Energy balances - early estimates

Statistics Explained

Data extracted in June 2022.
Planned update: 5 July 2023.

" Based on preliminary 2021 data for the EU, fossil fuels were again the leading source for electricity generation. "

" Based on preliminary 2021 data for the EU, the consumption of natural gas was the highest in the past 10 years. "

" Based on preliminary 2021 data for the EU, consumption of solid fossil fuels increased by 13.7% compared to 2020, but remained below 2019 levels. "

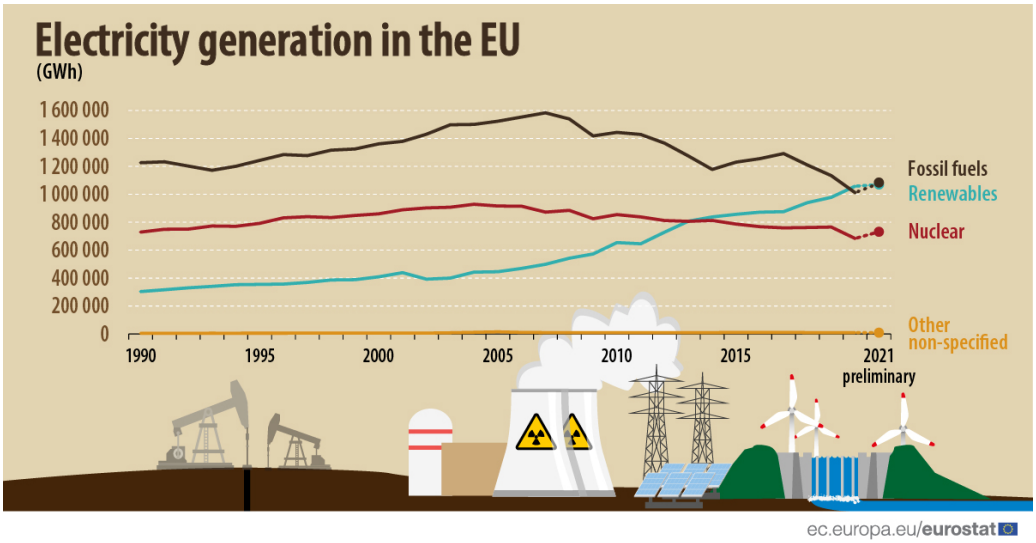

Figure 1: Electricity generation in the EU - Source: Eurostat (nrg_ind_pehcf) and (nrg_ind_pehnf)

This article presents the 2021 preliminary data for energy commodities, estimating the evolution of the energy supply across the EU in 2021 as compared with 2020. Reporting countries transmit their preliminary annual energy data on a voluntary basis within 5 months after the end of the reference year to Eurostat. This improved timeliness is the result of Eurostat's response to policy needs, and reporting countries have significantly contributed to achieving these results. Final annual energy data is published by Eurostat 13 months after the end of the reference period (final 2021 data will be available by the end of January 2023). The sections below present the highlights for the EU aggregate. All preliminary data are available in the commodity balances of the energy database . MS Excel files at the end of this article include all **detailed national data** for the supply side[1] of energy commodities.

[1] The preliminary annual data that Eurostat publishes within the framework of this voluntary exercise concerns energy supply. In this article we use the terms supply and inland consumption interchangeably, since the calculated inland consumption corresponds to the supply.

After a long period of national lockdowns and restrictive measures introduced to curb the spread of COVID-19 in 2020, 2021 saw a rebound in economic activity in many EU countries. Businesses reopened, people started to travel again, and all this had an effect on energy use in the EU. Oil and petroleum products, for example, after a sharp drop in 2020, increased by 5.0 %. The consumption of natural gas, in the context of rocketing prices particularly in the second half of the year, was the highest recorded in the past ten years in the EU. Solid fossil fuels increased by 13.7 % compared to 2020, which still places them on their second lowest level since 1990.

Figure 1 shows the contribution of different fuels to electricity generation in the EU. Preliminary data suggest that, in 2021, fossil fuels were again the leading source for electricity generation.

