Energistyrelsen

2023

Data, tables, statistics and maps
Energy Statistics 2023

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www.ens.dk/talogkort.
This website includes energy statistics that are far more detailed than the statistics published here. You can download the complete energy statistics, including tables and time series for energy consumption, emissions and calculation assumptions for the period 1972-2023. Descriptions of methods and checks are also available here. The data behind all figures in the PDF version and a PowerPoint of the figures are also available on the website.

Note

Briquettes

Wood briquettes have been included in firewood, households since 2013.

LNG

The distribution between freight and passenger transport follows the fuel (gas/diesel).

Electricity

Since 2021, the final electricity consumption is mainly based on data from the Danish TSO's (Energinet) Energy Data Service. There is however some uncertainty in the distribution among the Energy Statistics' Sectors.

Natural Gas

Data collection for the gas balance has changed from 2021. The collection unit is now kWh and not Nm3. Transition from 2020 to 2021 should be interpreted with caution.

Border trade

The Danish Ministry of Taxation provides the estimate for border trade of motor gasoline and diesel. Until 2021, the estimate was based on 2016 data. For 2022 and 2023 there are new estimates

Energy Statistics 2023

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Slight decline in energy consumption and more renewable energy in 2023

Observed energy consumption
Observed energy consumption fell by 2.2% to 667 PJ in 2023. This includes falls in coal, natural gas and oil consumption by 36.3%, 5.1% and 3.9% respectively, while renewable energy consumption increased by 3.0%.

Adjusted gross energy consumption
Adjusted gross energy consumption, which the Danish Energy Agency also estimates, is found by adjusting observed energy consumption for the fuel consumption linked to foreign trade in electricity, and by adjusting for climate variability relative to a normal weather year in terms of temperature. *Adjusted gross energy consumption* was 696 PJ in 2023, which is 0.6% below the level in 2022. Compared with 1990, adjusted gross energy consumption fell by 15.1%. Coal and coke account for the largest drop at 87.4%, while renewable energy, which began from a low starting point, accounted for the largest increase.

Energy consumption in individual sectors

Adjusted final energy consumption fell by 0.1% in 2023, which covers various developments in different sectors. Energy consumption in *agriculture and industry* was 4.5% lower in 2023 than in 2022, mainly due to lower energy consumption in manufacturing industries. Consumption in *commercial and public services* dropped by 0.6%. In contrast, the climate-adjusted final energy consumption *of households* and *the transport sector* increased by 2.0% and 1.6% respectively compared to the previous year. The increase in the transport sector was due to a 14.1% increase in energy consumption by aviation, which is approaching pre-Covid-19 levels. In contrast, energy consumption for road transport fell by 1.4%.

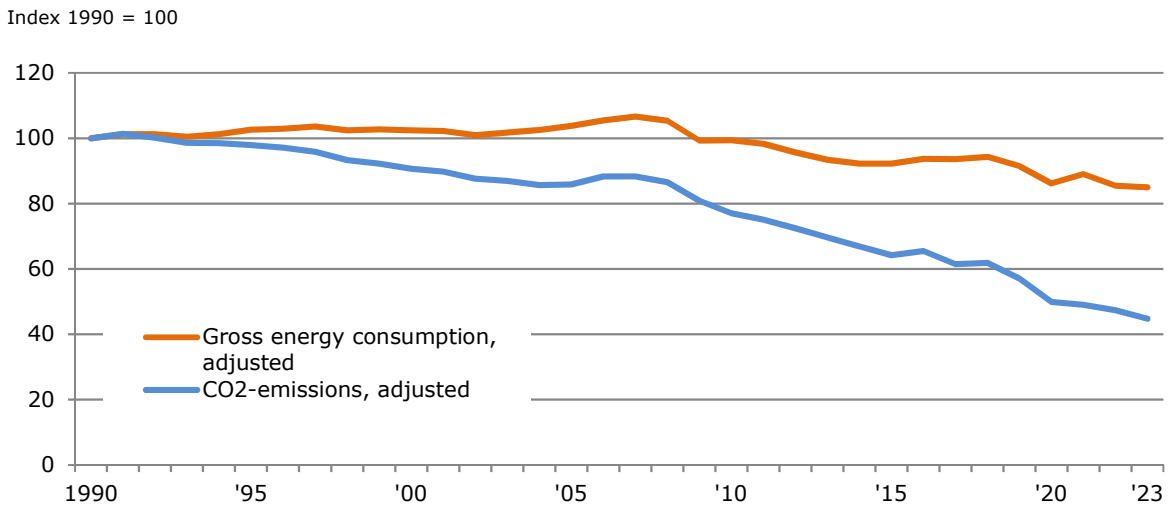
Consumption of renewable energy
Consumption of renewable energy increased from 290 PJ in 2022 to 298 PJ in 2023, which corresponds to an increase of 3.0%. The development is primarily attributable to an increase in consumption of solar energy of 4 PJ, biogas of 2.8 PJ, ambient heat of 2.6 PJ and consumption of fuel wood of 1.9 PJ. Consumption of wood pellets dropped by 3.2 PJ.

Renewables share in electricity supply
Production of electricity from renewables accounted for 82.1% of Danish domestic electricity supply in 2023 as opposed to 81.4% in 2022. Wind power contributed 53.8%, biomass 16.4%, and solar energy and biogas the remaining 2.5%.

Energy production
Danish production of crude oil and production of natural gas fell in 2023, by 8.3% and 8.4% respectively, compared with the year before. Renewable energy production however increased by 5.3% and now, as in 2022, accounts for more than half of total energy production.

CO_2 emissions from energy production
Observed CO_2 emissions from energy consumption were 25.8 million tonnes in 2023 and, thus, emissions fell by 2.1 million tonnes compared with 2022. Observed CO_2 emissions from energy consumption have fallen by 51.3% since 1990. Adjusted for fuel consumption linked to foreign trade in electricity and climate variability, CO_2 emissions fell by 5.4% to 27.3 million tonnes. Adjusted CO_2 emissions from energy consumption have fallen by 55.3% since 1990.

Greenhouse gas emissions 2023
A preliminary estimate of total observed Danish greenhouse gas emissions shows a drop of 44.7% from 1990 to 2022, while total adjusted greenhouse gas emissions have dropped by 48.4%.

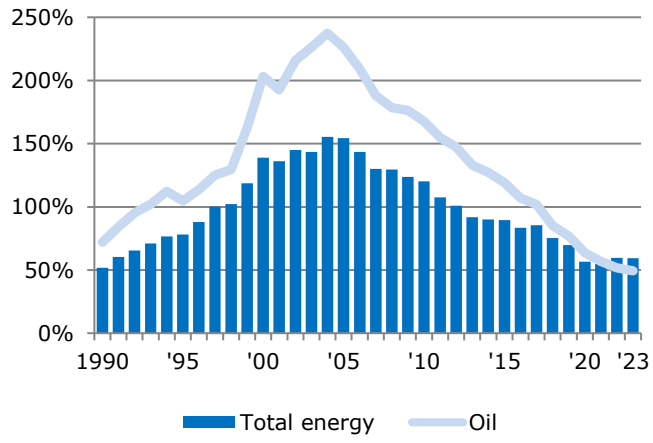


Energy balance 2023

Direct energy content [TJ]	Total	Crude oil and refinery feedstocks	Oil products	Natural gas	Coal and coke	Waste, non-renewable	Renewable energy	Electricity	District heating	Gas works gas
Total energy consumption	**666 926**	**317 183**	**-63 901**	**58 363**	**27 930**	**17 349**	**298 608**	**11 280**	**114**	**-**
Primary energy production	412 669	125 647	-	48 642	-	15 154	223 226	-	-	-
Recycling	1	-	1	-	-	-	-	-	-	-
Imports	915 875	205 251	216 986	310 513	30 555	2 195	78 871	71 391	114	-
Exports	-643 253	-12 893	-263 014	-303 054	- 231	-	-3 950	-60 111	-	-
Border trade	-8 045	-	-8 045	-	-	-	-	-	-	-
International marine bunkers	-22 910	-	-22 910	-	-	-	-	-	-	-
Stock changes	11 251	2 126	11 790	- 833	-2 426	-	594	-	-	-
Statistical differences, input from blending	1 340	-2 948	1 292	3 097	32	-	- 132	-	0	-
Energy sector	**-27 498**	**-317 183**	**307 737**	**-13 505**	**-**	**-**	**-**	**-4 540**	**- 7**	**-**
Extraction and gasification	-13 505	-	-	-13 505	-	-	-	-	-	-
Petroleum products	322 606	-	322 606	-	-	-	-	-	-	-
Used in refineries	-333 103	-317 183	-14 870	-	-	-	-	-1 043	- 7	-
Used in distribution	-3 497	-	-	-	-	-	-	-3 497	-	-
Transformation	**-20 089**	**-**	**-3 621**	**-10 393**	**-24 355**	**-15 982**	**-209 829**	**109 690**	**133 893**	**508**
Large-scale units	-14 614	-	- 696	-1 285	-24 355	-	-55 441	25 513	41 650	-
Wind turbines and hydropower plants	-	-	-	-	-	-	-69 886	69 886	-	-
Small-scale units	-1 693	-	- 50	-4 016	-	-2 288	-18 504	6 506	16 659	-
District heating units	- 160	-	- 746	-4 419	-	- 230	-31 258	-8 729	45 221	-
Autoproducers	163	-	-2 129	- 379	-	-13 464	-34 439	19 534	31 041	-
Gas works	- 87	-	- 0	- 295	-	-	-300	-	-	508
Own use	-3 698	-	-	-	-	-	-	-3 020	- 678	-
Distribution losses etc.	**-33 880**	-	**-**	**- 72**	**-**	**-**	- 42	**-6 944**	**-26 801**	**- 20**
Final energy consumption	**-585 458**	**-**	**-240 215**	**-34 393**	**-3 575**	**-1 368**	**-88 737**	**-109 486**	**-107 198**	**- 487**
Non-energy use	-7 947	-	-7 947	-	-	-	-	-	-	-
Transport	-201 296	-	-188 226	- 304	-	-	-9 238	-3 528	-	-
Agriculture and industry	-123 554	-	-36 417	-16 729	-3 575	-1 154	-23 154	-36 872	-5 467	- 187
Commercial and public services	-78 760	-	-1 379	-5 792	-	- 214	-5 212	-33 979	-32 161	- 24
Households	-173 901	-	-6 245	-11 568	-	-	-51 133	-35 108	-69 570	- 276

Note: The energy balance provides an overview of supply (production, imports and exports), transformation and consumption of energy. A more detailed statement of input (black figures) and output (red figures) of energy products is listed in the table "Energy supply and consumption" table on pages 18-19.
**) LNG has been included with natural gas.*

Degree of self-sufficiency



The degree of self-sufficiency is calculated as primary energy production in relation to climate-adjusted gross energy consumption. Self-sufficiency in oil is calculated as crude oil production in relation to the share of gross energy consumption that is represented by oil.

For the first time, in 1997, Denmark produced more energy than it consumed. Self-sufficiency was 52% in 1990 and peaked at 155% in 2004. In 2013, for the first time since 1996, Denmark was again a net importer of energy. In 2023, self-sufficiency was 59% as opposed to 60% in 2022.

From 1993 to 2017 Denmark was more than self-sufficient in oil. Oil self-sufficiency peaked in 2004 but has since fallen and was at 49% in 2023.

Production of primary energy

Direct energy content [TJ]	1990	2000	2005	2010	2015	2020	2022	2023	Change '90-'23
Total production	**424 361**	**1 164 526**	**1 311 683**	**978 614**	**676 496**	**398 420**	**417 573**	**412 669**	**-2,8%**
Crude oil	255 959	764 526	796 224	522 733	330 662	151 369	136 949	125 647	**-50,9%**
Natural gas	115 967	310 307	392 868	307 425	173 510	49 863	53 125	48 642	**-58,1%**
Renewable energy	45 461	76 017	105 585	131 309	156 454	181 199	211 941	223 226	**391%**
Waste, non-renewable	6 975	13 676	17 006	17 148	15 870	15 989	15 558	15 154	**117%**

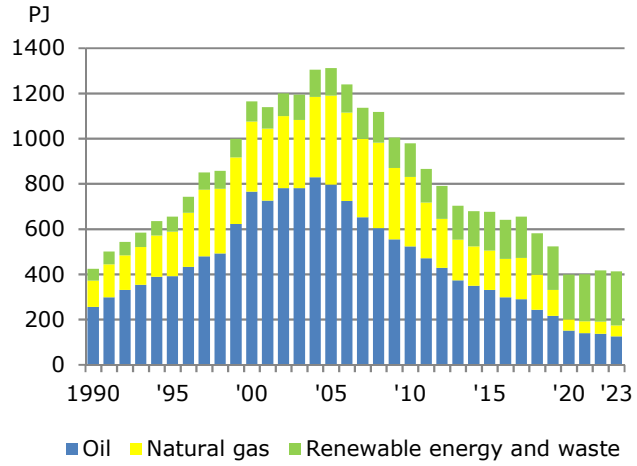
Note: Data for the gas balances has been adjusted from 2021 and onwards. Developments from 2020 to 2021 should therefore be interpreted with some caution.

Production and consumption of renewable energy

Direct energy content [TJ]	1990	2000	2005	2010	2015	2020	2022	2023	Change '90-'23
Production of renewable energy	**45 461**	**76 017**	**105 585**	**131 309**	**156 454**	**181 199**	**211 941**	**223 226**	**391%**
Solar	100	335	419	657	3 713	7 522	11 360	15 331	**15262%**
Wind	2 197	15 268	23 810	28 114	50 879	58 789	68 480	69 815	**3078%**
Hydro	101	109	81	74	65	61	54	71	**-29.9%**
Geothermal	48	58	172	212	140	46	82	70	**46.7%**
Biomass	39 996	54 040	73 542	92 271	87 308	79 861	83 800	84 401	**111%**
- Straw	12 481	12 220	18 485	23 326	19 789	18 934	21 189	21 750	**74.3%**
- Wood chips	1 724	2 744	6 082	11 352	14 744	18 660	20 686	20 876	**1111%**
- Firewood	8 757	12 432	17 667	23 779	21 943	13 686	12 655	14 091	**60.9%**
- Wood pellets	1 575	2 984	3 262	2 407	2 697	2 027	2 520	2 127	**35.1%**
- Wood waste	6 191	6 895	6 500	8 500	8 102	6 934	7 646	6 877	**11.1%**
- Waste, renewable	8 524	16 715	20 786	20 959	19 396	19 542	19 016	18 522	**117%**
- Biodiesel *)	..	..	..	..	..	..	..	..	
- Biooil	744	49	761	1 949	636	79	89	159	**-78.7%**
Biogas	752	2 912	3 830	4 337	6 285	21 152	28 948	31 739	**4121%**
Heat pumps	2 267	3 296	3 731	5 643	8 064	13 768	19 217	21 799	**861%**
Imports of renewable energy	**-**	**2 466**	**18 918**	**39 484**	**52 462**	**81 735**	**83 561**	**78 871**	•
Firewood	-	-	1 963	2 939	2 547	1 521	1 100	1 600	•
Wood chips	-	305	1 521	4 865	2 808	17 928	19 637	20 009	•
Wood pellets	-	2 161	12 802	27 676	34 243	45 595	44 835	42 009	•
Waste, renewable **)	-	-	-	-	2 559	3 341	2 683	2 683	•
Bioethanol	-	-	-	1 118	1 818	3 437	4 117	4 254	•
Biodiesel	-	-	2 632	2 886	8 485	9 913	11 188	8 316	•
Exports of renewable energy	**-**	**-**	**2 632**	**2 846**	**1 084**	**2 385**	**5 822**	**3 950**	•
Biodiesel	-	-	2 632	2 846	1 084	2 385	5 822	3 950	•
Stock changes, stat. diffs. etc.	**-**	**22**	**6**	**0**	**- 341**	**- 1 550**	**17**	**161**	•
Consumption of renewable energy	**45 461**	**78 505**	**121 877**	**167 947**	**207 491**	**259 000**	**289 697**	**298 308**	**556%**

**) Production of biodiesel has been included in imports of biodiesel.*
***) Imports of waste for 2023 have been based on assessment as no source data was available at the time of publication of this report.*

Primary energy production



Primary energy refers to crude oil, natural gas, renewable energy (energy from hydro, solar, wind, biogas and biomass, including renewable waste) and non-renewable waste.

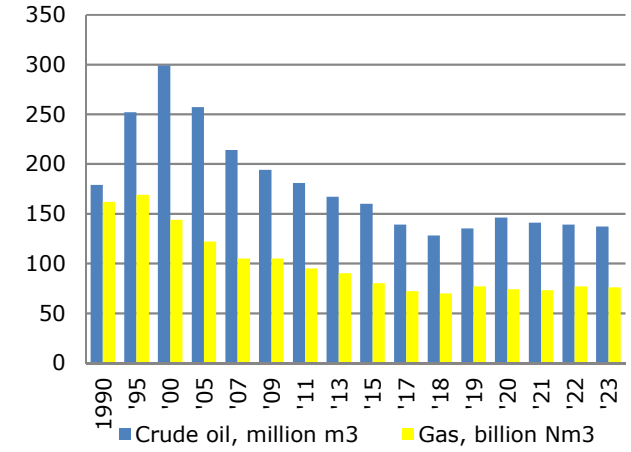
Primary energy production includes crude oil, natural gas, renewables (such as hydro, solar, wind, biogas and biomas) and non-renewable waste.

Energy production in 2023 was 413 PJ, corresponding to a decrease of 1.2% compared with 2022. Production of crude oil and natural gas fell 8.3% and 8.4% respectively, while production of renewable energy increased by 5.3%. In 2023, renewable energy accounted for 54.1% of the total primary energy production.

Production of crude oil and natural gas increased up to 2004 and 2005, respectively, after which production has been falling. Total primary energy production peaked at 1,312 PJ in 2005.

The reduction in production of crude oil and natural gas in 2020-2023 is due to the temporary shutdown of the Tyra field since 2019 in order to redevelop the field.

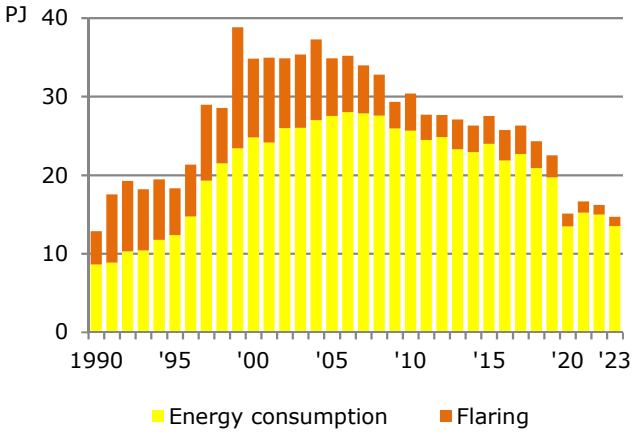
Oil and gas reserves / resources



Up to the end of 2009, crude oil and natural gas reserves were calculated as the volumes that were financially feasible to recover from known oil fields and oil finds using known technologies. At the end of 2009, the Danish Energy Agency changed the classification system, introducing the category *contingent resources*. For 2009 to 2023, estimates include the sum of reserves and contingent resources, so that comparison with earlier statements is possible. At the end of 2023, the sum of reserves and contingent resources was calculated at 137 million m^3 oil and 76 billion Nm^3 gas. From 2011 to 2017, Danish oil and gas reserves were estimated every second year.

