb)

Supply, transformation and consumption of solid fossil fuels (nrg\_cb\_sff)

Supply, transformation and consumption of gas (nrg\_cb\_gas)

Supply, transformation and consumption of oil and petroleum products (nrg\_cb\_oil)

Supply, transformation and consumption of renewables and wastes (nrg\_cb\_rw)

Supply, transformation and consumption of electricity (nrg\_cb\_e)

Supply, transformation and consumption of derived heat (nrg\_cb\_h)

Energy indicators (nrg\_ind)

Gross production of electricity and derived heat from combustible fuels by type of plant and operator (nrg\_ind\_pehcf)

Gross production of electricity and derived heat from non-combustible fuels by type of plant and operator (nrg\_ind\_pehnf)

## Thematic section

- [Energy](#)

## Methodology

- [Energy statistics - quantities](#) (ESMS metadata file: European and national metadata)
- [Supply, transformation and consumption - commodity balances](#) (ESMS metadata file)
- [Energy balances](#) (ESMS metadata file)

## External links

- [European Commission - DG Energy: Data and analysis](#)
- [Energy Community](#)
- [United Nations Statistics Division - Energy Statistics](#)
- [International Energy Agency - Data and statistics](#)

*View this article online at [http://ec.europa.eu/eurostat/statistics-explained/index.php/Energy\\_balances\\_-\\_early\\_estimates](http://ec.europa.eu/eurostat/statistics-explained/index.php/Energy_balances_-_early_estimates)*

## Legislation

- [Regulation \(EC\) No 1099/2008](#) on energy statistics

## Visualisation

- [Portal for energy data visualisations](#)
- [Energy indicators made easy](#)
- [Monthly energy data made easy](#)
- [Energy balances](#)
- [Sankey diagram - Visualise energy flows](#)