Solid fossil fuels (coal) and manufactured gases

Contrary to the developments observed in 2020, preliminary 2021 data indicate a year-on-year increase in the supply and inland consumption of coal. However, solid fossil fuels in 2020 were on a record low level since data are available (i.e. since 1990) partially due to lockdowns introduced during the COVID-19 pandemic. The rise in 2021 was to a large extent caused by the post-lockdown industrial recovery, as well as by the increased use of coal for electricity and heat generation in some EU countries, as a replacement for the increasingly expensive natural gas. Even with the growing figures observed in 2021, solid fossil fuels are on their second lowest level since 1990, as expected given the EU's decarbonisation goals. Inland consumption of lignite in the EU increased by 31.6 million tonnes (Mt) (+12.83 %), other bituminous coal rose by 18.9 Mt (+18.95 %), oil shale and oil sands by 1.7 Mt (+13.83 %), coking coal by 2.1 Mt (+4.83 %), and coke oven coke by 4.9 Mt (-17.56 %).These solid fossil fuels, being the most represented in the solid fossil fuels total, drive the overall upward trend in supply and consumption. Most other solid fossil fuels follow the same trend. By contrast, peat and peat products were on the decrease (-22.5 %, and -8.48 %, respectively), as well coal tar (-8.37 %). Manufactured gases, mostly produced in relation to coal consumption in iron and steel industry, increased rather significantly, with the exception of gas works gas. These data are presented in Table 1. The MS Excel file available at the end of the article provides details on indigenous production, imports, exports and stock changes for each type of coal, as well as country specific data.

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

	Inland consumption (Calculated)	2020	2021 preliminary	2020>2021 growth rate (%)
kt	Anthracite	2 482.3	2 796.9	12.67%
kt	Coking coal	42 932.5	45 006.1	4.83%
kt	Other bituminous coal	99 620.1	118 496.8	18.95%
kt	Sub-bituminous coal	1 162.9	1 217.7	4.72%
kt	Lignite	246 002.8	277 566.7	12.83%
kt	Patent fuel	81.0	86.5	6.73%
kt	Coke oven coke	27 967.6	32 877.7	17.56%
kt	Gas coke	0.0	0.0	0.0
kt	Coal tar	898.8	823.6	-8.37%
kt	BKB	5 509.7	6 036.5	9.56%
TJ GCV	Gas works gas	11 875.2	3 000.0	-74.74%
TJ GCV	Coke oven gas	238 175.4	275 245.5	15.56%
TJ GCV	Blast furnace gas	377 982.1	436 351.3	15.44%
TJ GCV	Other recovered gases	44 162.7	48 231.6	9.21%
kt	Peat	6 478.6	5 020.7	-22.50%
kt	Peat products	188.5	172.5	-8.48%
kt	Oil shale and oil sands	12 072.2	13 741.4	13.83%

Notes:
Values were extracted from Eurostat database on 23 June 2022.
Source: Eurostat (online data codes: nrg_cb_sff, nrg_cb_gas)

Table 1: Inland consumption of solid fossil fuels and manufactured gases in the EU - Source: Eurostat (nrg_cb_sff), and (nrg_cb_gas)