Source: Resource assessment and forecasts, September 2024. Published by the Danish Energy AgencySource:

Natural gas consumption and flaring on platforms in the North Sea

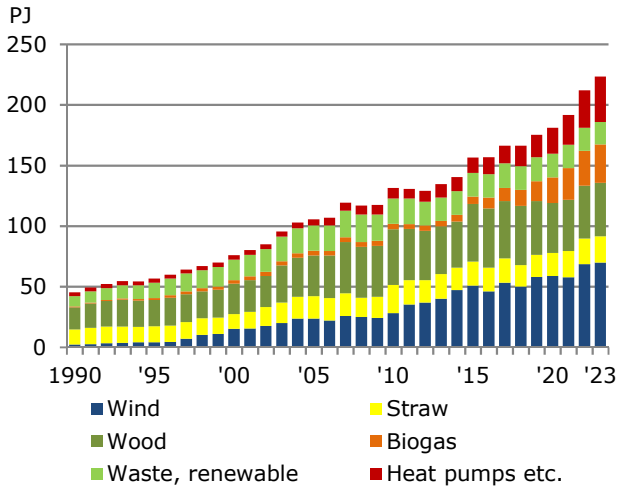


Natural gas is used in the extraction of crude oil and natural gas, for production, transport and for offloading. In 2023, natural gas consumption at platforms amounted to 13.5 PJ, corresponding to 23.2% of total Danish natural gas consumption. In 2022, consumption amounted to 15 PJ.

Production in the North Sea fields also involves flaring (burning) natural gas. Flaring is not included in energy consumption. However, flaring is included in Denmark's international GHG inventory report and is covered by the EU ETS. Flaring of natural gas was estimated at 1.2 PJ in 2023, the same as in 2022.

Note: The method for calculating energy consumption in the North Sea was revised in 2021 and 2022 compared with previous publications to reflect a more accurate and updated calculation of energy consumption.

Production of renewable energy by energy product



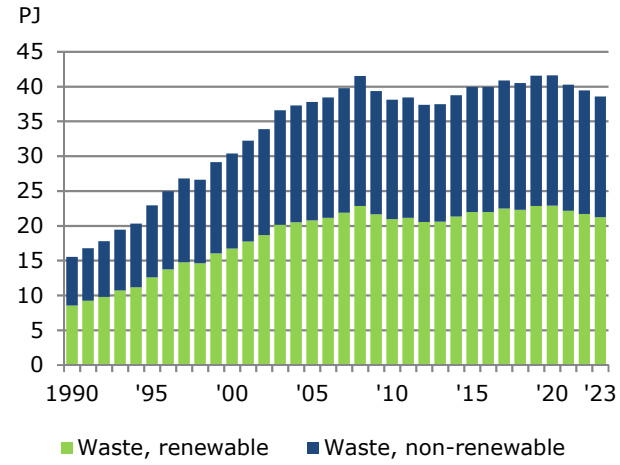
Renewable energy includes wind power, wood, straw, biogas, renewable waste and other renewable sources (solar energy, hydropower, geothermal energy and ambient heat for heat pumps).

Production of renewable energy was 223.2 PJ in 2023, which corresponds to an increase of 5.3% compared with 2022. Across the period 1990-2023, renewable energy production increased by 391%.

Production of wind power was 69.8 PJ in 2023, corresponding to an increase of 2.0% relative to 2022.

Production of straw, wood products and renewable waste was 21.7 PJ, 44 PJ and 18.5 PJ, respectively, in 2023. Production of biogas was 31.7 PJ in 2023, corresponding to an increase of 9.6% relative to 2022. Production of solar energy and ambient heat for heat pumps increased by 35% and 13.4%, respectively, relative to 2022.

Consumption of waste



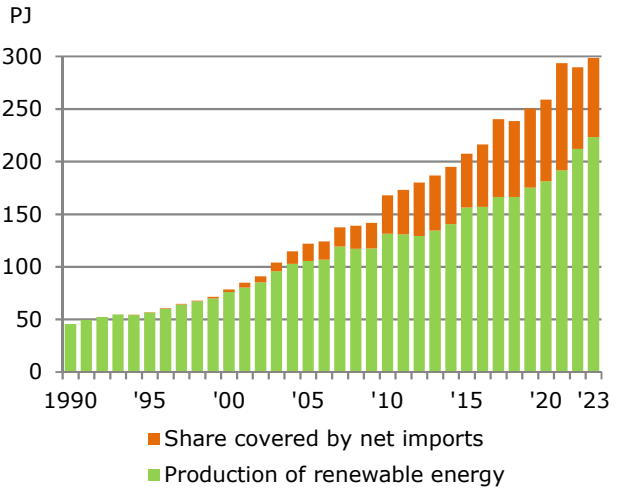
Consumption of waste for the production of electricity and district heating has increased significantly over time. However, total waste consumption fell by 2.3% from 2022 to 2023. Waste consumption for energy purposes has increased by 149% since 1990.

In statistics for energy and CO_2 emissions, waste is analysed by two components: Renewable waste and non-renewable waste. According to international conventions, renewable waste is included in renewable energy.

Annual Danish energy statistics assume that 55% of waste consumed is renewable waste. This means that waste accounts for a considerable proportion of the total consumption of renewable energy.

Note: Imports of waste for 2023 (which are included in the statement of waste consumption) are estimated as no source data was available at the time of publication.

Consumption of renewable energy



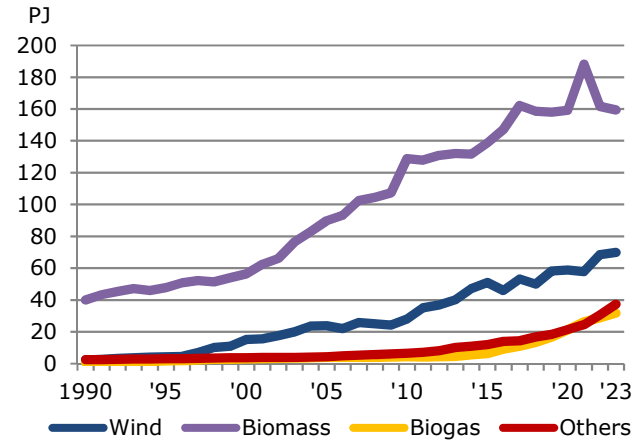
Renewable energy consumption has increased dramatically since 1990. The increased demand has been met partly through increased domestic production and partly through net imports of renewable energy from biomass and biofuels.

In 2023, consumption of renewable energy was 298.3 PJ, which is 3.0% more than the year before. Observed consumption of renewable energy was 45.5 PJ in 1990.

In 2023, net imports (including stock changes, etc.) of renewable energy were 75.1 PJ, which is 3.4% less than the year before.

Note: Imports of waste for 2023 (which are included in the statement of waste consumption) are estimated as no source data was available at the time of publication.

Renewable energy - consumption by energy product



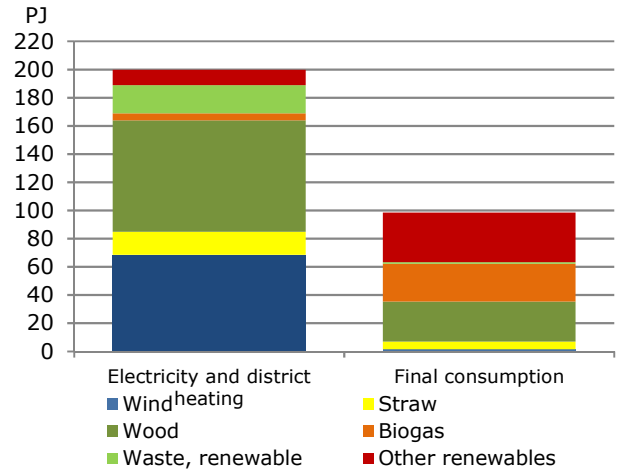
The figure shows renewable energy consumption by the products wind, biomass (including bioliquids), biogas and others, which includes solar energy and ambient heat.

Consumption of biomass has almost tripled since 2000, primarily due to increased consumption of wood chips and wood pellets.

After the high consumption in 2021 of 188 PJ, biomass consumption in 2023 fell to 159.3 PJ, a decrease of 1.4% compared with 2022. Consumption of firewood, straw and wood chips increased in 2023, while there was a decrease in consumption of wood pellets, wood waste and waste. Consumption of wind power increased from 68.5 PJ to 69.8 PJ.

Biogas consumption increased by 9.6% in 2023 compared to 2022, while solar energy and ambient heat (heat pumps) consumption rose by 35% and 13.4% respectively.

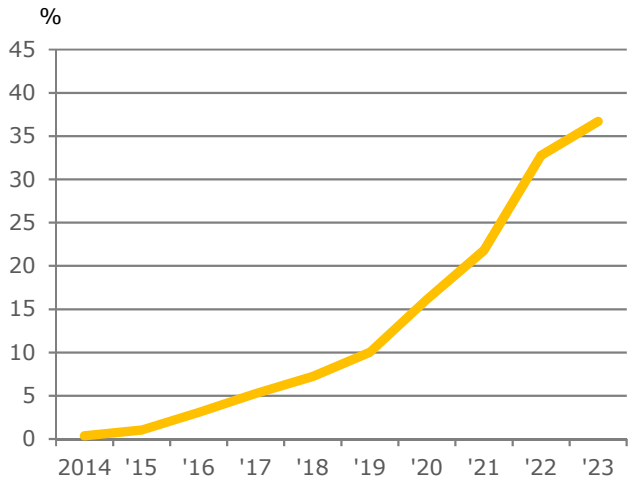
Use of renewable energy in 2023



Total consumption of renewable energy (production plus net imports) was 298.1 PJ in 2023, of which 209.5 PJ was used in the production of electricity and district heating. Wind power, wood and renewable waste were predominant in electricity and district heating production, accounting for 69.8 PJ, 75.7 PJ and 19.5 PJ, respectively. Consumption of straw and biogas accounted for 16.8 PJ and 10.4 PJ, respectively. Solar energy is the largest component of other renewables and contributed with 14.7 PJ.

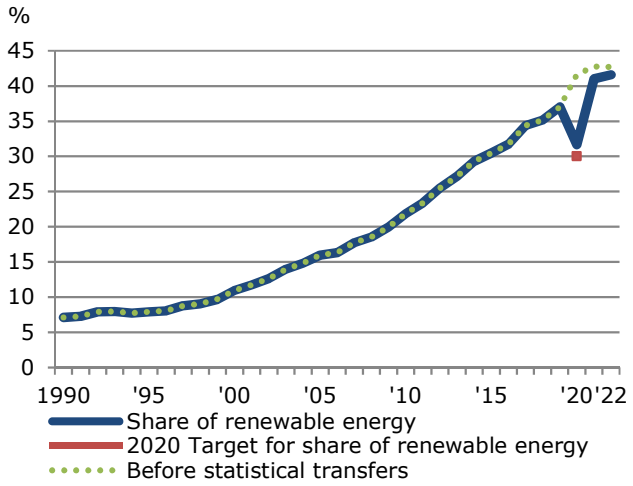
In 2023, renewable energy in final energy consumption amounted to 88.6 PJ. Wood, bio natural gas and ambient heat, which are included in the "other renewables" category, made the three largest contributions to renewable energy in final energy consumption. Furthermore, it was used for heating and processes in agriculture and industry, in commercial and public services, as well as for transport.

Biogas share of mains gas



Biogas production has increased significantly in recent years and was 31.7 PJ in 2023. This is an increase of 9.6% compared to 2022 and 632% compared to 2010.
An increasing amount of biogas has been upgraded and injected into the gas grid. In 2023, 82% of the total biogas production was upgraded and injected into the gas grid. In the energy statistics, all bio natural gas injected to the gas grid in a given year is considered consumed during the same period.
All the gas in the Danish gas grid used to be natural gas, but in 2023 bio natural gas accounted for 36.7% of grid gas. The share is calculated as bio natural gas injected into the gas grid in relation to total domestic consumption of grid gas.

Share of renewable energy according to the EU method of calculation

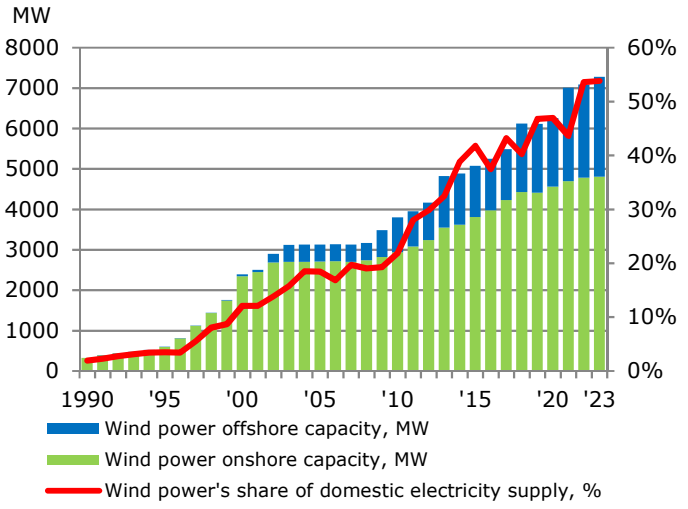


The EU Directive on renewable energy prescribes a different method for calculating the share of renewable energy based on gross final energy consumption expressed as energy consumption by end-users, excluding border trade and consumption for non-energy purposes, while distribution losses are added to the gross final energy consumption. In the EU method, renewable energy is defined as final consumption of renewables as well as consumption of electricity and district heating based on renewables. Furthermore, there are certain rules for the inclusion of bioenergy.

Denmark was obligated to achieve a renewable energy share of 30% by 2020. Denmark exceeded the goal and decided to transfer shares to countries with a deficit regarding achieving the goal. In 2021 and 2022 Denmark also transferred shares to other countries. The share for 2023 is, as of 31 October 2023, still not available.

Sources: 2004-2022 Eurostat. 1990-2003 Danish Energy Agency calculations.

Wind power capacity and wind power's share of domestic electricity supply

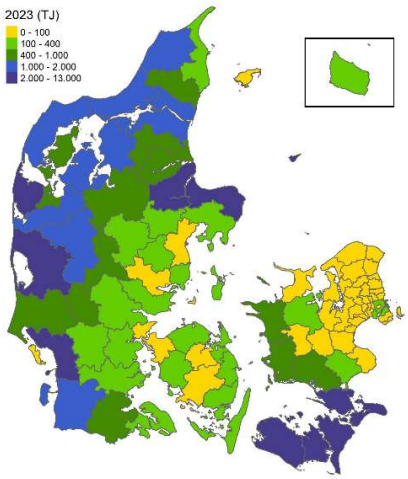


In 2023, wind power production accounted for 53.8% of domestic electricity supply, compared to 1.9% in 1990.

Wind power capacity was 7,277 MW in 2023, as opposed to 7,084 MW the year before. In 2023 onshore and offshore wind turbine capacities were 4,808 MW and 2,469 MW, respectively. In 1990 there were only onshore wind turbines and they accounted for a wind power capacity of 326 MW.

Trends in wind power capacity and production do not always correspond, as annual wind power generation is highly dependent on wind conditions, which can be quite variable in Denmark. Furthermore, when capacity goes up, this is not reflected fully in the production until in the following year, as production from new capacity is limited to the part of the year in which the installations are in operation.

Wind power onshore by municipality



Total wind power production was 70 PJ in 2023. Of this, onshore installations accounted for 55.9% and offshore installations accounted for 44.1%.

Wind power generation from onshore installations varies across Denmark. Municipalities with west-facing coastlines have many wind turbines, and the favourable wind conditions in these areas contribute to high production from these installations.

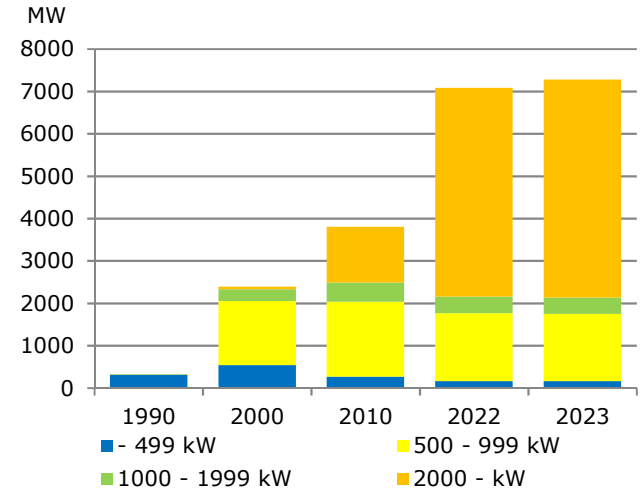
In 2023, turbines in the top ten wind-power-producing municipalities were therefore responsible for a total production of 21 PJ, corresponding to 53.7% of total wind power production from onshore installations.

Wind power - number of turbines and capacity by size

	1990	2000			2022			2023		
	Onshore	Onshore	Offshore	Total	Onshore	Offshore	Total	Onshore	Offshore	Total
Total no. of turbines	**2 666**	**6 194**	**41**	**6 235**	**5641**	**630**	**6271**	**5631**	**648**	**6279**
- 499 kW	2 656	3 652	11	3 663	2152	-	2152	2160	-	2160
500 - 999 kW	8	2 283	10	2 293	2346	10	2356	2318	10	2328
1 000 - 1 999 kW	2	251	-	251	316	-	316	316	-	316
2 000 - kW	-	8	20	28	827	620	1447	837	628	1475
Total wind power capacity [MW]	**326**	**2 340**	**50**	**2 390**	**4778**	**2306**	**7084**	**4808**	**2469**	**7277**
- 499 kW	317	533	5	538	164	-	164	162	-	162
500 - 999 kW	6	1 512	5	1 517	1600	5	1605	1580	5	1585
1 000 - 1 999 kW	3	279	-	279	391	-	391	391	-	391
2 000 - kW	-	16	40	56	2623	2301	4924	2675	2464	5139

Note: The first offshore wind turbines were established in 1991.

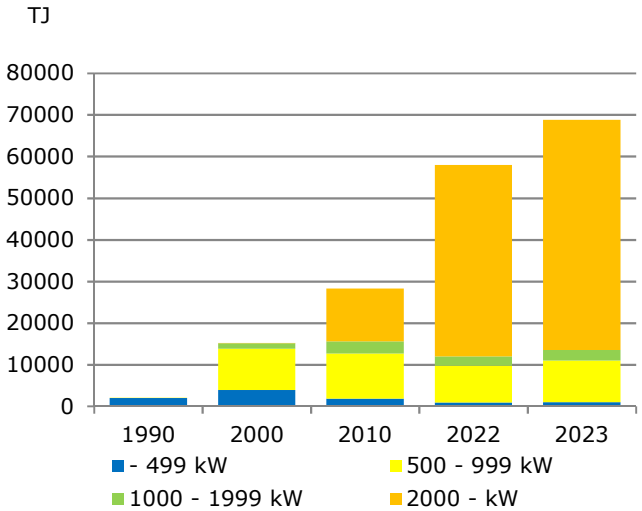
Wind power capacity by size of turbine



The total number of wind turbines increased by 8 turbines from 2022 to 2023, and the total wind power capacity increased by 193 MW.