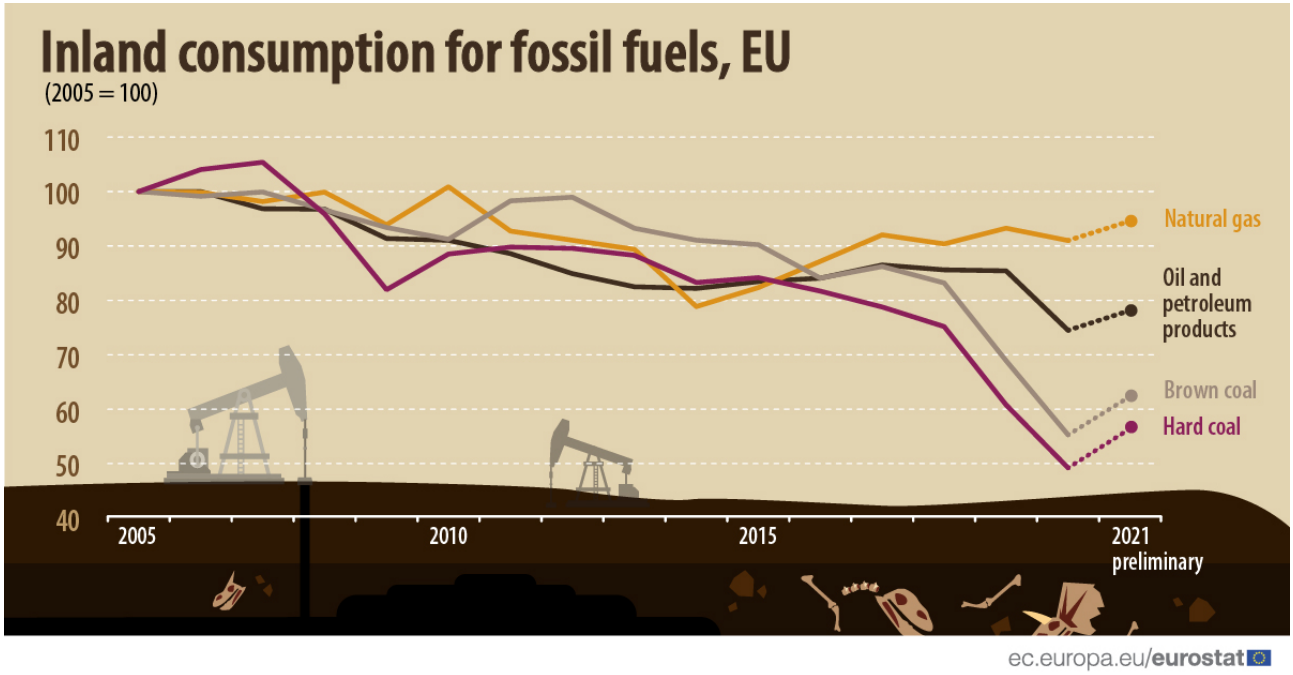

Figure 2: Index of inland consumption for fossil fuels in the EU - Source: Eurostat (nrg_cb_sff), (nrg_cb_gas) and (nrg_cb_oil)

Figure 2 shows the trend in fossil fuels. Preliminary data suggest a continuation of significant decreases for coal in 2020.

Natural gas

Preliminary 2021 data indicate a further decrease in the domestic production of natural gas (-8.7 % compared to 2020). Combined with these production developments, a very slight drop in imports (-0.1 %) and a significant one in exports (-20.3 %) resulted in a 3.9 % increase in the inland consumption of natural gas (see Table 2). The MS Excel file available at the end of the article provides details for each country. According to these preliminary data, Bulgaria saw the biggest increase in inland consumption of natural gas (+12.9 %), closely followed by Slovakia (+11.3 %), and Greece (+10.6 %). On the other hand, Sweden reported the sharpest decrease in inland consumption of natural gas (-9.2 %), followed by Denmark (-4.9 %), Lithuania (-4.8 %), and Portugal (-4.2 %). Cyprus was still the only EU country without any natural gas consumption, while the Netherlands remained the biggest natural gas producer in the EU, with 721 PJ of indigenous production.

Natural gas supply and inland consumption in the EU, TJ GCV

	Natural gas: TJ GCV	2020	2021 preliminary	2020>2021 growth rate (%)
Natural gas	Indigenous production	1 913 439	1 747 332	-8.7
Natural gas	From Other Sources	38 316	54 438	42.1
Natural gas	Total Imports	15 313 617	15 296 110	-0.1
Natural gas	Total Exports	2 610 968	2 079 861	-20.3
Natural gas	Stock Changes	578 984	818 611	41.4
Natural gas	International Marine Bunkers	8 410	12 323	46.5
Natural gas	Inland consumption (Calculated)	15 224 978	15 824 306	3.9

Notes:

Values were extracted from Eurostat database on 23 June 2022.

Source: Eurostat (online data code: nrg_cb_gas)

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Table 2: Natural gas supply and inland consumption in the EU - Source: Eurostat (nrg_cb_gas)

Oil

Preliminary 2021 data indicate that the demand of refineries for primary oil (such as crude oil) increased slightly: +2.6 % for calculated refinery intake (see Table 3). A similar trend (+3.2 %) was also observed for the supply of refined petroleum products from refineries (see Table 4). Gas/diesel oil followed by motor gasoline were the most significant oil products refined in the EU, accounting together for 59.4 % of the total refinery output in 2021. The gross inland deliveries of all petroleum products to the EU market show an increase in 2021 (+5.0 %). The preliminary data suggest that gross inland deliveries of transport fuels (motor gasoline, gas/diesel oil, LPG and kerosene type jet fuel) all increased compared to 2020, unsurprisingly given the very low values in 2020 due to lockdowns. More details and country specific preliminary data are available in the MS Excel file for oil.

Oil and petroleum products supply in the EU, kt

EU	kt	2017	2018	2019	2020	2021 preliminary	2020>21 growth rate (%)
Crude oil, NGL, refinery feedstocks, additives and oxygenates and other hydrocarbons (including biofuels blended with fossil fuels)	Indigenous production	25 074	24 573	22 756	21 444	20 372	-5.0
	Receipts from other sources	18 912	20 900	21 452	21 841	22 523	3.1
	Backflows	15 936	14 475	14 874	14 843	14 861	0.1
	Products transferred	22 916	25 020	27 907	25 299	25 921	2.5
	Imports (Balance)	549 811	539 195	530 347	465 180	473 579	1.8
	Exports (Balance)	16 571	14 803	13 461	13 197	13 958	5.8
	Direct use	29 722	30 595	30 801	31 537	33 449	6.1
	Stock changes	1 683	913	-2 918	-1 816	5 206	:
	Refinery intake (Calculated)	**588 040**	**579 678**	**570 156**	**502 056**	**515 054**	**2.6**
Oil and petroleum products (including biofuels blended with fossil fuels)	Primary product receipts	25 131	26 349	26 851	27 478	28 415	3.4
	Refinery gross output	581 726	573 868	563 210	496 321	512 119	3.2
	Recycled products	1 126	1 086	1 227	1 182	1 077	-8.8
	Refinery fuel	26 703	25 128	24 635	22 506	24 442	8.6
	Imports (Balance)	318 581	317 540	316 624	281 344	299 023	6.3
	Exports (Balance)	341 201	331 454	312 606	278 745	305 938	9.8
	International marine bunkers	43 092	44 391	43 952	39 498	41 611	5.3
	Interproduct transfers	1 556	1 661	1 782	1 700	2 841	:
	Products transferred	-22 916	-25 020	-27 907	-25 299	25 923	:
	Stock changes	6 445	2 900	-2 899	-5 945	12 068	:
	Gross inland deliveries (Calculated	**500 653**	**497 411**	**497 695**	**436 031**	**457 629**	**5.0**

Notes:

Values were extracted from Eurostat database on 24 June 2022.

Source: Eurostat (online data code: nrg_cb_oil)

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Table 3: Oil and petroleum products supply in the EU - Source: Eurostat (nrg_cb_oil)

Refinery gross output in the EU, kt

Refinery gross output (kt)	2017	2018	2019	2020	2021 preliminary	2020>21 growth rate (%)
Non-bio gas/diesel oil	232 074	227 281	228 038	210 768	211 990	0.58
Non-biogasoline	101 782	102 321	99 956	87 263	92 019	5.45
Total fuel oil	73 264	71 803	61 150	48 797	52 481	7.55
Naphtha	42 867	41 907	40 651	38 266	38 625	0.94
Non-bio jet kerosene	30 262	33 306	33 062	15 883	16 671	4.96
Refinery gas	19 120	18 718	18 639	16 577	16 468	-0.66
Bitumen	17 385	17 145	17 393	17 362	15 356	-11.56
LPG	14 627	14 123	14 283	12 485	13 854	10.97
Other kerosene	10 399	11 242	10 943	8 749	10 068	15.07
Petroleum coke	10 333	9 938	10 283	9 765	9 720	-0.45
Lubricants	6 987	6 633	6 183	6 414	6 547	2.07
All other oil products (including non-specified output)	22 627	19 451	22 628	23 991	28 319	18.04
TOTAL	581 726	573 868	563 210	496 321	512 119	3.18

Notes:

Values were extracted from Eurostat database on 24 June 2022.

Source: Eurostat (online data code: nrg_cb_oil)

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Table 4: Refinery gross output in the EU - Source: Eurostat (nrg_cb_oil)

Electricity & heat

The total electricity supply in the EU increased by 4.2 % compared to 2020. Preliminary data indicate significant annual variations between various fuel sources. After the renewable category surpassed fossil fuels for electricity generation in 2020, 2021 saw a return to fossil fuel dominance. On the renewables side, preliminary 2021 data show the biggest increases in electricity produced from solar energy (+13 % or 18.7 TWh) on the EU level, followed by solid biofuels (+9.6 % or 7.9 TWh). On the other hand, due to unfavourable weather conditions, electricity generation from hydro and wind decreased (-1.2 % and -3 %, respectively). There were no significant changes in the production of electricity from natural gas (-1.7 % or -9.3 TWh). At the same time, electricity generation from certain solid fossil fuels increased substantially in 2021: other bituminous coal (+25.6 % or +39.2.5 TWh) and lignite (+16.2 % or +31.7 TWh). In comparison with 2020, the output of nuclear power plants increased by 7.0 % (+48 TWh). The biggest contributors to the EU electricity generation system in 2021 were nuclear (731 TWh), natural gas (550 TWh), wind (386 TWh), hydro (370 TWh), lignite (227 TWh), other bituminous coal (193 TWh), and solar (163 TWh). Fossil fuels in total (1 078 TWh) were
the biggest contributor as an individual fuel group, with renewables closely following in the second place (1 069 TWh).