For years, the trend has been toward fewer but larger turbines. Since 2000, the number of small wind turbines of up to 499 kW has been reduced by 1,503, and the number of large turbines of more than 2 MW has increased by 1,447.

Wind power production by size of turbine



The development toward larger turbines is even more evident in terms of wind power production. From 2000 to 2023, production from turbines up to 499 kW decreased by 2,915 TJ, while production from turbines of more than 2 MW increased by 56,598 TJ. However, from 2022 to 2023, capacity increased by 2.7%, while electricity production increased by 1.8%.

Turbines above 2 MW accounted for 70.6% of installed wind power capacity and were responsible for 80.9% of total energy from wind turbines in 2023.

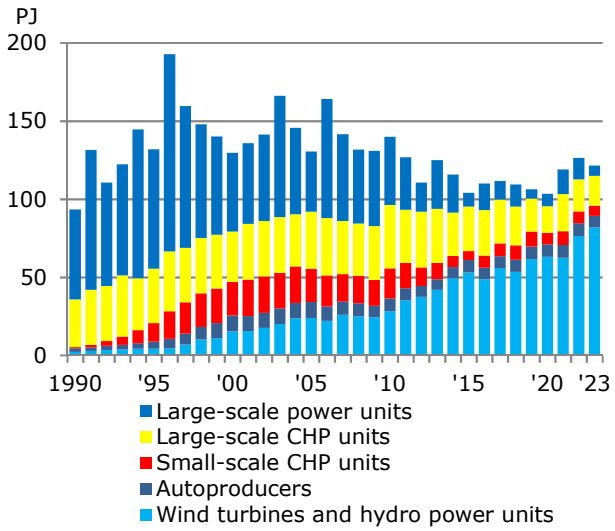
Similarly, in 2023 wind turbines with a capacity up to 499 MW accounted for only 1.4% of the total production. Wind turbines with a capacity up to 499 kW accounted for 22.5% in 2000.

Electricity production by type of producer

Direct energy content [TJ]	1990	2000	2005	2010	2015	2020	2022	2023	Change '90 - '23
Total electricity production(gross)	**93 518**	**129 776**	**130 469**	**139 906**	**104 164**	**103 423**	**126 446**	**121 439**	**29.9%**
Large-scale power units	7 494	8 871	49	336	46	63	118	20	-100%
Large-scale CHP units	80 639	73 809	74 932	83 940	37 375	24 985	34 155	25 493	-68%
- of which electricity production	50 157	41 584	38 402	43 221	8 936	7 913	13 690	6 474	-87%
Small-scale CHP units	988	21 547	21 254	19 216	5 765	7 217	7 550	6 506	559%
Autoproducers	2 099	10 168	10 336	8 203	7 858	8 058	8 159	7 426	254%
- Electricity production [1]	-	9	7	6	3	5	6	5	•
- CHP [1]	2 099	10 158	10 328	8 197	7 855	8 053	8 154	7 421	254%
Wind turbines [1]	2 197	15 268	23 810	28 114	50 879	58 789	68 480	69 815	3078%
Hydropower units [1]	101	109	81	74	65	61	54	71	-30%
Photovoltaics [1]	-	4	8	22	2 175	4 250	7 929	12 108	•
Own use in production	**-6 118**	**-5 776**	**-6 599**	**-7 159**	**-3 670**	**-3 070**	**-3 702**	**-3 020**	**-50.6%**
Large-scale power units	- 590	- 312	- 2	- 17	- 0	- 3	- 7	- 1	-100%
Large-scale CHP units	- 5 509	- 4 993	- 6 033	- 6 602	- 3 303	- 2 588	- 3 242	- 2 551	-54%
Small-scale CHP units	- 19	- 472	- 564	- 541	- 368	- 479	- 453	- 468	2362%
Total electricity production (net)	**87 400**	**123 999**	**123 870**	**132 747**	**100 493**	**100 353**	**122 745**	**118 419**	**35.5%**
Net imports of electricity	25 373	2 394	4 932	- 4 086	21 282	24 777	4 906	11 280	-56%
Domestic electricity supply	**112 773**	**126 393**	**128 802**	**128 661**	**121 775**	**125 130**	**127 650**	**129 699**	**15.0%**
Transformation consumption	-	- 1	-	- 110	- 1 073	- 3 240	- 4 785	- 8 729	•
Distribution losses etc. [2]	- 8 886	- 7 650	- 5 573	- 9 482	- 6 839	- 8 734	- 7 177	- 6 944	-22%
Domestic electricity consumption	**103 887**	**118 742**	**123 228**	**119 068**	**113 863**	**113 156**	**115 689**	**114 026**	**9.8%**
Consumption in the energy sector	- 1 748	- 1 893	- 2 761	- 3 445	- 2 796	- 4 227	- 4 761	- 4 540	160%
Final electricity consumption	**102 139**	**116 849**	**120 467**	**115 623**	**111 067**	**108 929**	**110 928**	**109 486**	**7.2%**

[1] Gross and net production are by definition identical. [2] Determined as the difference between supply and consumption.

Electricity production by type of producer



Electricity is generated by wind turbines, large-scale power units, by autoproducers (i.e. producers, whose main product is not energy) and by small-scale CHP units.

In 2023, electricity production was 121.4 PJ, which is a reduction of 4% compared with 2022. The fall is primarily due to lower production on large-scale units.

Of the total electricity production of 121.4 PJ, 82 PJ (67.5%) was generated from wind, solar and hydro power units. Large-scale power units generate electricity, partly as separate electricity production, and partly as combined electricity and heat production. 25.5 PJ (21.0%) was from large-scale power units – of this 6.5 PJ (5.4%) as separate production. Separate electricity production varies greatly from year to year due to fluctuations in foreign trade in electricity. Electricity production from small-scale units and autoproducers was 6.5 PJ (5.4%) and 7.4 PJ (6.1%), respectively.

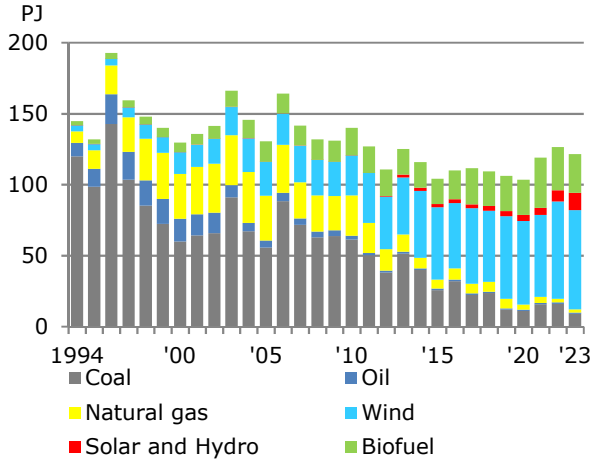
Electricity production by fuel

Direct energy content [TJ]	1994	2000	2005	2010	2015	2020	2022	2023	Change '94 - '23
Total electricity production (gross)	**144 707**	**129 776**	**130 469**	**139 906**	**104 164**	**103 423**	**126 446**	**121 439**	**-16.1%**
Oil	9 547	15 964	4 933	2 783	1 122	947	1 195	861	-91.0%
- of which orimulsion	-	13 467	-	-	-	-	-	-	•
Natural gas	8 206	31 589	31 606	28 464	6 499	3 576	2 456	2 280	-72.2%
Coal	119 844	60 022	55 665	61 222	25 596	11 022	15 945	9 090	-92.4%
Surplus heat	-	139	-	-	-	-	-	-	•
Waste, non-renewable	836	2 002	2 938	2 689	2 706	2 783	3 005	2 721	226%
Renewable energy	**6 275**	**20 060**	**35 326**	**44 749**	**68 242**	**85 096**	**103 845**	**106 488**	**1597%**
Solar	-	4	8	22	2 175	4 250	7 929	12 108	•
Wind	4 093	15 268	23 810	28 114	50 879	58 789	68 480	69 815	1606%
Hydro	117	109	81	74	65	61	54	71	-39.8%
Biomass	1 743	3 928	10 410	15 253	13 396	18 887	24 116	21 295	1121%
- Straw	293	654	3 088	3 968	2 080	1 771	2 565	2 371	710%
- Wood	429	828	3 730	7 998	7 987	13 714	17 878	15 599	3532%
- Biooil	-	0	1	1	22	-	-	-	•
- Waste, renewable	1 021	2 447	3 591	3 286	3 307	3 401	3 673	3 325	226%
Biogas	321	751	1 017	1 285	1 726	3 109	3 266	3 199	897%

Electricity from renewable energy: Share of domestic electricity supply

[%]	1994	2000	2005	2010	2015	2020	2022	2023	Change '94 - '23
Renewable energy	**5,3**	**15,9**	**27,4**	**34,8**	**56,0**	**68,0**	**81,4**	**82,1**	**1457%**
Solar	0,0	0,0	0,0	0,0	1,8	3,4	6,2	9,3	•
Wind	3,4	12,1	18,5	21,9	41,8	47,0	53,6	53,8	1464%
Hydro	0,1	0,1	0,1	0,1	0,1	0,0	0,0	0,1	-45%
Biomass	1,5	3,1	8,1	11,9	11,0	15,1	18,9	16,4	1020%
- Straw	0,2	0,5	2,4	3,1	1,7	1,4	2,0	1,8	643%
- Wood	0,4	0,7	2,9	6,2	6,6	11,0	14,0	12,0	3231%
- Biooil	-	0	0	0	0	-	-	-	•
- Waste, renewable	0,9	1,9	2,8	2,6	2,7	2,7	2,9	2,6	199%
Biogas	0,3	0,6	0,8	1,0	1,4	2,5	2,6	2,5	815%

Electricity production by fuel



In 2023, 69.8 PJ (57.5%) of total electricity production was generated by wind turbines. Solar energy and biofuel accounted for 12.2 PJ (10%), and 27.2 PJ (22.4%), respectively.

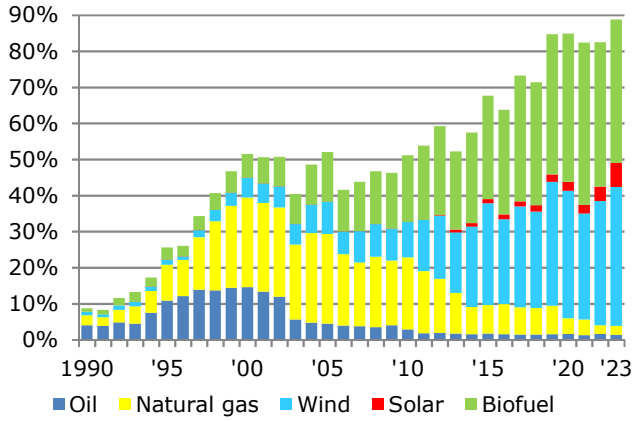
Electricity production based on renewables therefore accounted for 106.5 PJ or 87.7% of total electricity production in 2023, corresponding to an increase of 5.6 percentage points from 2022.

Coal-based electricity production contributed 9.1 PJ (7.5%), while natural gas accounted for 2.3 PJ (1.9%), oil 0.9 PJ (0.7%) and non-renewable waste 2.7 PJ (2.2%) of total electricity production.

Fuel consumption for electricity production

Direct energy content [TJ]	1990	2000	2005	2010	2015	2020	2022	2023	Change '90 - '23
Total fuel consumption	**227 001**	**276 974**	**265 330**	**286 006**	**180 654**	**166 533**	**198 673**	**181 122**	**-20.2%**
Oil	9 215	40 356	11 867	8 087	3 110	2 650	3 301	2 515	-72.7%
- of which orimulsion	-	33 503	-	-	-	-	-	-	•
Natural gas	6 181	68 868	65 912	57 229	14 302	7 292	4 656	4 415	-28.6%
Coal	207 173	134 205	127 119	139 714	58 410	25 127	34 848	20 196	-90.3%
Waste, non-renewable	262	5 294	7 650	9 085	9 412	8 885	9 432	8 516	3152%
Renewable energy	**4 170**	**28 252**	**52 784**	**71 891**	**95 420**	**122 579**	**146 436**	**145 481**	**3389%**
Solar	-	4	8	22	2 175	4 250	7 929	12 108	•
Wind	2 197	15 268	23 810	28 114	50 879	58 789	68 480	69 815	3078%
Hydro	101	109	81	74	65	61	54	71	-29.9%
Biomass	1 428	11 009	26 470	40 808	38 665	53 340	63 602	57 288	3911%
- Straw	363	2 021	7 715	10 213	5 807	4 963	6 418	6 206	1610%
- Wood	745	2 518	9 405	19 492	21 248	37 518	45 657	40 674	5360%
- Biooil	-	0	0	-	107	-	-	-	•
- Waste, renewable	320	6 470	9 350	11 104	11 503	10 860	11 528	10 408	3152%
Biogas	444	1 861	2 415	2 872	3 635	6 139	6 371	6 199	1296%

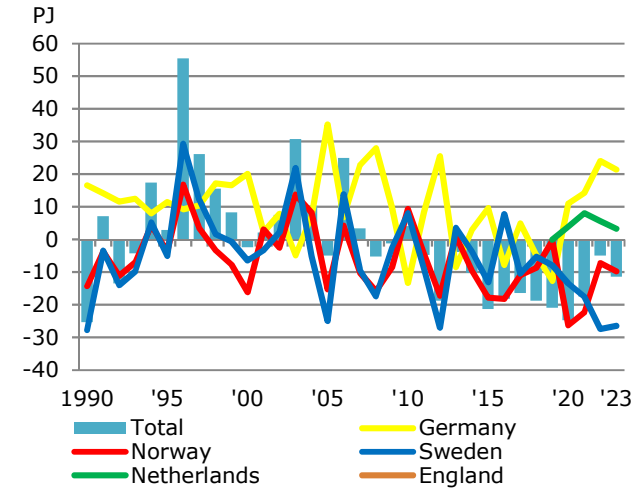
Other fuels than coal for electricity production



In the early 1990s, coal was the dominant fuel used in the production of electricity. The picture is very different today with wind power, solar energy, biomass, waste, natural gas and oil together covering 88.8% of fuel consumption in electricity production.

The share contributed by other fuels than coal increases up through the 1990s, initially driven by increased use of natural gas and later by increased use of renewable energy, including especially wind and biofuels. In 2023 the share of biofuels in electricity production where 39.8%, wind 38.5% and solar energy 6.7%, whereas natural gas and oil contributed with 2.4% and 1.4%, respectively.

Net exports of electricity by country

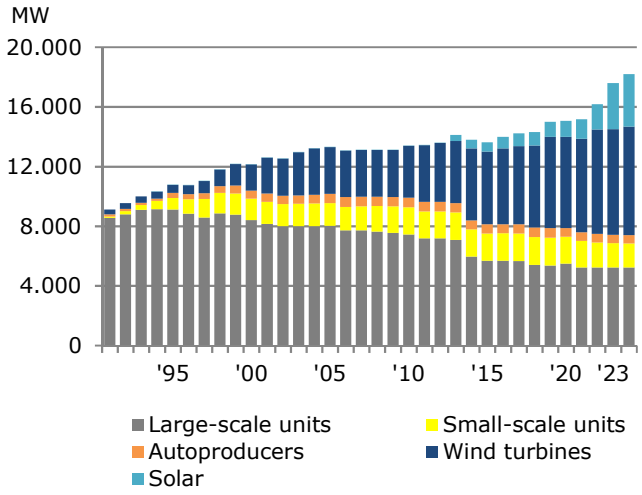


Danish foreign trade in electricity varies considerably from year to year. Foreign trade is strongly affected by price trends on the Nordic electricity exchange, Nordpool, which, in turn, is significantly influenced by varying precipitation patterns in Norway and Sweden, where electricity production is dominated by hydropower.
The significant deployment of solar and wind power in recent years, along with fluctuating prices on natural gas and emissions allowances, are affecting prices in electricity markets and, thus, are affecting trends in electricity exchange.
In 2023, Denmark had overall net imports of electricity of 11.3 PJ. This was the result of net imports from Norway and Sweden of 9.7 PJ and 26.5 PJ and net exports to Germany and the Netherlands of 21.4 PJ and 3.4 PJ, respectively. In 2023, a link to the UK was also established, and net exports of 0.2 PJ were recorded.

Electricity capacity, end of year

[MW]	1994	2000	2005	2010	2015	2020	2022	2023	Change '94 - '23
Total	**10 768**	**12 598**	**13 088**	**13 450**	**13 995**	**15 164**	**17 588**	**18 204**	**69.1%**
Large-scale units	9 126	8 160	7 710	7 175	5 690	5 231	5 228	5 228	-42.7%
- Electricity	2 186	1 429	834	840	839	815	812	812	-62.9%
- CHP	6 940	6 731	6 877	6 335	4 850	4 415	4 415	4 415	-36.4%
Small-scale units	773	1 462	1 579	1 819	1 836	1 776	1 646	1 620	110%
Autoproducers	339	574	657	638	604	587	555	543	60.0%
Solar	0	1	3	7	782	1 304	3 070	3 529	•
Wind	522	2 390	3 128	3 802	5 077	6 259	7 084	7 277	1295%
Hydro	8	10	11	9	7	7	7	7	-14.6%

Electricity capacity

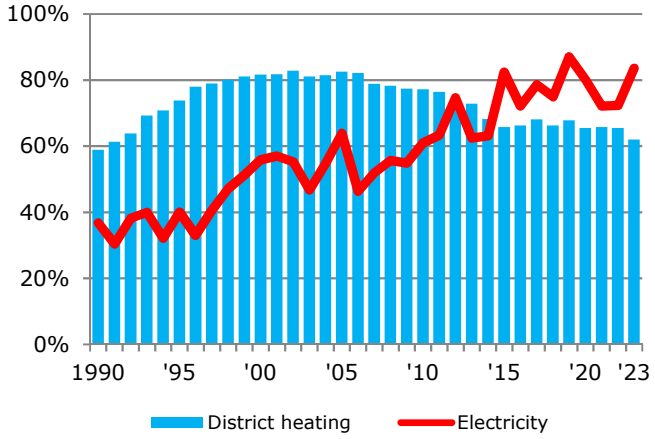


Up until the early 1990s electricity production capacity was dominated by the large-scale power units. Up through the 1990s, electricity capacity in small-scale units and secondary installations (autoproducers) increased. By the turn of the millennium, this capacity corresponded to a fifth of the capacity of the large-scale units, small-scale units and secondary installations i.e. one-fifth of production in total, excluding wind, solar and hydro.