Electricity supply in the EU

		Electricity: GWh GROSS PRODUCTION	2020	2021 preliminary	2020>21 growth rate (%)
GWh	Electricity	Nuclear	683 512	731 513	7.02%
GWh	Electricity	Hydro	374 535	369 991	-1.21%
GWh	Electricity	Geothermal	6 717	6 559	-2.36%
GWh	Electricity	Solar	144 232	162 989	13.00%
GWh	Electricity	Tide, wave and ocean	509	503	-1.17%
GWh	Electricity	Wind	397 418	385 665	-2.96%
GWh	Electricity	Industrial waste (non-renewable)	2 383	2 538	6.48%
GWh	Electricity	Municipal waste (renewable)	18 888	19 927	5.50%
GWh	Electricity	Municipal waste (non-renewable)	18 336	19 280	5.15%
GWh	Electricity	Solid Biofuels	82 987	90 934	9.58%
GWh	Electricity	Biogases	55 754	54 759	-1.78%
GWh	Electricity	Other Liquid Biofuels	5 023	4 696	-6.52%
GWh	Electricity	Anthracite	715	803	12.26%
GWh	Electricity	Coking Coal	81	239	194.24%
GWh	Electricity	Other Bituminous Coal	153 280	192 550	25.62%
GWh	Electricity	Sub-Bituminous Coal	572	288	-49.71%
GWh	Electricity	Lignite	195 221	226 915	16.24%
GWh	Electricity	BKB	1 508	1 733	14.93%
GWh	Electricity	Gas Works Gas	1 250	135	-89.20%
GWh	Electricity	Coke Oven Gas	6 519	7 496	14.99%
GWh	Electricity	Blast Furnace Gas	16 757	20 185	20.45%
GWh	Electricity	Other Recovered Gases	1 605	1 683	4.85%
GWh	Electricity	Peat	3 137	2 328	-25.77%
GWh	Electricity	Oil Shale and Oil Sands	2 247	3 579	59.26%
GWh	Electricity	Refinery Gas	6 656	6 259	-5.96%
GWh	Electricity	Liquefied Petroleum Gases	217	193	-11.28%
GWh	Electricity	Gas/Diesel Oil	10 123	10 425	2.98%
GWh	Electricity	Residual Fuel Oil	21 474	22 861	6.46%
GWh	Electricity	Petroleum Coke	514	493	-4.11%
GWh	Electricity	Other Oil Products	9 066	7 219	-20.38%
GWh	Electricity	Natural Gas	560 052	550 743	-1.66%
GWh	Electricity	Heat from chemical sources	1 089	915	-15.99%
GWh	Electricity	All other fuels (sources)	3 630	3 314	-8.70%
GWh	**Electricity**	**TOTAL GROSS PRODUCTION**	**2 786 008**	**2 909 707**	4.44%
GWh	Electricity	Own use	121 772	130 540	7.20%
GWh	**Electricity**	**TOTAL NET PRODUCTION**	**2 664 236**	**2 779 167**	4.31%
GWh	Electricity	Imports	380 882	401 439	5.40%
GWh	Electricity	Exports	367 048	394 152	7.38%
GWh	Electricity	Used for Heat Pumps	1 852	2 145	15.86%
GWh	Electricity	Used for Electric Boilers	1 223	1 252	2.36%
GWh	Electricity	Used for pumped storage: Pure pumping plants	24 214	21 284	-12.10%
GWh	Electricity	Used for pumped storage: Mixed plants	14 514	14 552	0.26%
GWh	**Electricity**	**Total electricity supply**	**2 636 268**	**2 747 221**	4.21%
GWh	Electricity	Distribution losses	174 394	175 300	0.52%
GWh	**Electricity**	**Inland consumption (calculated)**	**2 461 874**	**2 571 921**	4.47%

Notes:
Values were extracted from Eurostat database on 23 June 2022.
Source: Eurostat (online data code: nrg_cb_e, nrg_ind_pehcf and nrg_ind_pehnf)

eurostat

Table 5: Electricity supply in the EU - Source: Eurostat (nrg_cb_e), (nrg_ind_pehcf) and (nrg_ind_pehnf)

The total derived heat supply in the EU in 2021 is estimated to have increased by 8.9 % compared to 2020. Natural gas as the most important fuel for heat production in the EU saw an increase of 6.3 % or 49.9 PJ. Looking at all fossil fuels together, preliminary data indicate an increase in heat production of 7 % or 103 PJ. Solid biofuels, the second largest contributor to heat production, increased even more significantly by 12.6 % or 59.4 PJ, whereas heat from wastes (industrial waste and renewable/non-renewable municipal waste) increased by 5 % or 12.9 PJ. Other sources contribute significantly less to the total heat production, and preliminary data indicate mixed trends. More details and country specific preliminary data are available in the MS Excel file at the end of the article.

Derived heat supply in the EU

		Heat: TJ GROSS PRODUCTION	2020	2021 preliminary	2020>21 growth rate %
TJ	Heat	Nuclear	3 686	3 912	6.13%
TJ	Heat	Geothermal	13 169	13 416	1.88%
TJ	Heat	Solar thermal	2 817	2 464	-12.53%
TJ	Heat	Industrial Waste (Non-Renew.)	10 415	12 092	16.10%
TJ	Heat	Municipal Waste (Renew.)	119 603	124 928	4.45%
TJ	Heat	Municipal Waste (Non-Renew.)	124 200	130 081	4.73%
TJ	Heat	Solid Biofuels	472 170	531 568	12.58%
TJ	Heat	Biogases	41 898	43 116	2.91%
TJ	Heat	Biodiesel	36	27	-24.37%
TJ	Heat	Biogasolines	0	0	0.00%
TJ	Heat	Other Liquid Biofuels	3 904	5 846	49.76%
TJ	Heat	Anthracite	1 915	1 771	-7.54%
TJ	Heat	Coking Coal	1 111	1 377	23.96%
TJ	Heat	Other Bituminous Coal	320 920	360 342	12.28%
TJ	Heat	Sub-Bituminous Coal	4 096	3 278	-19.98%
TJ	Heat	Lignite	86 932	92 776	6.72%
TJ	Heat	Patent Fuel	0	0	0.00%
TJ	Heat	Coke Oven Coke	23	31	33.71%
TJ	Heat	Gas Coke	0	0	0.00%
TJ	Heat	Coal Tar	84	105	23.88%
TJ	Heat	BKB	6 923	7 535	8.84%
TJ	Heat	Gas Works Gas	375	230	-38.68%
TJ	Heat	Coke Oven Gas	10 796	9 424	-12.70%
TJ	Heat	Blast Furnace Gas	18 866	21 452	13.71%
TJ	Heat	Other Recovered Gases	2 700	2 368	-12.31%
TJ	Heat	Peat	23 922	20 754	-13.24%
TJ	Heat	Peat Products	36	15	-58.33%
TJ	Heat	Oil Shale and Oil Sands	1 207	1 250	3.52%
TJ	Heat	Crude Oil	0	0	0.00%
TJ	Heat	Natural Gas Liquids	0	0	0.00%
TJ	Heat	Refinery Gas	28 386	26 197	-7.71%
TJ	Heat	Liquefied Petroleum Gases	918	866	-5.62%
TJ	Heat	Naphtha	0	0	0.00%
TJ	Heat	Kerosene Type Jet Fuel	0	0	0.00%
TJ	Heat	Other Kerosene	0	0	0.00%
TJ	Heat	Gas/Diesel Oil	9 850	11 760	19.39%
TJ	Heat	Residual Fuel Oil	12 482	18 483	48.08%
TJ	Heat	Bitumen	0	0	0.00%
TJ	Heat	Petroleum Coke	18	0	-100.00%
TJ	Heat	Other Oil Products	14 564	11 886	-18.39%
TJ	Heat	Natural Gas	791 126	841 028	6.31%
TJ	Heat	Heat pumps	24 419	25 769	5.53%
TJ	Heat	Electric boilers	4 353	4 419	1.53%
TJ	Heat	Heat from chemical sources	38 505	37 819	-1.78%
TJ	Heat	Other sources	53 415	81 041	51.72%
TJ	**Heat**	**TOTAL GROSS PRODUCTION**	**2 249 843**	**2 449 425**	**8.87%**
TJ	Heat	Own use	41 122	47 551	15.63%
TJ	**Heat**	**TOTAL NET PRODUCTION**	**2 208 721**	**2 401 873**	**8.74%**
TJ	Heat	Imports	223	231	3.47%
TJ	Heat	Exports	69	74	7.36%
TJ	Heat	Used for Electricity Production	21 516	21 013	-2.34%
TJ	**Heat**	**Total heat supply**	**2 187 359**	**2 381 017**	**8.85%**
TJ	Heat	Distribution losses	209 477	218 822	4.46%
TJ	**Heat**	**Inland consumption (calculated)**	**1 977 882**	**2 162 196**	**9.32%**

Notes:

Values were extracted from Eurostat database on 23 June 2022.