A number of units at the large-scale plants have now been scrapped and capacity at the large-scale plants therefore decreased significantly. Capacity at small-scale and secondary (autoproducers) installations now corresponds to almost one-third of the capacity of thermal plants.

Wind and solar capacity has increased and came to 7,277 MW and 3,529 MW, respectively, in 2023, corresponding to 59.4% of total electricity production capacity.

CHP share of thermal power and district heating production



By generating electricity and district heating together, it is possible to exploit the large amounts of heat generated through thermal production of electricity.

In 2023, 83.5% of thermal electricity production (i.e. total production excluding wind, solar and hydro) was produced simultaneously with heat, which is 11.2 percentage points more than in 2022.

In 2023, 62% of district heating was produced with electricity. This share is slightly lower compared to 2022.

Heat production by type of production plant, 2023

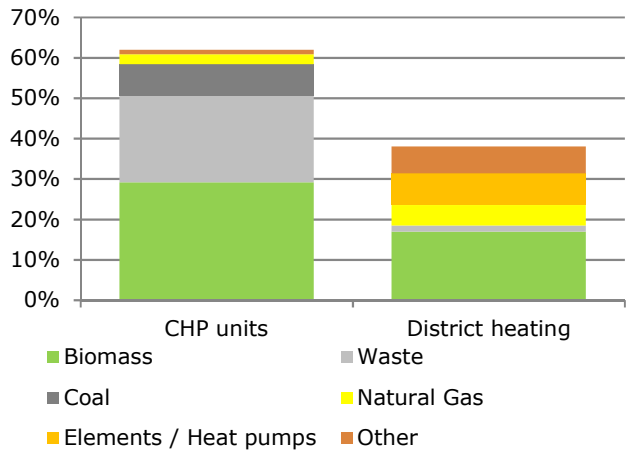
	Number of units	Electricity capacity [MW]	Heat capacity [MJ/s]	Share of total heat supply [%]
Total	**2801**	**6614**	**27147**	**100**
Large-scale CHP units	22	4415	5568	31,1
Small-scale CHP units	493	1648	2112	12,1
District heating units	1956		17156	33,6
Autoproducers				
- CHP units	214	551	1538	18,7
- Heating units	116		773	4.5

Heat production by primary fuel, 2023

	CHP by plant				Heat producers by plant		
Primary fuel of unit	Number of units	Electricity capacity [MW]	Heat capacity [MJ/s]	Share of total heat supply [%]	Number of units	Heat capacity [MJ/s]	Share of total heat supply [%]
Total	**729**	**6615**	**9279**	**62.0%**	**2072**	**17930**	**38.0%**
Coal	5	1851	2314	7.7%	0	0	0.0%
Natural gas	357	1441	1702	2.5%	555	4953	5.1%
Oil	46	188	158	0.2%	296	3043	0.4%
Waste	31	393	1186	21.5%	8	104	1.5%
Biogas	149	123	159	0.9%	21	35	0.1%
Biomass	32	1487	2913	29.2%	370	3553	16.9%
Biooil	0	0	0	0.0%	39	500	0.1%
Surplus heat	0	0	0	0.0%	78	505	4.1%
Solar heating	0	0	0	0.0%	143	1090	2.0%
Heat pumps[1)] and electric boilers	0	0	0	0.0%	234	1982	7.8%
No production in 2023	109	1132	847	0.0%	328	2166	0.0%

[1)]All Heat pumps included, also those based on surplus heat.

Heat supply by primary fuel, 2023



District heating supply takes place partly at CHP units and partly at units exclusively producing district heating. CHP units produced 62%, of which large-scale CHP units contributed 31.1%, small-scale CHP units contributed 12.1%, and CHP units at autoproducers contributed 18.7%.

Many CHP and district heating units use several types of fuel. A break-down by primary fuel in 2023 reveals that CHP units using biomass as primary fuel accounted for 29.2% of heat supply, while units using waste, coal and natural gas as primary fuel accounted for 21.5%, 7.7% and 2.5%, respectively, of total district heating supply.

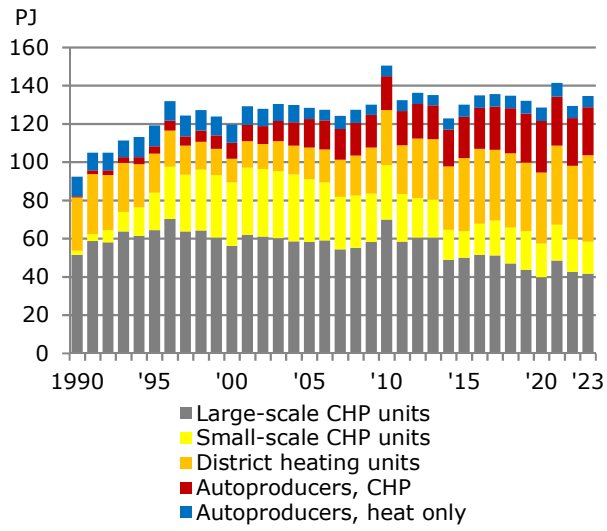
For units that produce district heating alone, units primarily firing with biomass contributed 16.9%, while electric boilers and heat pumps contributed a total of 7.8%, natural gas units contributed 5.1% while surplus heat accounted for 4.1% of the total district heating supply.

District heating production by type of production plant

Direct energy content [TJ]	1990	2000	2005	2010	2015	2020	2022	2023	Change '90 - '23
Total production (gross)	**92 411**	**119 702**	**128 382**	**150 394**	**129 994**	**128 614**	**129 387**	**134 571**	**45.6%**
Large-scale CHP units	51 511	56 271	58 248	69 955	50 098	39 764	42 667	41 650	-19.1%
Small-scale CHP units	2 145	33 027	32 727	28 462	13 777	17 559	17 125	16 659	677%
District heating by type of producer	27 755	12 516	16 621	28 816	38 175	37 294	38 306	45 221	62.9%
Autoproducers									
- CHP units [1)]	694	8 375	14 884	17 625	21 589	26 811	24 887	25 112	3518%
- Heating units [1)]	10 306	9 513	5 901	5 537	6 354	7 187	6 402	5 929	-42.5%
Consumption in production	**-**	**-1 539**	**-1 303**	**-1 207**	**- 623**	**- 683**	**- 653**	**- 678**	•
Large-scale CHP units	-	- 866	- 384	- 331	-	-	-	-	•
Small-scale CHP units	-	- 637	- 656	- 643	- 321	- 481	- 412	- 409	•
District heating units	-	- 36	- 262	- 233	- 302	- 202	- 241	- 269	•
Total production (net)	**92 411**	**118 163**	**127 079**	**149 187**	**129 371**	**127 931**	**128 733**	**133 893**	**44.9%**
Net imports	122	144	153	174	151	107	102	114	-6.6%
Domestic supply	**92 533**	**118 307**	**127 232**	**149 360**	**129 522**	**128 038**	**128 835**	**134 007**	**44.8%**
Consumption in refineries	- 428	- 275	- 355	- 584	- 480	- 8	- 7	- 7	-98.3%
Distribution losses	-18 507	-23 661	-25 446	-29 872	-25 904	-25 608	-25 767	-26 801	44.8%
Final consumption	**73 599**	**94 370**	**101 430**	**118 904**	**103 137**	**102 423**	**103 061**	**107 198**	**45.7%**

[1)] *Gross and net productions are by definition identical.*

District heating production by type of production plant



In 2023, total district heating production was 134.6 PJ, which constitutes an increase of 4% compared with 2022. Compared with 2000, district heating production increased by 12.4%, compared with 1990 it increased by 45.6%.

District heating production is generated at large-scale CHP units, small-scale CHP units, district heating units and by auto producers such as industrial companies, horticulture and waste treatment facilities.

The greatest contribution to district heating production comes from large-scale CHP units. However, this share has decreased since the 1990s, from more than 50% to just 31% in 2023.

Furthermore, district heating units contributed 33.6%, CHP autoproducers contributed 18.7%, small-scale CHP units contributed 12.4% and heating units at autoproducers (typically based on surplus heat) contributed 4.4% to total district heating production in 2023.

District heating production by fuel

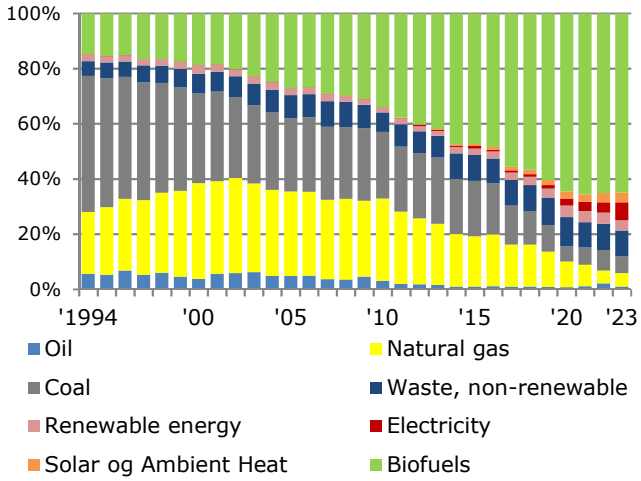
Direct energy content [TJ]	1994	2000	2005	2010	2015	2020	2022	2023	Change '94 - '23
Total production (gross)	**113 103**	**119 702**	**128 382**	**150 394**	**129 994**	**128 614**	**129 387**	**134 571**	**19.0%**
Oil	6 335	4 433	6 103	4 627	1 281	908	2 756	1 243	-80.4%
- of which orimulsion	-	1 291	-	-	-	-	-	-	•
Natural gas	25 370	41 620	39 377	44 844	23 654	11 909	5 974	6 613	-73.9%
Coal	55 748	38 873	34 189	36 337	26 050	7 284	9 668	8 285	-85.1%
Surplus heat	2 838	3 676	3 174	2 518	3 083	5 346	5 175	4 883	72.0%
Electricity excl. heat pumps[1)]	-	-	-	110	1 037	2 727	3 624	7 126	•
Electricity, heat pumps[2)]	23	9	2	0	99	681	1 294	1 703	7188%
Waste, non-renewable	6 084	8 651	10 713	10 627	12 245	13 480	12 312	12 545	106%
Renewable energy	**16 704**	**22 440**	**34 823**	**51 331**	**62 544**	**86 279**	**88 585**	**92 174**	**452%**
Solar	6	24	53	139	956	2 632	2 747	2 595	45061%
Geothermal	21	29	86	106	70	23	41	35	66%
Biomass	16 304	21 462	33 509	49 912	59 329	78 625	79 490	81 819	402%
- Straw	4 318	5 696	7 681	11 507	11 359	11 633	12 381	13 284	208%
- Wood	4 327	5 153	12 086	23 731	32 495	50 447	51 983	53 066	1126%
- Biooil	223	39	650	1 685	508	69	79	136	-39.2%
- Waste, renewable	7 436	10 574	13 093	12 989	14 966	16 476	15 048	15 333	106%
Biogas	348	903	1 169	1 173	2 173	4 439	4 752	5 493	1480%
Heat pumps	25	22	6	0	15	560	1 554	2 231	8981%

Fuel consumption for district heating production

Direct energy content [TJ]	1990	2000	2005	2010	2015	2020	2022	2023	Change '90 - '23
Total fuel consumption	**69 833**	**73 174**	**78 687**	**95 742**	**86 265**	**81 384**	**80 006**	**84 069**	**20.4%**
Oil	4 766	3 726	4 322	4 554	1 039	713	2 737	1 106	-76.8%
- of which orimulsion	-	646	-	-	-	-	-	-	•
Natural gas	12 131	22 203	22 044	28 454	20 134	10 306	4 766	5 684	-53.1%
Coal	30 898	19 459	17 121	18 245	13 117	3 665	4 888	4 159	-86.5%
Electricity[3)]	-	-	-	-	94	539	1 218	1 607	•
Waste, non-renewable	6 289	7 675	8 138	7 122	7 649	8 136	6 899	7 466	18,7%
Renewable energy	**15 749**	**20 112**	**27 063**	**37 367**	**44 231**	**58 024**	**59 498**	**64 048**	**307%**
Solar	6	24	53	143	956	2 661	2 788	2 621	43591%
Geothermal	48	58	172	212	140	46	82	70	47%
Biomass	15 611	19 425	26 125	36 290	41 739	51 666	51 778	54 933	252%
- Straw	3 640	5 013	5 934	8 272	9 068	9 233	9 862	10 590	191%
- Wood	3 541	4 983	9 484	17 365	22 793	32 410	33 395	35 060	890%
- Biooil	744	49	761	1 949	529	79	89	159	-78.7%
- Waste, renewable	7 686	9 380	9 946	8 705	9 349	9 944	8 432	9 125	18.7%
Biogas	84	582	707	721	1 380	3 090	3 296	4 192	4891%
Ambient Heat (Heat pumps)	-	22	6	0	15	560	1 554	2 231	•

1) Electricity consumption except electricity used to run heat pumps using ambient heat. 2) Electricity consumption for heat pumps using ambient heat.
3) Electricity consumption including heat pumps, electric boilers etc.

Fuel consumption for district heating production



The upper table shows output, the amount of district heating produced, and the type of fuel used. For example, in 2023 a total of 134.6 PJ district heating was produced. The lower table shows input and the amount of energy used to produce district heating. For example, in 2023, a total of 84 PJ energy was used.

Input can well be less than output. This is because of variations in the heat efficiency by which the different fuels are converted into district heating, and because it is assumed that CHP units produce heat with an efficiency of 200%. An example would be consumption of 4.2 PJ coal in 2023 (lower table) results in district heating production of 8.3 PJ (upper table).

There has been a significant change in the fuel used in production of district heating since 1990. Production from coal and natural gas has been replaced by renewable energy. In 2023, biofuels accounted for 64.9% of production, surplus heat 3.6% and solar and ambient heat (heat pumps) 3.6%.

Energy supply and consumption 2023

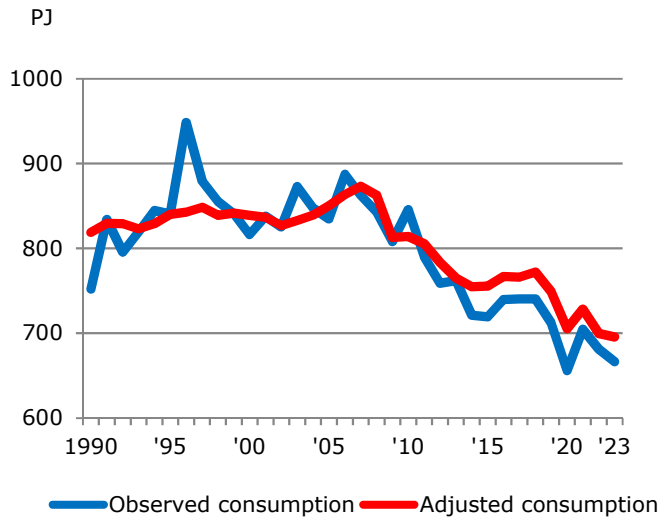
Direct energy content [TJ]	Total	Crude oil	Refinery feed-stocks	Refinery gas	LPG	Aviation gasoline	Motor gasoline	Other kerosene	JP1	Gas-/diesel-oil	Fuel oil	Waste oil	Petro-leum coke	Lubri-cation oil and bitumen
Energy supply														
- Primary production	412 669	125 647	-	-	-	-	-	-	-	-	-	-	-	-
- Recycling	1	-	-	-	-	-	-	-	-	-	-	1	-	-
- Imports	915 875	203 226	2 025	-	2 896	4	18 471	-	31 157	84 889	66 615	-	4 571	8 383
- Exports	-643 253	-9 603	-3 289	-	-2 168	-	-53 502	-	- 308	-76 564	-130 342	-	-	- 128
- Border trade	-8 045	-	-	-	-	-	1 334	-	-	-9 379	-	-	-	-
- International marine bunkers	-22 910	-	-	-	-	-	-	-	-	-12 051	-10 759	-	-	- 101
- Supply from blending	- 97	-	-1 750	-	-	-	- 642	9	-	298	1 916	-	-	1
- Stock changes	11 251	2 345	- 219	-	- 94	-	646	-	- 406	-1 115	13 697	-	- 744	- 193
Statistical differences	1 617	-1 304	105	0	176	- 0	657	0	- 17	-1 499	409	-	- 0	- 15
Extraction and gasification	-13 505	-	-	-	-	-	-	-	-	-	-	-	-	-
Refineries														
- Input and net production	5 424	-320 310	3 127	16 504	3 087	-	85 696	-	7 974	149 401	59 944	-	-	-
- Own use in production	-15 920	-	-	-14 776	-	-	-	-	-	- 94	-	-	-	-
Used in distribution	-3 497	-	-	-	-	-	-	-	-	-	-	-	-	-
Large-scale power units	-													
- Fuel used and production	- 82	-	-	-	-	-	-	-	-	- 101	- 1	-	-	-
- Own use in production	- 1	-	-	-	-	-	-	-	-			-	-	-
Large-scale CHP units	-													
- Fuel used and production	-14 532	-	-	-	- 0	-	-	-	-	- 74	- 521	-	-	-
- Own use in production	-2 551	-	-	-	-	-	-	-	-					
Renewable energy, selected														
- Wind		-	-	-	-	-	-	-	-	-	-	-	-	-
- Hydro		-	-	-	-	-	-	-	-	-	-	-	- -	
Small-scale CHP units	-													
- Fuels used and production	-1 693	-	-	-	-	-	-	-	-	- 50	-	-	-	-
- Own use in production	- 877	-	-	-	-	-	-	-	-	-	-	-	- -	
District heating units	-													
- Fuels used and production	- 160	-	-	-	- 3	-	-	-	-	- 709	- 34	- 0	-	-
- Own use in production	- 269	-	-	-	-	-	-	-	-	-	-	-	- -	
Autoproducers	-													
- Electricity units	- 11	-	-	-	-	-	-	-	-	-	-	-	-	-
- CHP units	-3 605	-	-	-1 728	-	-	-	-	-	- 128	- 241	- 0	-	-
- Heat units	3 711	-	-	-	-	-	-	-	-	- 31	- 0	- 0	-	-
Gas works	- 87	-	-	-	-	-	-	-	-	- 0	-	-	- -	
Biogas upgrading plants														
Distribution losses etc.	-33 812	-	-	-	-	-	-	-	-	-	-	-	- -	
Final consumption	-													
- Non-energy use	-7 947	-	-	-	-	-	-	-	-	-	-	-	-	-7 947
- Road	-153 665	-	-	-	-	-	-52 081	-	-	-90 300	-	-	-	-
- Rail	-4 126	-	-	-	-	-	-	-	-	-2 359	-	-	-	-
- Domestic sea transport	-4 911	-	-	-	-	-	-	-	-	-4 791	- 101	-	-	-
- International aviation	-35 207	-	-	-	-	-	-	-	-35 207	-	-	-	-	-
- Domestic aviation	-1 028	-	-	-	-	- 4	-	-	-1 025	-	-	-	-	-
- Military transport	-2 359	-	-	-	-	-	- 1	-	-2 168	- 189	-	-	-	-
- Agriculture, forestry and horticulture	-24 697	-	-	-	- 251	-	- 70	-	-	-12 253	- 1	-	-	-
- Fishing	-5 039	-	-	-	- 87	-	-	-	-	-4 952	-	-	-	-
- Manufacturing	-84 566	-	-	-	-2 108	-	-	- 2	-	-5 080	- 501	-	-3 827	-
- Construction	-9 251	-	-	-	- 118	-	- 34	-	-	-7 133	-	-	-	-
- Wholesale	-10 263	-	-	-	- 45	-	-	- 0	-	- 124	- 0	-	-	-
- Retail trade	-9 145	-	-	-	- 37	-	-	- 0	-	- 53	- 0	-	-	-
- Private service	-35 836	-	-	-	- 168	-	-	- 1	-	- 189	- 34	- 0	-	-
- Public service	-23 516	-	-	-	- 176	-	-	- 2	-	- 530	- 20	-	-	-
- Single-family houses	-125 299	-	-	-	- 697	-	- 473	-	-	-4 311	-	-	-	-
- Multi-family houses	-48 603	-	-	-	- 206	-	-	- 3	-	- 529	- 26	-	-	-

Natural Gas (incl. LNG)	Coal	Coke etc.	Solar energy	Wind power	Hydro power	Geo-thermal	Straw	Wood chips	Fire-wood	Wood pellets	Wood waste	Biogas	Bio methane	Waste	Biooil, biodiesel etc.	Ambient Heat (Heat pumps)	Electricity	District heating	Gas-works gas
48 642	-	-	15 331	69 815	71	70	21 750	20 876	14 091	2 127	6 877	31 739	-	33 676	159	21 799	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
310 513	30 280	275	-	-	-	-	-	20 009	1 600	42 009	-	-	-	4 878	12 569	-	71 391	114	-
-303 054	- 231	-	-	-	-	-	-	-	-	-	-	-	-	-	-3 950	-	-60 111	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	-	-	-	-
- 833	-2 409	- 17	-	-	-	-	-	-	-	-	-	-	-	-	594	-	-	-	-
3 097	23	9	0	-	-	-	-	-	-	-	-	-	8	- 0	- 213	-	-	0	0
-13 505	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-1 043	- 7	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-3 497	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	- 1	-	-
-1 285	-24 355	-	-	-	-	-	-4 305	-20 195	-	-29 823	- 369	- 5	- 745	-	-	-	25 493	41 650	-
																	-2 551	-	-
-	-	-	-	-69 815	-	-	-	-	-	-	-	-	-	-	-	-	69 815	-	-
-	-	-	-	-	- 71	-	-	-	-	-	-	-	-	-	-	-	71	-	-
-4 016	-	-	-	-	-	-	-5 024	-4 859	-	- 279	- 592	-2 627	-2 327	-5 083	-	-	6 506	16 659	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	- 468	- 409	-
-4 419	-	-	-2 621	-	-	- 70	-7 419	-13 753	-	-1 369	- 720	- 74	-2 561	- 511	- 159	-2 231	-8 729	45 221	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	- 269	-
-	-	-	-12 108	-	-	-	-	-	-	-	-	- 15	-	-	-	-	12 112	-	-
- 284	-	-	-	-	-	-	- 28	- 305	-	-	-3 049	-1 770	- 165	-28 440	-	-	7 421	25 112	-
- 95	-	-	-	-	-	-	- 21	- 98	-	- 19	- 304	- 46	- 55	-1 480	-	-	- 69	5 929	-
- 295	-	-	-	-	-	-	-	-	-	-	-	- 129	- 171	-	-	-	-	-	508
												-25 980	25 980						
- 72	-	-	-	-	-	-	-	-	-	-	-	-	- 42	-	-	-	-6 876	-26 801	- 20
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
- 286	-	-	-	-	-	-	-	-	-	-	-	-	- 166	-	-9 073	-	-1 761	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-1 767	-	-
- 19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
- 415	- 75	-	-	-	-	-	-1 981	- 28	-	-	- 216	- 73	- 241	-	-	-1 683	-5 978	-1 431	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-16 135	-3 233	- 266	-	-	-	-	-	-1 416	-	-1 003	-1 567	- 609	-9 351	-2 564	-	-3 471	-29 210	-4 036	- 187
- 178	-	-	-	-	-	-	-	-	-	-	-	-	- 103	-	-	-	-1 684	-	-
- 776	-	-	-	-	-	-	-	-	-	-	-	-	- 450	-	-	-	-4 655	-4 212	-
- 599	-	-	-	-	-	-	-	-	-	-	-	-	- 347	-	-	-	-4 858	-3 251	-
-2 475	-	-	-	-	-	-	-	- 0	-	-	- 59	- 409	-1 434	- 476	-	-	-16 420	-14 163	- 9
-1 941	-	-	- 90	-	-	-	-	- 149	-	- 886	-	-	-1 125	-	-	-	-8 046	-10 535	- 15
-9 726	-	-	- 421	-	-	-	-2 972	- 82	-15 691	-10 759	-	-	-5 637	-	-	-14 413	-26 011	-33 954	- 150
-1 842	-	-	- 90	-	-	-	-	-	-	-	-	-	-1 068	-	-	-	-9 096	-35 616	- 126

Gross energy consumption

	1990	2000	2005	2010	2015	2020	2022	2023	Change '90-'23
Adjusted total gross energy consumption. Fuel equivalent [PJ]	**819**	**839**	**850**	**814**	**755**	**705**	**700**	**696**	**-15.1%**
By fuel	**819**	**839**	**850**	**814**	**755**	**705**	**700**	**696**	**-15.1%**
Oil	355	376	352	312	278	238	265	255	-28.2%
Natural gas	82	192	192	176	133	96	64	62	-23.9%
Coal and coke	327	175	166	147	111	69	52	41	-87.4%
Waste, non-renewable	8	14	17	16	18	20	18	18	139%
Renewable energy	48	81	123	163	216	283	301	319	569%
By energy product	**819**	**839**	**850**	**814**	**755**	**705**	**700**	**696**	-15.1%
Oil	338	329	333	300	273	234	258	250	-25.9%
Natural gas	59	98	100	94	87	68	52	48	-18.7%
Coal and coke	17	12	11	6	5	5	4	4	-79.3%
Waste, non-renewable	0	1	1	1	1	2	1	1	192%
Renewable energy	28	32	43	54	70	82	86	90	224%
Electricity	297	286	279	274	229	225	211	208	-30.1%
District heating	77	79	81	86	91	90	87	94	21.0%
Gas works gas	2	1	1	1	1	0	0	0	-84.1%
By use	**819**	**839**	**850**	**814**	**755**	**705**	**700**	**696**	**-15.1%**
Energy sector	28	44	52	46	42	29	31	25	-10.7%
Non-energy use	13	13	12	11	11	9	9	8	-38.9%
Transport	172	203	218	212	209	180	201	204	19.1%
Agriculture and industry	226	226	213	187	160	165	162	155	-31.3%
Commercial and public services	132	125	127	130	114	106	105	105	-20.3%
Households	248	228	229	228	220	215	192	198	-20.3%
Observed total energy consumption [PJ]	**752**	**816**	**835**	**846**	**719**	**656**	**681**	**667**	**-11.4%**
Oil	343	370	348	316	276	236	264	253	-26.3%
Natural gas	76	186	188	185	120	84	62	58	-23.3%
Coal and coke	255	166	155	164	76	34	44	28	-89.0%
Waste, non-renewable	7	14	17	17	18	19	18	17	149%
Renewable energy	45	79	122	168	207	259	290	298	556%
Foreign trade in electricity, net imports	25	2	5	- 4	21	25	5	11	-55.5%
Foreign trade in district heating, net imports	0	0	0	0	0	0	0	0	-

Observed energy consumption and adjusted gross energy consumption

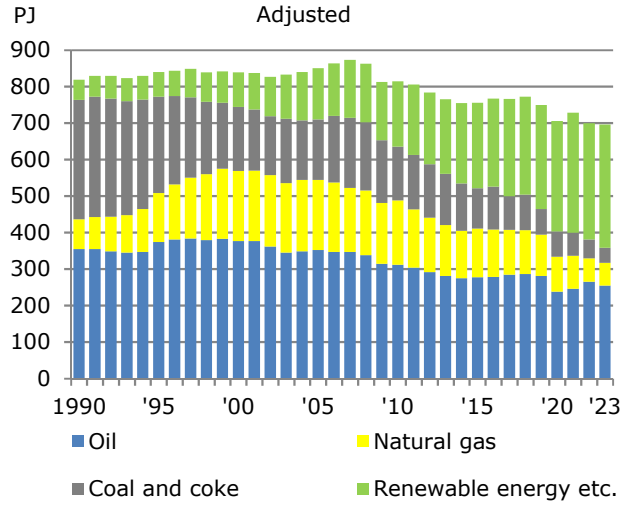


Observed energy consumption shows the registered amount of energy consumed in a calendar year. Gross energy consumption is derived by adjusting observed energy consumption for the fuel consumption linked to foreign trade in electricity. The adjusted gross energy consumption is moreover adjusted for climate variability with respect to a normal weather year. The purpose of this consumption figure is to provide a clearer picture of trends in domestic energy consumption.

Adjusted gross energy consumption was 696 PJ in 2023, which is 0.6% below the level in 2022. Compared with 1990, consumption has fallen by 15.1%.

Observed energy consumption was 677 PJ in 2023, which is 2.2% below the level in 2022. Compared with 1990, observed energy consumption was 11.4% lower.

Gross energy consumption by fuel

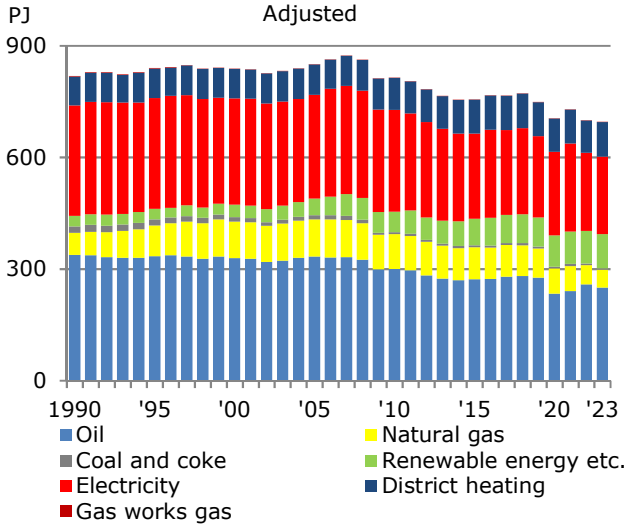


Adjusted gross energy consumption was 15.1% lower in 2023 than in 1990. However, consumption of individual fuels has followed rather varied trends.

Consumption of oil fell by 28.2% from 1990 to 2023. Consumption of coal, which primarily takes place at CHP units, has decreased by 87.4% since 1990. Consumption of natural gas increased up to 2005 but has been falling since then. From 2022 to 2023, consumption of natural gas fell from 64 PJ in to 62 PJ. Consumption of renewable energy and non-renewable waste increased by 509% in the period from 1990 to 2023.

In 2023, consumption of oil, natural gas and coal decreased by 3.9%, 2.6% and 20.4%, respectively, compared with 2022. Consumption of renewable energy etc. fell by 5.8% relative to 2022.

Gross energy consumption by energy product after transformation

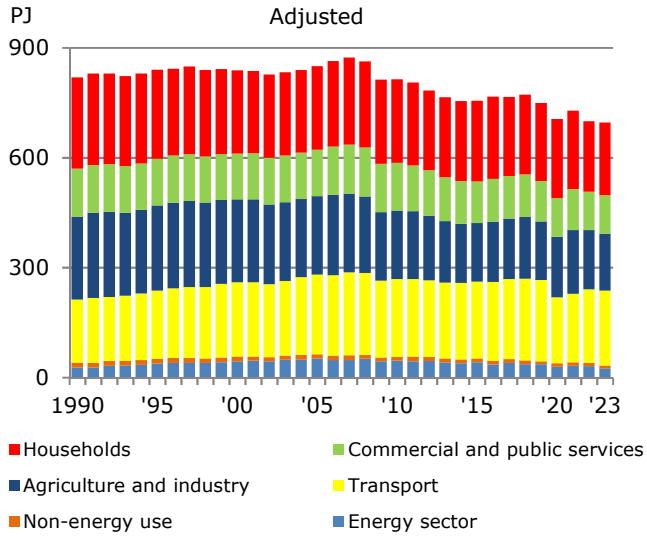


Gross energy consumption by energy product shows gross energy consumption after a number of fuels have been transformed to electricity, district heating, and gas works gas. In other words, the consumption of oil, natural gas, coal and renewable energy etc. is a statement of the volumes of these fuels used outside the transformation sector.

Fuel consumption for electricity production was 208 PJ in 2023, which is 1.3% less than in 2022. Compared with 1990, fuel consumption fell by 30.1% due to more efficient electricity production and a growing share of wind power.

Fuel consumption for district heating was 94 PJ in 2023, which is 8% more than in 2022. Compared with 1990, fuel consumption increased by 21%. Also in this regard, production has become more efficient, as district heating production has increased by 45.6% since 1990.

Gross energy consumption by use



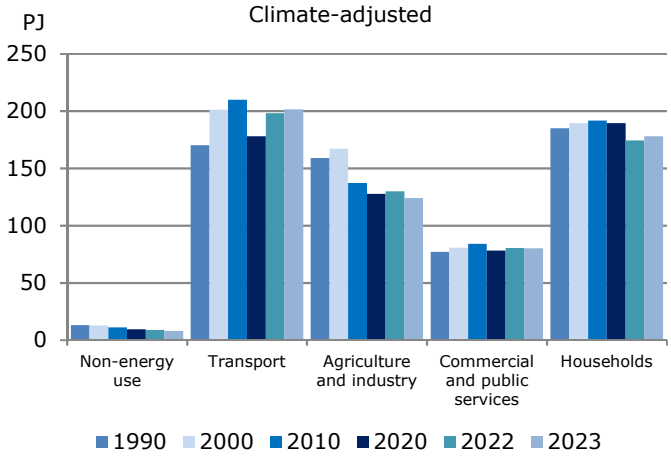
For gross energy consumption broken down by use, note that electricity, district heating and gas works gas are included with their associated fuel consumptions. Adjusted gross energy consumption fell in all sectors in 2023, except for in the transport sector and in households, in which consumption increased by 1.7% and 3.1%, respectively. At 19.3%, the energy sector (North Sea platforms and oil refineries) saw the largest fall. Consumption in the commercial and public services sector, in the agriculture and industry sector was 0.1% and 4.1% lower, respectively, in 2023 than the year before.

Compared with 1990, gross energy consumption for transport increased by 19.1%. In the agriculture and industry sector, gross energy consumption fell by 31.3%, while it fell by 20.3% in both the commercial and public services sector and for households. From 1990 to 2023, developments were affected by the fact that electricity and district heating can be generated with even smaller fuel consumption.

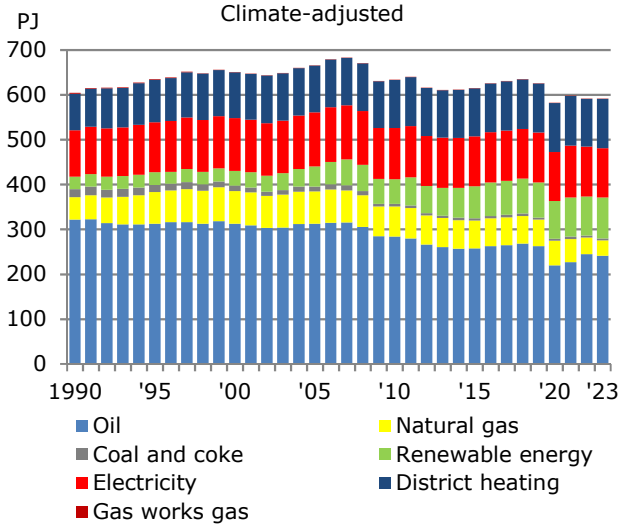
Final energy consumption

Direct energy content [TJ]	1990	2000	2005	2010	2015	2020	2022	2023	Change '90-'23
Total final energy consumption Climate adjusted	**604 097**	**650 815**	**665 869**	**633 250**	**615 043**	**582 348**	**591 677**	**591 126**	**-2.1%**
By energy product									
Oil	321 946	312 354	312 290	283 644	257 500	219 927	244 538	241 006	-25.1%
Natural gas	50 060	72 674	72 415	67 638	62 309	54 367	37 248	34 645	-30.8%
Coal and coke	17 243	12 389	10 826	5 559	4 972	4 736	4 119	3 577	-79.3%
Waste, non-renewable	470	763	1 239	922	908	1 718	1 433	1 374	192%
Renewable energy	27 833	32 228	43 216	53 578	69 945	82 090	85 695	90 237	224%
Electricity	103 212	117 590	120 731	114 700	111 371	109 429	111 193	109 682	6.3%
District heating	81 679	102 127	104 604	106 726	107 363	109 505	106 896	110 111	34.8%
Gas works gas	1 654	691	547	485	675	576	555	494	-70.1%
By use									
Non-energy use	**13 004**	**12 619**	**12 064**	**11 026**	**10 529**	**9 473**	**8 721**	**7 947**	**-38.9%**
Total transport	**170 216**	**201 209**	**215 789**	**209 731**	**207 836**	**177 901**	**198 190**	**201 296**	**18.3%**
Road transport	129 943	153 666	161 923	161 215	159 245	152 066	155 840	153 665	18.3%
Rail transport	4 765	4 339	4 488	4 728	4 785	4 180	4 218	4 126	-13.4%
Sea transport, domestic	6 344	6 857	8 026	6 533	4 211	4 989	5 089	4 911	-22.6%
Aviation	27 515	34 822	37 627	35 785	38 246	14 645	31 756	36 235	31.7%
Military transport	1 649	1 525	3 726	1 470	1 350	2 020	1 287	2 359	43.1%
Total agriculture and industry	**158 790**	**167 113**	**158 242**	**137 014**	**122 181**	**127 491**	**129 879**	**124 033**	-21.9%
Agriculture, forestry and horticulture	33 087	32 428	29 322	29 146	27 542	25 481	25 215	24 910	-24.7%
Fishing	10 785	9 451	7 488	6 049	5 205	4 575	5 078	5 039	-53.3%
Manufacturing	108 624	117 583	113 280	94 679	82 879	89 859	90 711	84 812	-21.9%
Construction	6 295	7 651	8 152	7 140	6 554	7 577	8 875	9 272	47.3%
Total commercial and public services	**77 047**	**80 599**	**85 045**	**83 893**	**81 270**	**78 164**	**80 462**	**79 988**	**3.8%**
Wholesale	13 795	13 893	12 906	11 493	10 882	10 474	10 405	10 396	-24.6%
Retail trade	8 883	9 323	9 991	10 939	10 331	9 181	9 297	9 266	4.3%
Private service	28 812	32 901	36 238	36 653	35 502	35 032	36 795	36 377	26.3%
Public service	25 557	24 481	25 909	24 807	24 555	23 478	23 965	23 948	-6.3%
Total households	**185 039**	**189 275**	**194 729**	**191 585**	**193 228**	**189 320**	**174 425**	**177 863**	**-3.9%**
Single-family houses	137 383	139 568	144 258	140 889	142 003	137 766	125 023	128 154	-6.7%
Multi-family houses	47 656	49 706	50 471	50 696	51 225	51 554	49 402	49 709	4.3%
Observed consumption Total final energy consumption	**580 458**	**632 528**	**658 455**	**659 750**	**606 143**	**567 879**	**584 098**	**585 458**	**0.9%**

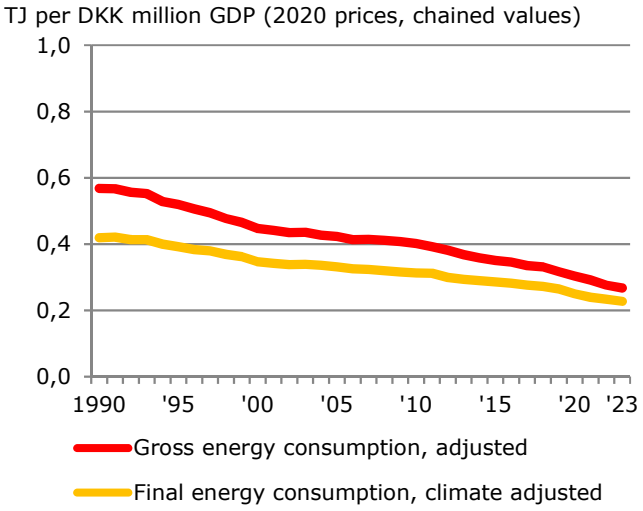
Final energy consumption by use



Final energy consumption by energy product



Gross energy consumption and final energy consumption per DKK million GDP (intensity)



Final energy consumption includes consumption for transport and non-energy purposes (such as lubricants and asphalt), and energy consumption for production and heating by the agriculture and industry sector, the commercial and public services sector, and energy consumption by households.