Source: Eurostat nrg_bal_h, nrg_ind_pehcf and nrg_ind_pehnf

eurostat

Table 6: Derived heat supply in the EU - Source: Eurostat (nrg_cb_h), (nrg_ind_pehcf) and (nrg_ind_pehnf)

Renewables and waste

Preliminary 2021 data indicate that the use of renewable energies increased in 2021. As seen in Table 5, electricity generated from several renewable sources recorded relatively high increases (solar +13 %, solid biofuels +9.6 %). However, there were also some drops in electricity production from certain renewables (hydro -1.2 %, tide, wave and ocean -1.1 %, wind -2.9 %, geothermal -2.3 %, other liquid biofuels -6.5 %). Table 7 shows that the use of ambient heat recorded the biggest increase (+13.7 %), followed by biogasoline with +9.3 %. Industrial and municipal waste for energy purposes slightly increased as well (non-renewable industrial waste +1.4 %, renewable municipal waste +1.2 %, non-renewable municipal waste +0.3 %). Supply of charcoal continued its downward trend and was 14.4 % lower than in 2020. Unlike biogasoline, supply of biodiesels remained relatively stable, whereas other liquid biofuels dropped by 6.5 %. Preliminary data indicate a small increase in the use of solar thermal energy

(+1.9 %) and a subtle drop in geothermal energy (-1.8 %) in 2021. More details and country specific preliminary data are available in the MS Excel file for renewables and waste.

Supply of renewables and wastes in the EU

Inland consumption (Calculated)		2016	2017	2018	2019	2020	2021 preliminary	2020>21 growth rate (%)
TJ NCV	Geothermal energy	280 380.9	283 517.7	284 078.5	288 809.3	288 373.1	283 246.3	-1.8
TJ NCV	Solar thermal	182 132.0	190 133.5	179 916.1	194 623.7	186 879.5	190 418.0	1.9
TJ NCV	Industrial waste (non-renewable)	190 384.1	182 266.9	192 400.4	198 702.1	201 935.9	204 755.0	1.4
TJ NCV	Municipal waste (renewable)	386 033.5	398 288.4	391 391.0	395 853.5	401 273.5	406 186.7	1.2
TJ NCV	Municipal waste (non-renewable)	382 567.5	393 594.9	386 740.7	390 671.2	396 088.8	397 366.6	0.3
TJ NCV	Solid biofuels excluding charcoal	3 814 625.0	3 870 102.5	3 985 233.7	4 058 523.9	4 051 089.8	4 342 146.0	7.2
kt	Charcoal	537.0	519.5	518.2	552.1	529.3	453.3	-14.4
TJ NCV	Biogases	569 047.4	582 048.4	580 303.2	592 313.7	616 135.3	618 533.1	0.4
kt	Biogasoline	3 640.9	3 840.5	4 117.4	4 355.8	4 338.9	4 745.8	9.3
kt	Bio jet kerosenes	0.0	0.0	0.0	0.0	0.0	0.0	0.0
kt	Biodiesels	11 606.3	12 948.0	14 520.6	14 711.5	15 044.2	15 192.7	1.0
kt	Other liquid biofuels	1 438.6	1 349.6	1 382.3	1 499.1	1 478.3	1 382.0	-6.5
TJ NCV	Ambient heat (heat pumps)	289 193.9	454 298.2	484 256.1	518 161.2	549 959.4	625 008.3	13.7

Notes:

Values were extracted from Eurostat database on 23 June 2022.

Source: Eurostat (online data code: nrg_cb_rw)

eurostat

Table 7: Supply of renewables and wastes in the EU Source: Eurostat (nrg_cb_rw)

Source data for tables and graphs

- Download Excel file with 2021 preliminary data for electricity
- Download Excel file with 2021 preliminary data for heat
- Download Excel file with 2021 preliminary data for solid fossil fuels (coal) and manufactured gases
- Download Excel file with 2021 preliminary data for renewables & wastes
- Download Excel file with 2020 preliminary data for oil (crude oil and derived oil products
- Download Excel file with 2021 preliminary data for natural gas

Data sources & methodology

Timeliness and accuracy of the input data

Currently, the official energy annual data (the European statistics on energy) is published in a harmonised form of commodity/energy balance by Eurostat 13 months after the end of the reference period (2015 data were available at the end of January 2017, 2016 data were available at the end of January 2018, etc.). Consequently, in the documents of the Energy Union Report from November 2015, the latest data available cover the reference year 2013, i.e. almost 2 years after the end of the reference period or "year-2". This is not optimal for a proper monitoring process and it is therefore essential to find ways to reduce this 'gap'. This could be achieved in several different ways:

- by finding solutions for improving the timeliness and accuracy of the existing statistical annual data collections
- by developing suitable new statistical data collections
- by estimation/modelling techniques.