Final energy consumption was 591 PJ in 2023, which is 0.1% lower than in 2022. Final consumption was 2.1% lower compared with 1990.

After the drop in energy consumption for transport in 2020, consumption was 201.3 PJ in 2023, which is 8.6% lower than in 2018 and 2019, when energy consumption for transport was higher. Energy consumption in the agriculture and industry sector fell by 21.9% from 1990 to 2023, while consumption in the commercial and public services sector increased by 3.8%. Energy consumption by households fell by 3.9% from 1990 to 2023.

Consumption of oil and consumption of natural gas (for other uses than electricity and district heating production) fell by 1.4% and 7.0%, respectively, from 2022 to 2023. Consumption of electricity fell by 1.4% and district heating increased by 3.0% in 2023.

From 1990 to 2021, final consumption of natural gas went up by 3.9%. From 2022 to 2023, natural gas consumption fell from 54.5 PJ to 34.6 PJ. Consumption of electricity and district heating has increased by 6.3% and 34.8%, respectively, since 1990. In the same period, consumption of oil and coal fell by 25.1% and 79.3%, respectively.

In 2023, final consumption of renewable energy etc. was 5.1% higher than in 2022. Consumption of renewable energy etc. has increased by 224% since 1990.

Economic activity in Denmark, measured as gross domestic product (GDP) in 2020 prices (chained values), has increased much faster than energy consumption.

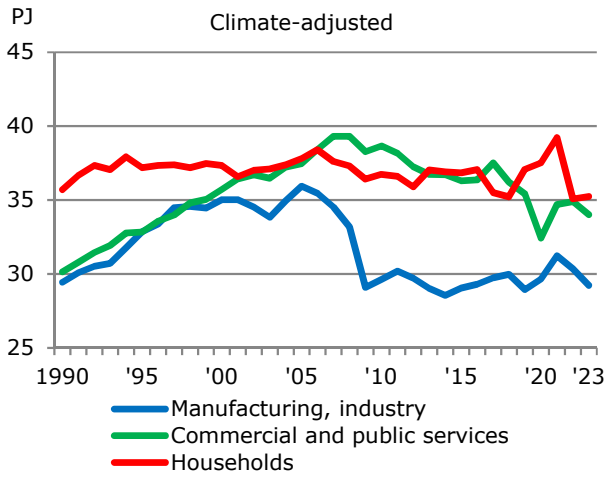
In 2023, gross energy consumption was 0.268 TJ per DKK million GDP (calculated in 2020 prices, chained values), as opposed to 0.568 TJ in 1990, corresponding to a 52.9%-reduction in fuel intensity during this period. In 2023, intensity fell by 3.0% relative to the year before.

Comparing developments in GDP with developments in final energy consumption shows a fall in energy intensity of 45.8% from 1990 to 2023. The reduction is smaller here because efficiency improvements in the transformation sector have not been included. Intensity decreased by 2.5% in 2023 relative to 2022.

Final electricity consumption

Direct energy content [TJ]	1990	2000	2005	2010	2015	2020	2022	2023	Change '90-'23
Total final electricity consumption Climate adjusted	**103 212**	**117 590**	**120 731**	**114 700**	**111 371**	**109 429**	**111 193**	**109 682**	**6.3%**
Rail transport	**736**	**1 253**	**1 351**	**1 455**	**1 429**	**1 889**	**3 188**	**3 528**	**379.4%**
Agriculture and industry	**36 633**	**43 283**	**44 092**	**37 851**	**36 783**	**37 609**	**38 040**	**36 895**	**0.7%**
Agriculture, forestry and horticulture	6 143	7 047	6 874	6 841	6 441	6 534	6 001	5 989	-2.5%
Manufacturing	29 436	35 022	35 943	29 638	29 042	29 651	30 341	29 222	-0.7%
Construction	1 054	1 214	1 274	1 372	1 300	1 425	1 698	1 684	59.7%
Commercial and public services	**30 147**	**35 715**	**37 479**	**38 656**	**36 303**	**32 424**	**34 889**	**34 010**	**12.8%**
Wholesale	5 451	5 936	5 973	5 740	5 269	4 829	4 756	4 658	-14.6%
Retail trade	5 202	5 742	6 260	6 543	6 075	4 833	4 963	4 860	-6.6%
Private services	11 715	14 903	15 866	17 108	16 379	15 494	16 943	16 437	40.3%
Public services	7 778	9 134	9 380	9 266	8 580	7 268	8 227	8 055	3.6%
Households	**35 696**	**37 339**	**37 810**	**36 738**	**36 855**	**37 507**	**35 077**	**35 249**	**-1.3%**
Single-family houses	27 011	28 210	28 279	27 335	27 772	27 934	25 624	26 139	-3.2%
Multi-family houses	8 686	9 129	9 530	9 403	9 084	9 573	9 453	9 110	4.9%
Observed electricity consumption	**102 139**	**116 849**	**120 467**	**115 623**	**111 067**	**108 929**	**110 928**	**109 486**	**7.2%**

Final electricity consumption by use

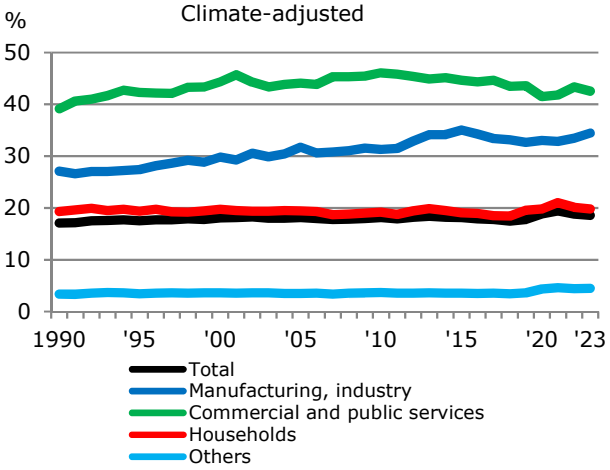


Electricity consumption by manufacturing industries was 3.7% lower in 2023 than in 2022. Compared with 1990, electricity consumption has decreased by 0.7%.

The commercial and public services sector has seen increasing electricity consumption until 2008, after the trend changed. From 2022 to 2023, electricity consumption in the commercial and public services sector decreased by 2.5%. From 1990 to 2023, electricity consumption increased by 12.8%.

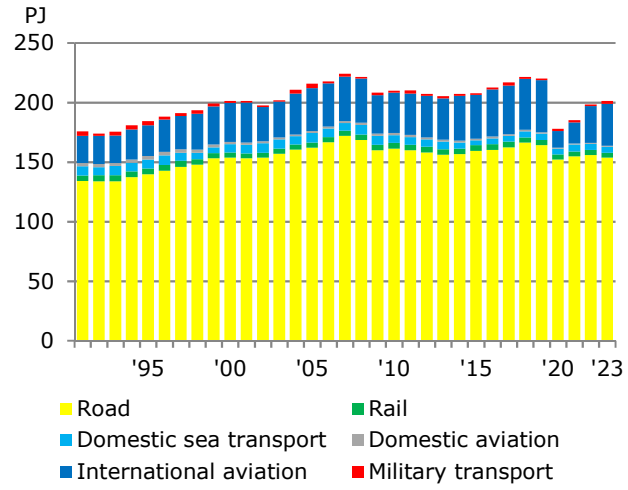
The electricity consumption of households fluctuated in the period 1990 to 2021 between 35.7 PJ and 39.2 PJ. Electricity consumption fell to 35.1 PJ in 2022. In 2023, electricity consumption in households increased by 0.5% Compared with 1990, consumption fell by 1.3%.

Electricity consumption's share of total energy consumption



During the period from 1990 to 2023 the electricity consumption's share of total energy consumption has been almost unchanged. In 1990, the share was 17.1%, in 2000 it was 18.1% and in 2023 it was 18.6%. In the commercial and public services sector, electricity consumption's share of total energy consumption grew steadily from 1990 when the share was 39.1% and up to 2001 when it was 45.7%. From 2002 to 2019, the share fluctuated between 44.4% and 43.6%. In 2023, electricity consumption accounted for 42.5% of the sector's total energy consumption. The manufacturing industries sector has seen a steady increase across the period 1990-2015. After this, the share of electricity fell, except for a minor increase in 2023. In 2023, the share was 34.5% against 27.1% in 1990. Electricity consumption's share for households remains more or less unchanged with 19.3% in 1990 and 19.8% in 2023.

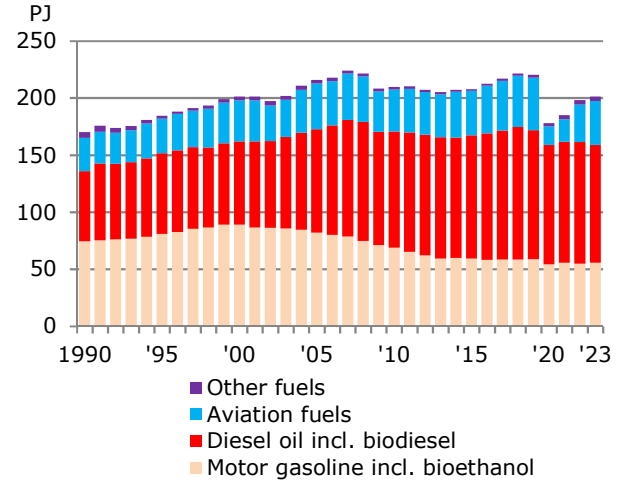
Energy consumption for transport by type



Energy consumption for transport followed an upward trend from 1990 until 2007, when energy consumption was at 224.0 PJ. In 2009, energy consumption fell to 208.4 PJ. Following the drop in 2020 brought on by the Covid-19 pandemic, energy consumption for transport totalled 201.3 PJ in 2023, which is an increase of 1.6% since 2022. Compared with 1990, energy consumption for transport increased by 18.3% in 2023. Energy consumption for road transport was 153.7 PJ in 2023, which is 1.4% lower than in 2022. Energy consumption for road transport is calculated as sales in Denmark, adjusted for border trade. Energy consumption for international aviation grew steadily throughout almost the whole period 1990-2019. In 2020, consumption fell substantially. From 2022 to 2023, it rose by 14.6%, but it is still 19.6% lower than in 2019.

*Estimates of border trade in motor gasoline and diesel are from the Danish Ministry of Taxation and are based on 2016-2021 data. For 2022 and 2023 there are new estimates.

Energy consumption for transport by fuel type

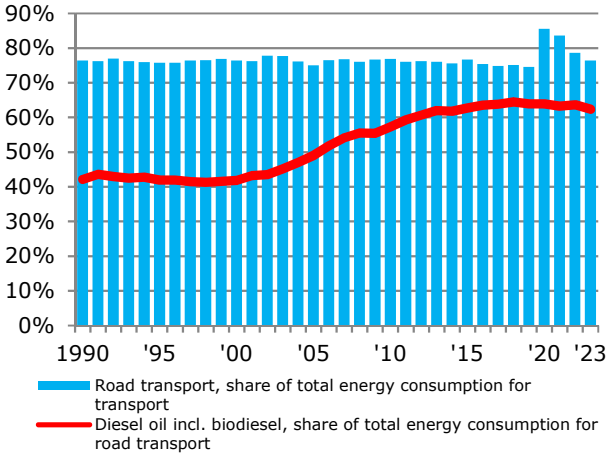


Consumption of motor gasoline (including bioethanol) increased by 1.3% from 2022 to 2023, while consumption of diesel oil (including biodiesel) fell by 3.2%. Consumption of bioethanol and biodiesel together fell by 9.1% from 2022 to 2023.

Considering developments from 1990 to 2023, consumption of motor gasoline (including bioethanol) fell by 25.2%, while consumption of diesel oil (including biodiesel) grew by 67.3%. Consumption of aviation fuels increased by 32.5%.

Consumption of other types of fuel fell by 21.5% in the same period. Other types of fuel include electricity consumption by railways.

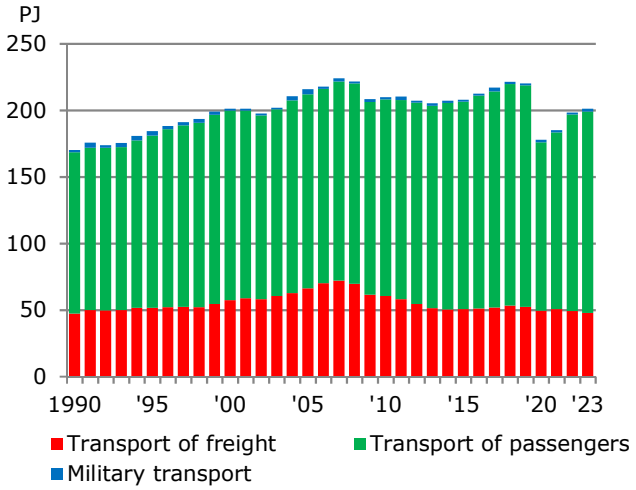
Energy consumption for road transport



Energy consumption for road transport is by far the largest contributor to total energy consumption for transport. Road transport's share was almost unchanged from 1990 to 2019. In 2020, road transport accounted for 85.5% of total energy consumption for transport. The change should be considered in light of the substantial fall in consumption of jet fuel for air transport, which occurred during the COVID-19 pandemic restrictions. The share was 76.3% in 2023.

Consumption of diesel oil has increased significantly and diesel oil has been the most common fuel for road transport since 2006. In 2023, diesel oil (including biodiesel) accounted for 62.4% of total energy consumption for transport, as opposed to 42.1% in 1990.

Final energy consumption by passenger and freight transport



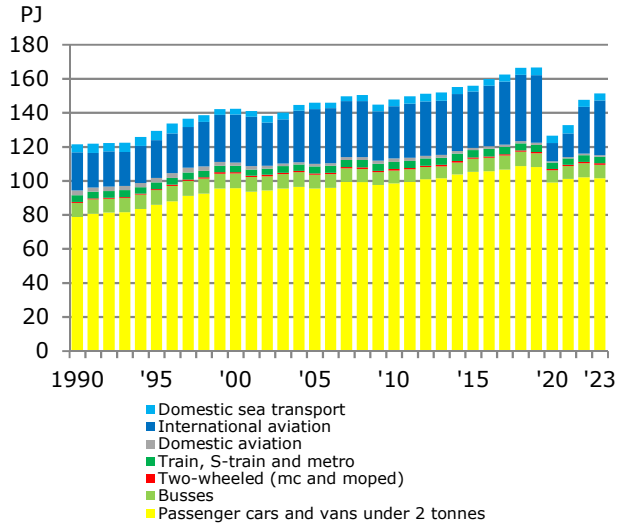
In the distribution of energy consumption for transport of passengers and freight, vans less than 2 tonnes have been included under passenger transport, whereas vans of 2-6 tonnes have been included under freight transport.

Out of the total of 201.3 PJ energy consumption for transport in 2023, passenger transport accounted for 151 PJ, corresponding to 75.2%. Energy consumption for freight transport was 47.6 PJ, corresponding to 23.7%, while energy consumption for transport by Danish military was 2.4 PJ.

Energy consumption for passenger transport increased by 2.5% from 2022 to 2023, while energy consumption for freight transport fell by 3.3%. Considering the trend from 1990 to 2023, energy consumption for passenger transport increased by 24.7%, while energy consumption for freight transport increased by 0.9%.

Note: LNG is included with the same distribution as gas/diesel in maritime transport.

Energy consumption for passenger transport by means of transport

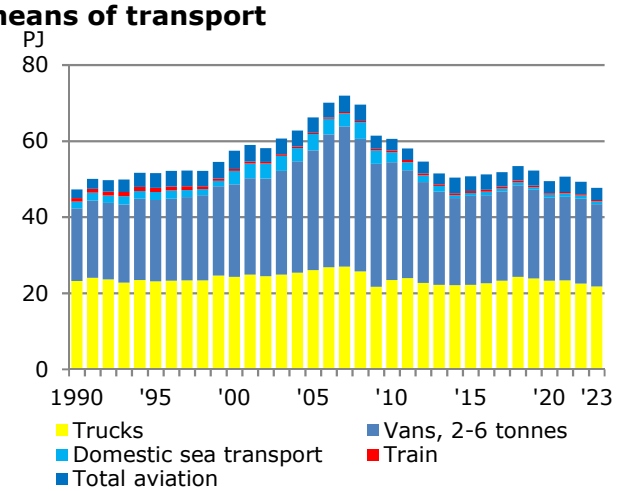


Energy consumption for passenger transport is mainly used for transport by car and for international aviation. In 2023, energy consumption for these categories made up 67.0% and 21.2%, respectively, of total energy consumption for passenger transport.

Following a large drop in 2020, from 2022 to 2023, energy consumption for cars and vans (less than 2 tonnes) fell only slightly by 0.6%, while energy consumption for international aviation increased by 16.9%. From 1990 to 2023, energy consumption for cars and vans increased by 28.9%, and energy consumption for international aviation by 42.4%.

Note: LNG is included with the same distribution as gas/diesel in maritime transport.
*The distribution by means of transport in 2023 is based on 2022 data. A revised version will be drawn up later.

Energy consumption for freight transport by means of transport



Energy consumption for freight transport is mostly by trucks and vans (2-6 tonnes). In 2023, energy consumption by these types of vehicle made up 45.7% and 45.3%, respectively, of total energy consumption for freight transport.

Energy consumption for trucks fell by 3.2% from 2022 to 2023, while energy consumption for vans fell by 3.0%. From 1990 to 2023, energy consumption for trucks fell by 6.2%, while energy consumption for vans increased by 13.1%.

Note: LNG is included with the same distribution as gas/diesel in maritime transport.
*The distribution by means of transport in 2023 is based on 2022 data. A revised version will be drawn up later.

Final energy consumption for transport

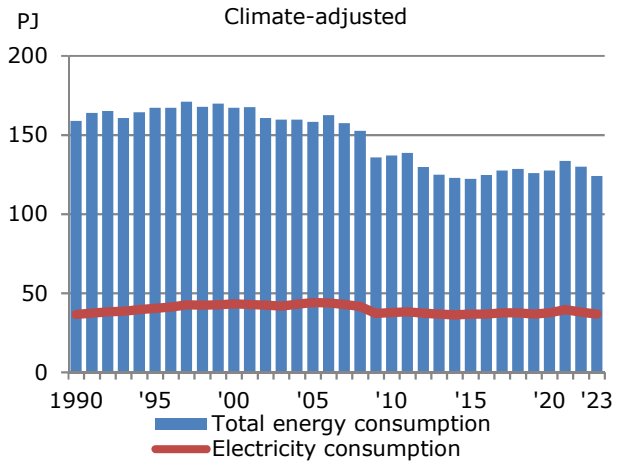
Direct energy content [TJ]	1990	2000	2005	2010	2015	2020	2022	2023	Change '90-'23
Total transport Observed consumption	**170 216**	**201 209**	**215 789**	**209 731**	**207 836**	**177 901**	**198 190**	**201 296**	**18.3%**
LPG	464	425	323	3	-	-	-	-	-100%
Aviation gasoline	155	119	107	76	57	44	5	4	-97.7%
Motor gasoline	74 327	88 976	82 126	67 726	57 443	50 861	51 523	52 082	-29.9%
Petroleum	462	39	14	0	-	-	-	-	-100%
JP1	28 828	35 810	39 959	36 577	38 927	16 132	32 687	38 400	33.2%
Gas/diesel oil	61 685	73 077	90 529	101 893	100 825	97 607	100 188	97 639	58.3%
Fuel oil	3 560	1 509	1 379	868	39	430	355	101	-97.1%
Natural gas	-	-	-	-	76	278	309	286	•
LNG	-	-	-	-	71	77	2	19	•
Bio methane	-	-	-	-	1	53	151	166	•
Bioethanol	-	-	-	1 118	1 840	3 339	3 346	3 517	•
Biodiesel	-	-	-	16	7 129	7 190	6 436	5 556	•
Electricity	736	1 253	1 351	1 455	1 429	1 889	3 188	3 528	379%
Road	129 943	153 666	161 923	161 215	159 245	152 066	155 840	153 665	18.3%
Rail	4 765	4 339	4 488	4 728	4 785	4 180	4 218	4 126	-13.4%
Domestic sea transport	6 344	6 857	8 026	6 533	4 211	4 989	5 089	4 911	-22.6%
Domestic aviation	2 856	1 981	1 449	2 000	1 415	714	1 027	1 028	-64.0%
International aviation	24 659	32 842	36 178	33 785	36 831	13 931	30 729	35 207	42.8%
Military transport	1 649	1 525	3 726	1 470	1 350	2 020	1 287	2 359	43.1%
Passenger transport	121 342	142 227	145 898	147 700	155 785	126 414	147 633	151 287	24.7%
Freight transport	47 225	57 458	66 166	60 562	50 702	49 466	49 269	47 650	0.9%
Military transport	1 649	1 525	3 726	1 470	1 350	2 020	1 287	2 359	43.1%

** The distribution by means of transport in 2023 is based on 2022 data. A revised version will be created subsequently.*

Final energy consumption in agriculture and industry

Direct energy content [TJ]	1990	2000	2005	2010	2015	2020	2022	2023	Change '90-'23
Total for agriculture and industry Climate adjusted	**158 790**	**167 113**	**158 242**	**137 014**	**122 181**	**127 491**	**129 879**	**124 033**	**-21.9%**
By energy product									
Oil	65 613	58 460	53 743	44 071	35 757	35 532	41 911	36 559	-44.3%
Natural gas	25 281	35 606	32 433	30 901	29 134	24 884	17 201	16 816	-33.5%
Coal and coke	16 315	12 339	10 817	5 531	4 972	4 736	4 119	3 577	-78.1%
Waste, non-renewable	13	72	591	759	771	1 465	1 154	1 154	9046%
Renewable energy	9 377	8 098	7 759	11 509	10 440	17 622	21 682	23 278	148%
Electricity	36 633	43 283	44 092	37 851	36 783	37 609	38 040	36 895	0.7%
District heating	5 409	9 210	8 788	6 353	4 115	5 446	5 585	5 565	2.9%
Gas works gas	149	45	19	41	208	196	188	188	25.8%
By use									
Agriculture, forestry and horticulture	33 087	32 428	29 322	29 146	27 542	25 481	25 215	24 910	-24.7%
Fishing	10 785	9 451	7 488	6 049	5 205	4 575	5 078	5 039	-53.3%
Manufacturing industries	108 624	117 583	113 280	94 679	82 879	89 859	90 711	84 812	-21.9%
Construction	6 295	7 651	8 152	7 140	6 554	7 577	8 875	9 272	47.3%

Energy and electricity consumption in agriculture and industry

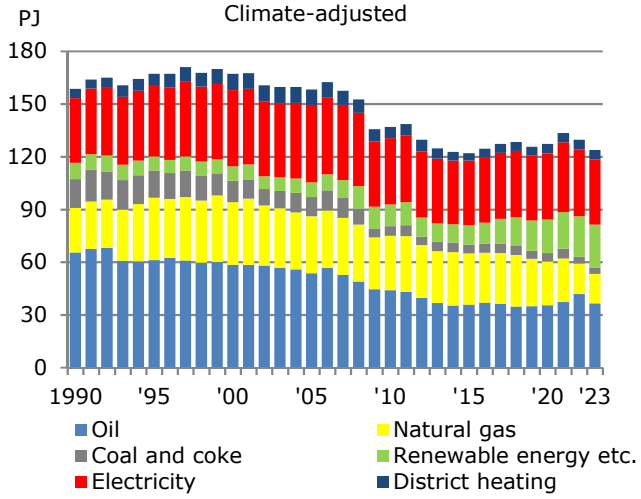


Agriculture and industry covers agriculture, forestry and horticulture, fishing, manufacturing industries (excl. refineries), as well as construction.

In 2023, climate-adjusted energy consumption in agriculture and industry was 124.0 PJ, which is 4.5% lower than the year before. Compared with 1990, energy consumption decreased by 21.9%.

Electricity consumption was 36.9 PJ in 2023 after adjusting for climate variability. This is a fall of 3.0% compared with the year before. Compared with 1990, electricity consumption increased by 0.7%.

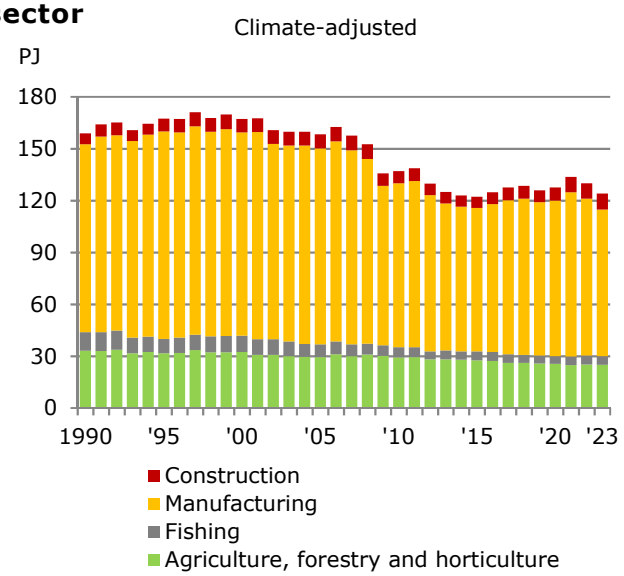
Energy consumption in agriculture and industry by energy products



In 2023, consumption of renewable energy etc. by agriculture and industry increased by 7.0% relative to 2022, while consumption of oil, natural gas and coal, coke, electricity and district heating fell by 12.8%, 2.2%, 13.2% and 0.4%, respectively.

Consumption of coal, oil and natural gas in the period 1990-2023 decreased by 78.1%, 44.3% and 33.5%, respectively. Consumption of renewable energy etc. increased by 160.2%. Since 1990, consumption of electricity has increased by 0.7% and consumption of district heating by 2.9%.

Energy consumption by individual industry in the agriculture and industry sector

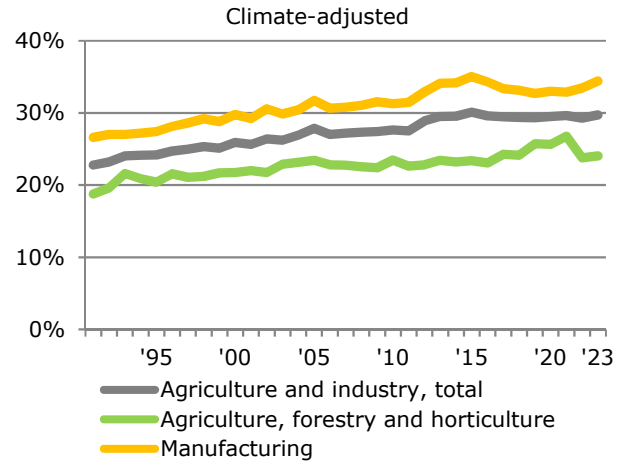


Compared with 2022, energy consumption in construction increased by 4.5%. Energy consumption by manufacturing industries, agriculture, forestry and horticulture and fishing decreased by 6.5%, 1.2% and 0.8%, respectively, in 2023.

From 1990 to 2023, energy consumption by manufacturing industries, agriculture, forestry and horticulture, and fishing fell by 21.9%, 24.7% and 53.3%, respectively. Energy consumption in construction increased by 47.3% during the same period.

In 2023, agriculture, forestry and horticulture's share of total energy consumption by the agriculture and industry sector was 20.1%, while manufacturing industries' share was 68.4%. In 2023, fishing and construction accounted for 4.1% and 7.5%, respectively, of energy consumption in the agriculture and industry sector.

Electricity consumption's share of total energy consumption

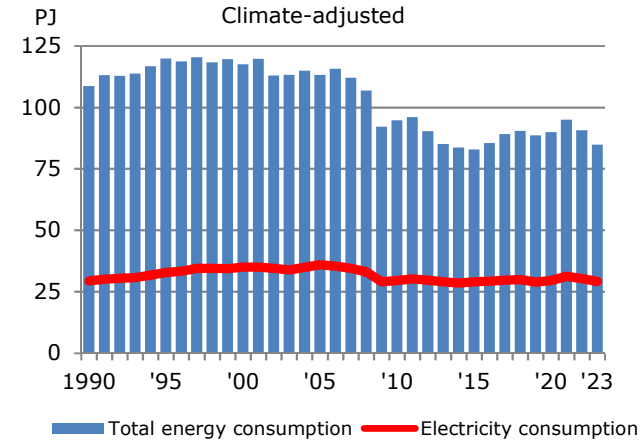


Electricity consumption's share of total energy consumption in the agriculture and industry sector increased from 23.1% in 1990 to 29.7% in 2023.

Electricity's share of energy consumption in manufacturing industries increased from 27.1% in 1990 to 34.5% in 2023.

In agriculture, forestry and horticulture the share of electricity was 18.6% in 1990. In 2023, this share made up 24.0% of total energy consumption in the agriculture and industry sector.

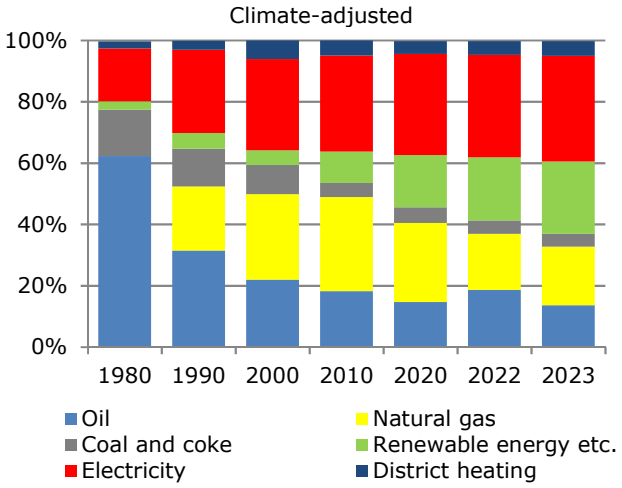
Energy and electricity consumption in manufacturing industries



Climate-adjusted energy consumption in manufacturing industries fell from 90.7 PJ in 2022 to 84.8 PJ in 2023, corresponding to a fall of 6.5%. Compared with 1990, energy consumption decreased by 21.9%.

In 2023, electricity consumption was 29.2 PJ, which is 3.7% lower than the year before. Electricity consumption has fallen by 0.7% since 1990.

Composition of energy consumption in manufacturing industries



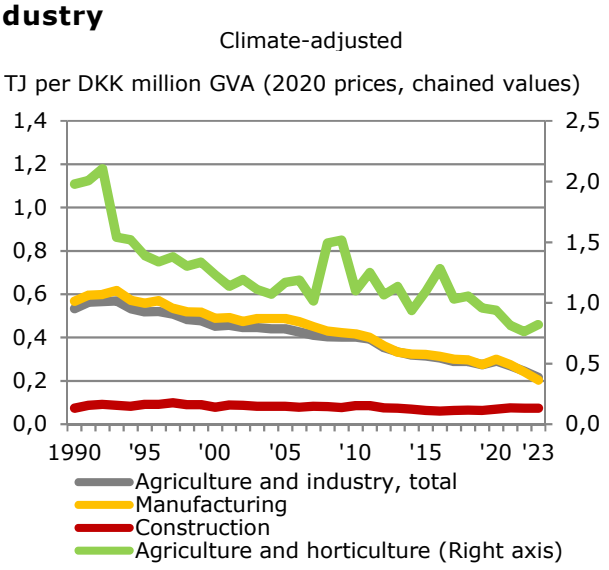
The composition of energy consumption in manufacturing industries has changed significantly since 1980, when oil consumption was dominant by 62.2% of the total energy consumption. In 1990, oil consumption accounted for almost one-third of total energy consumption. In 2022, the share was 18.6% and in 2023, it decreased to 13.6%.

The natural gas share was 19.1% in 2023, as opposed to 18.3% in 2022 and 20.8% in 1990.

Coal's share fell from 12.3% in 1990 to 4.1% in 2023. The contribution from renewable energy etc. and district heating increased from 1990 to 2023, with shares of 23.6% and 4.8%, respectively, in 2023.

Electricity consumption's share increased from 27.1% in 1990 to 34.5% in 2023.

Energy intensities in agriculture and industry



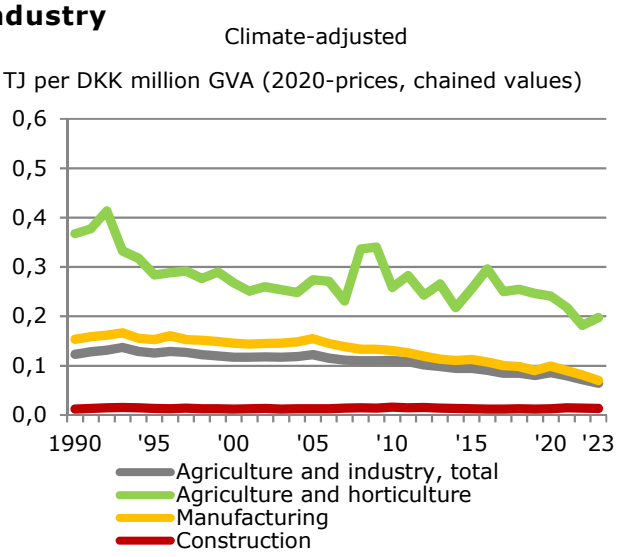
Energy intensity has been calculated as climate-adjusted energy consumption in relation to the gross value added (GVA), measured at 2020 prices, chained values.

Energy intensity in agriculture and industry dropped by 61.0% from 1990 to 2023. The annual average fall in energy intensity from 1990 to 2023 was 2.8% per year.

In manufacturing industries, energy intensity fell by 64.1% from 1990 to 2023. In 2023, energy intensity fell by 15.8% relative to 2022 as a result of an increase in GVA in manufacturing industries combined with a fall in energy consumption.

In agriculture, forestry and horticulture, energy intensity increased by 7.6% in 2023. Energy intensity has fallen by 58.5% since 1990. Since 2005, the trend has been influenced by significant fluctuations in agricultural, forestry and horticultural GVA.

Electricity intensities in agriculture and industry

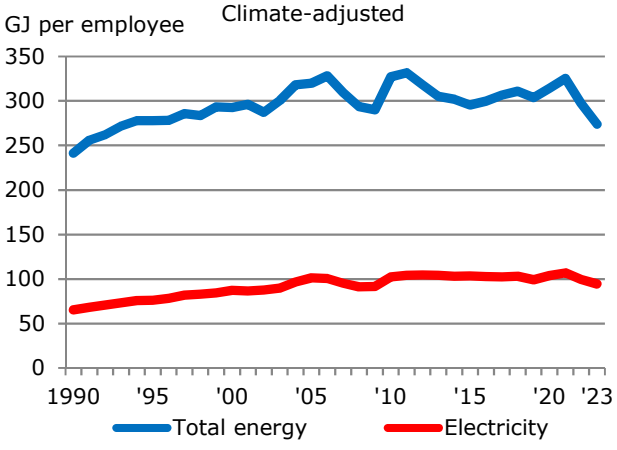


Electricity intensity has been calculated as climate-adjusted electricity consumption in relation to GVA, measured at 2020 prices, chained values.

In the period 1990 to 2023, electricity intensity in agriculture and industry fell by 49.7%. In 2023, electricity intensity was 0.064, i.e. 0.064 TJ of electricity (corresponding to 17,778 kWh) where used for every DKK 1 million GVA in the agriculture and industry sector. In 2023, electricity intensity fell by 10.8% compared with 2022.

In manufacturing industries and construction electricity intensity fell by 13.2% and 5.6%, respectively, in 2023 compared with 2022.