Timeliness, quality control and continuity of the monitoring process

The process of aggregating input data in order to produce relevant indicators is complex. It requires the collection of data, their validation and aggregation into indicators, all of this in a timely and accurate manner. The compilation and analysis in this process is time-consuming and efforts are needed to further automatize the process in order to efficiently provide high quality results. There is a strong need to have a database for ensuring the continuity of the

monitoring process over time. Therefore some developments are necessary in order to reduce the administrative burden of the process, to avoid potential human errors when processing data into indicators and to increase flexibility to cope with potential changes in the monitoring process or indicators.

Transparency of the monitoring process

The monitoring process should be done in a transparent manner. In other words, the indicators should be publicly available in an easily understandable visual presentation (including graphs and data tables) together with the calculation/estimation methodology.

The development of solutions

The European Commission (DG Energy and Eurostat) is developing short-term and long-term solutions. During 2016, DG Energy undertook an exploratory study to try to identify ways of having early estimates or earlier preliminary data on 2015 energy consumption. The future activities of DG Energy are planned to be complementary to Eurostat deliveries – whenever available, official statistics will be used as the primary source of information.

Eurostat response to policy needs

In March 2016 Eurostat initiated an intensive cooperation with the reporting countries in the Energy Statistics Working Group (ESWG) and launched the Energy Statistics Task Force on Early Estimates of Energy Balances. This cooperation resulted in the dissemination of preliminary data[2]of the 2017 supply side of the energy balance in July 2018, i.e. 7 months after the end of the reference period. For the years 2018, 2019 and 2020, the preliminary supply side data were published in June 2019, June 2020 and June 2021, respectively, i.e. 6 months after the end of reference period. The published data are to be considered preliminary and are revised upon the delivery of data as defined in Regulation (EC) No 1099/2008 on energy statistics. Further developments in the upcoming years are planned on delivering estimates of the key aggregates of the consumption side of energy balance. Together with the reporting countries, Eurostat will develop a methodology to produce early estimates of energy balances and will further analyse their accuracy. When the high quality of the results is confirmed, Eurostat will complement the dissemination of commodity balances with the early estimates of energy balances.

The methodology

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. However, for the purpose of presenting the EU aggregate, some missing values need to be estimated for a very limited number of reporting countries. These Eurostat estimates are not present on the data sheets with national data and were used only for the improvement of the accuracy of the EU aggregate.

The results

The commodity balances in the energy database as well as the MS Excel files below include all national results. These data should be considered as preliminary for the reference year 2020; these are not final data for policy evaluation or official monitoring of developments towards legally binding targets.

The limitations

The exercise on developing early estimates of energy balances is currently under development by Eurostat and the Energy Statistics Task Force on the Early Estimates of Energy Balances. It is yet to be seen if the preliminary data provided by reporting countries can be used only to create an accurate estimate of the supply side of the energy balance or also the estimate of the consumption side of the energy balance. Eurostat, in pursuing the approach of full transparency, publishes the collected data (the input into the project in the form of the so called "mini-questionnaires"). Thus the limitations as for any statistics under development should apply also for these data.

[2]While most countries provide preliminary data, some countries are able to provide final data and other countries can provide estimates.

Context

The European Green Deal and the Energy Union

Energy Union

The need for energy balances earlier.

The European Green Deal, adopted by the Commission on 11 December 2019, is an ambitious EU climate policy that aims for Europe to become the first climate-neutral continent by 2050. This requires a fundamental transformation of our energy system, which can only be achieved through a combination of coordinated action – legislative and non-legislative – at EU and national level. The Energy Union is the main energy policy instrument to deliver the transformations required to decarbonise our energy system. The Energy Union strategy has mutually reinforcing and closely interrelated dimensions designed to bring greater energy security, sustainability and competitiveness. The aim of the Energy Union is to provide a new integrated, cooperative and more effective framework for common EU energy and climate policies providing secure, affordable, competitive and sustainable energy to the European consumers – households and businesses. 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 the Energy Union and European Green Deal 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.

Other articles

- All articles on energy

Database

- Energy (nrg) , see:

Energy statistics - quantities (nrg_quant)

Energy statistics - quantities, annual data (nrg_quanta)

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)

Dedicated 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)

Legislation

- Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action
- Regulation (EC) No 1099/2008 on energy statistics

Visualisations

- Portal for energy data visualisations
- Energy indicators made easy
- Monthly energy data made easy
- Energy balances
- Sankey diagram - Visualise energy flows

External links

- EU Energy strategy
- EU energy statistical pocketbook and country datasheets
- Energy union indicators webtool

View this article online at http://ec.europa.eu/eurostat/statistics-explained/index.php/Energy_balances_-_early_estimates