Energy consumption per employee in manufacturing industries

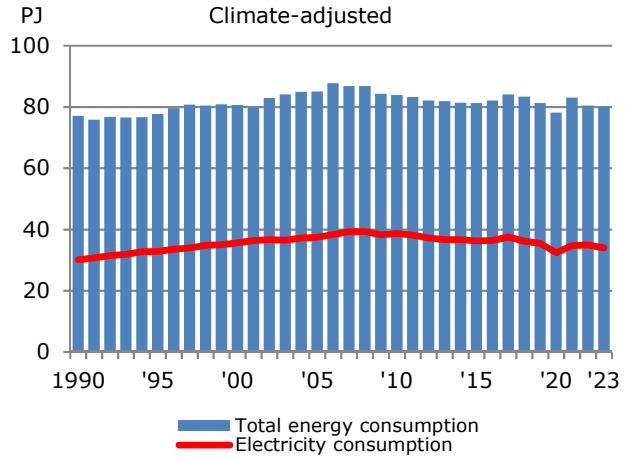


Energy and electricity consumption per employee in manufacturing industries have developed differently than the intensities shown above. This is due to a considerable increase in productivity, i.e. measured as GVA per employee in this sector.

Energy consumption per employee was 274 GJ in 2023, as opposed to 297 GJ the year before. This corresponds to a decrease of 7.8%. Compared with 1990, energy consumption per employee grew by 13.5%.

Electricity consumption per employee was 94 GJ in 2023, which is 5.0% lower than the year before. Compared with 1990, electricity consumption per employee increased by 44.3%.

Energy and electricity consumption in the commercial and public services

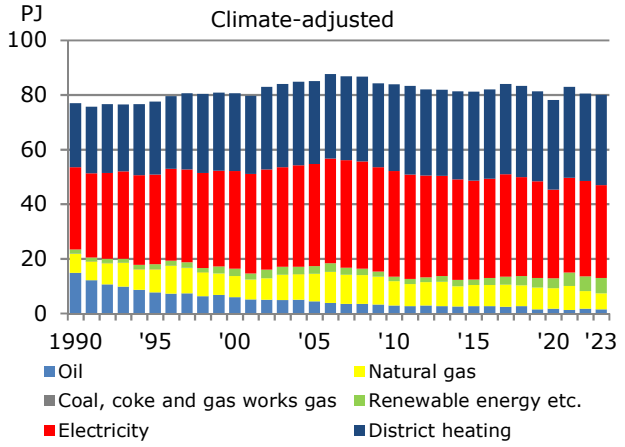


The commercial and public services sector includes wholesale, retail, private and public services.

Climate-adjusted energy consumption was 80.0 PJ in 2023, which is 0.6% lower than the year before. Compared with 1990, consumption increased by 3.8%.

In 2023, climate-adjusted electricity consumption was 34.0 PJ, which is 2.5% lower than the year before. Compared with 1990, electricity consumption increased by 12.8%.

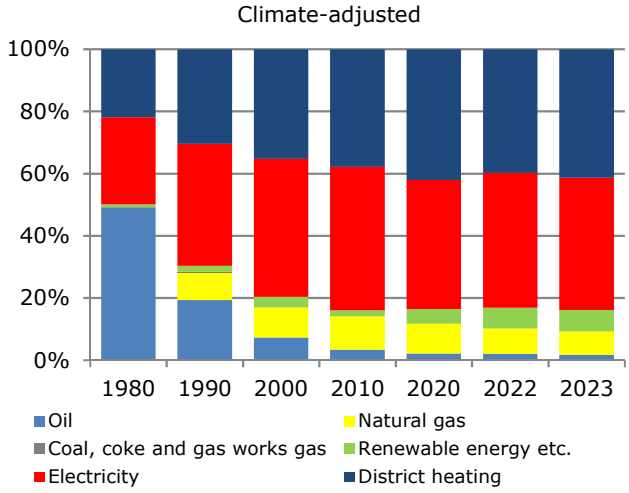
Energy consumption by energy product



Electricity and district heating are predominant energy sources in the commercial and public services sector. In 2023, electricity consumption decreased by 2.5%, relative to the previous year, while district heating consumption increased by 3.2%.

Compared with 1990, oil consumption fell by 90.5%, while natural gas consumption decreased by 14.0%. In 2023, consumption of electricity and consumption of district heating was 12.8% and 40.9% higher, respectively, than in 1990.

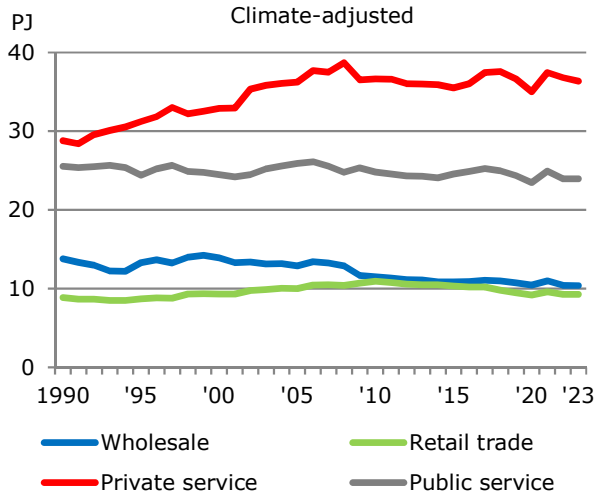
Composition of energy consumption in the commercial and public services



The composition of energy consumption in the commercial and public services sector has changed significantly since 1980, when oil consumption was dominant. In 1990, electricity and district heating together accounted for 69.5% of total energy consumption in the commercial and public services sector (electricity 39.1% and district heating 30.4%). The share of oil and natural gas was 19.3% and 9.0%, respectively, while consumption of renewable energy etc. accounted for 1.9%.

In 2023, electricity and district heating consumption together accounted for 83.8% of total energy consumption (electricity 42.5% and district heating 41.3%). The share of oil was 1.8%, while the share of natural gas was 7.4%. The share of renewable energy etc. was 7.0%.

Energy consumption by sector



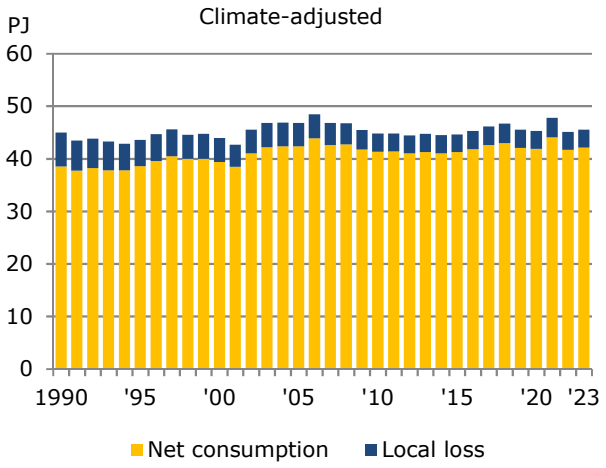
In 2023, 75.4% of energy consumption in the commercial and public services sector was in private and public services, while wholesale and retail accounted for the remaining 24.6%.

From 2022 to 2023, energy consumption in private services and public services fell by 1.1% and 0.1%, respectively. For wholesale and retail, energy consumption fell by 0.1% and 0.3%, respectively.

Compared with 1990, energy consumption in wholesale fell by 24.6%, while energy consumption in retail grew by 4.3%.

Energy consumption in the private service sector is higher today than in 1990. Since 1990, growth has been 26.3%. In the public services sector, energy consumption is 6.3% lower compared with 1990.

Energy consumption for heating in the commercial and public services

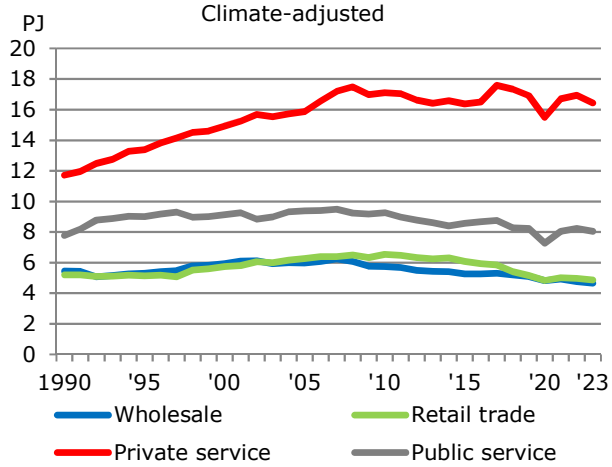


Energy consumption for heating (space heating and hot water) can be calculated in different ways. While final energy consumption is the volume of energy paid for, net energy consumption is the volume of energy utilised. The difference is local losses by the individual consumers, e.g. from oil and natural gas boilers.

Final energy consumption for heating in the commercial and public services sector was 45.5 PJ in 2023, which is 0.9% higher than the year before. Compared with 1990, consumption grew by 1.2%.

Net energy consumption was 42.1 PJ in 2023, which is 1.1% lower than the year before. Compared with 1990, net energy consumption increased by 9.4%.

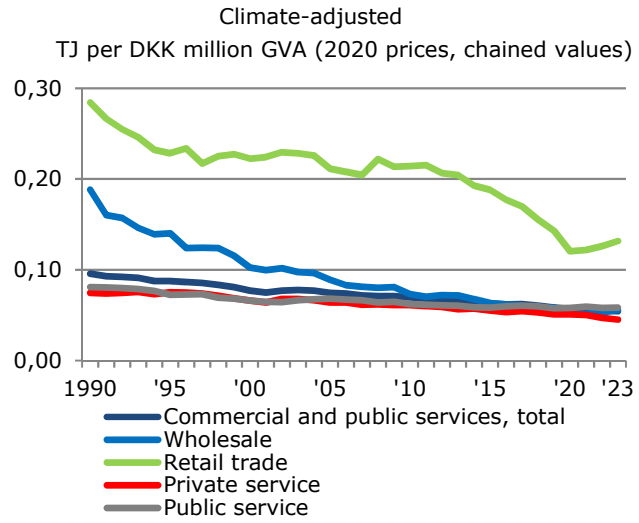
Electricity consumption by sector



From 1990 to 2023, electricity consumption in wholesale decreased by 14.6% and in retail by 6.6%. Electricity consumption increased by 3.6% in the public services sector and by 40.3% in the private services sector.

In 2023, both electricity consumption in wholesale and retail was 2.1% lower, than in 2022. In the private services sector, electricity consumption increased by 3.0%, while in the public services sector it increased by 2.1%.

Energy intensities in the commercial and public services

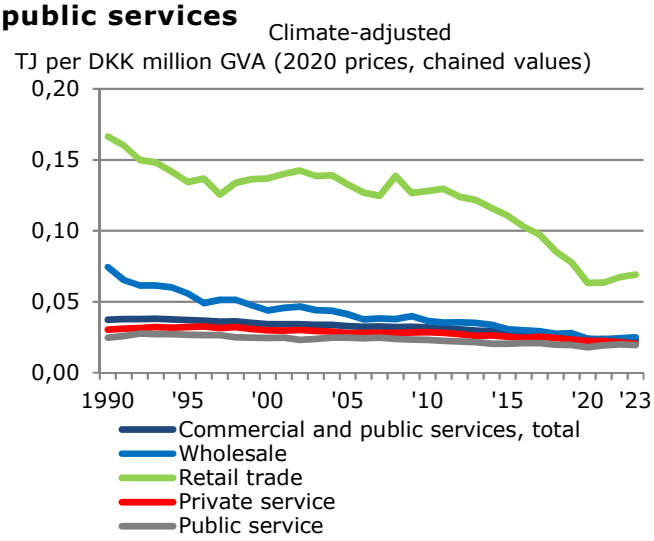


Energy intensities have been calculated as climate-adjusted energy consumption in relation to gross value added (GVA), measured at 2020 prices, chained values.

Energy intensity was 0.054 in 2023, i.e. for every DKK 1 million GVA in the commercial and public services sector, 0.054 TJ of energy were used. This is 1.2% less than the year before.

Energy intensity in the commercial and public services sector fell by 44.4% from 1990 to 2023. For wholesale and retail, energy intensities fell by 70.4% and 53.7%, respectively. For private and public services, intensities fell by 39.7% and 28.1%, respectively.

Electricity intensities in commercial and public services

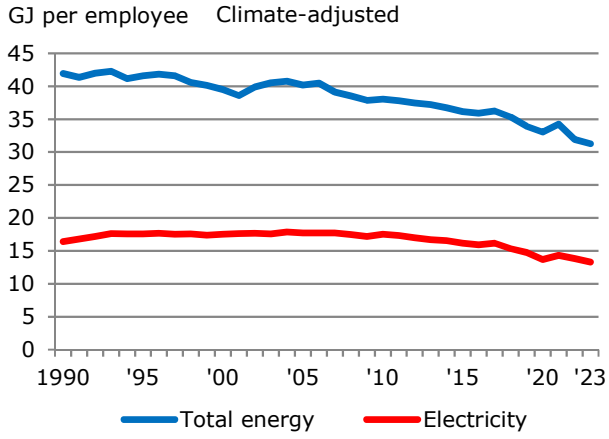


Electricity intensities have been calculated as climate-adjusted electricity consumption in relation to GVA, measured at 2020 prices, chained values.

In 2023 electricity intensity was 0.023, i.e. for every DKK 1 million GVA in the commercial and public services sector, 0.023 TJ of electricity (corresponding to 6,389 kWh) were used. Electricity intensity fell by 3.2% relative to the year before.

Electricity intensity in the commercial and public services sector fell by 39.6% from 1990 to 2023. For wholesale and retail, electricity intensities fell by 66.5% and 58.5%, respectively. In the private services sector, electricity intensity fell by 32.9%, while in the public services sector it fell by 20.6%.

Energy consumption per employee in the commercial and public services



Energy and electricity consumption per employee in the commercial and public services sector have developed differently than the intensities shown above. This is due to a considerable increase in productivity, measured as GVA per employee.

Energy consumption per employee was 31.3 GJ in 2023, as opposed to 31.9 GJ the year before. This corresponds to a decrease of 2.0%. Compared with 1990, energy consumption per employee fell by 25.5%.

In 2023, electricity consumption per employee was 13.3 GJ, as opposed to 13.8 GJ the year before, which is a fall of 3.9%. Compared with 1990, electricity consumption per employee decreased by 19.0%.

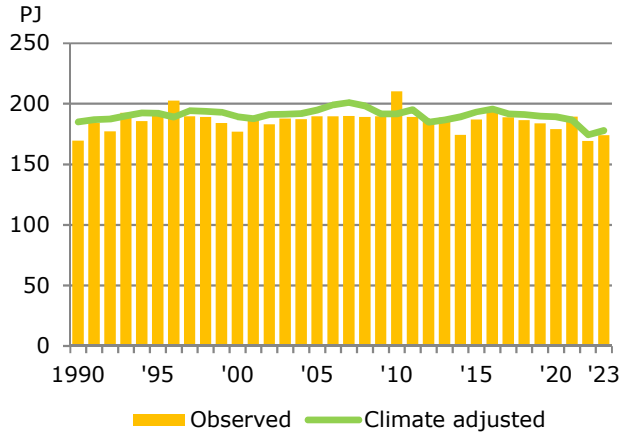
Final energy consumption in the commercial and public services

Direct energy content [TJ]	1990	2000	2005	2010	2015	2020	2022	2023	Change '90-'23
Total commercial and public services. Climate adjusted	**77 047**	**80 599**	**85 045**	**83 893**	**81 270**	**78 164**	**80 462**	**79 988**	**3.8%**
Oil	14 850	5 874	4 428	2 810	2 671	1 631	1 652	1 405	-90.5%
Natural gas	6 902	7 739	9 989	8 977	7 680	7 514	6 501	5 939	-14.0%
Coal and coke	98	-	-	-	-	-	-	-	-100%
Waste, non-renewable	457	691	648	163	137	253	279	220	-51.9%
Renewable energy	1 022	2 078	2 178	1 491	1 813	3 435	5 095	5 346	423%
Electricity	30 147	35 715	37 479	38 656	36 303	32 424	34 889	34 010	12.8%
District heating	23 449	28 451	30 281	31 761	32 628	32 876	32 017	33 042	40.9%
Gas works gas	121	52	42	35	37	30	29	25	-79.7%
By use									
Wholesale	13 795	13 893	12 906	11 493	10 882	10 474	10 405	10 396	-24.6%
Retail	8 883	9 323	9 991	10 939	10 331	9 181	9 297	9 266	4.3%
Private service	28 812	32 901	36 238	36 653	35 502	35 032	36 795	36 377	26.3%
Public service	25 557	24 481	25 909	24 807	24 555	23 478	23 965	23 948	-6.3%

Final energy consumption in households

Direct energy content [TJ]	1990	2000	2005	2010	2015	2020	2022	2023	Change '90-'23
Total households. Climate adjusted	**185 039**	**189 275**	**194 729**	**191 585**	**193 228**	**189 320**	**174 425**	**177 863**	**-3.9%**
Oil	58 998	35 444	27 617	18 595	11 105	7 807	7 034	6 399	-89.2%
Natural gas	17 877	29 329	29 993	27 761	25 495	21 970	13 546	11 890	-33.5%
Coal and coke	830	49	8	28	-	-	-	-	-100%
Renewable energy	17 434	22 052	33 279	39 444	48 724	50 504	49 136	52 540	201%
Electricity	35 696	37 339	37 810	36 738	36 855	37 507	35 077	35 249	-1.3%
District heating	52 820	64 466	65 536	68 612	70 620	71 183	69 294	71 503	35.4%
Gas works gas	1 384	594	486	408	429	349	338	282	-79.6%
Single-family houses	**137 383**	**139 568**	**144 258**	**140 888**	**142 003**	**137 766**	**125 023**	**128 154**	**-6.7%**
Oil	52 233	32 741	25 032	16 910	9 408	6 698	6 015	5 615	-89.2%
Natural gas	15 143	24 907	25 472	23 554	21 529	18 464	11 391	9 996	-34.0%
Coal and coke	136	17	0	13	-	-	-	-	100%
Renewable energy	17 420	22 006	33 226	39 370	48 594	49 739	47 989	51 352	195%
Electricity	27 011	28 210	28 279	27 335	27 772	27 934	25 624	26 139	-3.2%
District heating	24 685	31 364	31 985	33 486	34 467	34 741	33 819	34 898	41.4%
Gas works gas	754	323	264	221	234	190	184	153	-79.7%
Multi-family houses	**47 656**	**49 706**	**50 471**	**50 696**	**51 225**	**51 554**	**49 402**	**49 709**	**4.3%**
Oil	6 766	2 703	2 585	1 685	1 696	1 109	1 018	784	-88.4%
Natural gas	2 733	4 422	4 522	4 207	3 966	3 505	2 155	1 893	-30.7%
Coal and coke	693	32	8	15	-	-	-	-	-100%
Renewable energy	14	46	54	74	129	765	1 148	1 188	8340%
Electricity	8 686	9 129	9 530	9 403	9 084	9 573	9 453	9 110	4.9%
District heating	28 135	33 103	33 550	35 125	36 153	36 442	35 474	36 606	30.1%
Gas works gas	630	271	222	187	196	159	154	129	-79.6%

Energy consumption in households

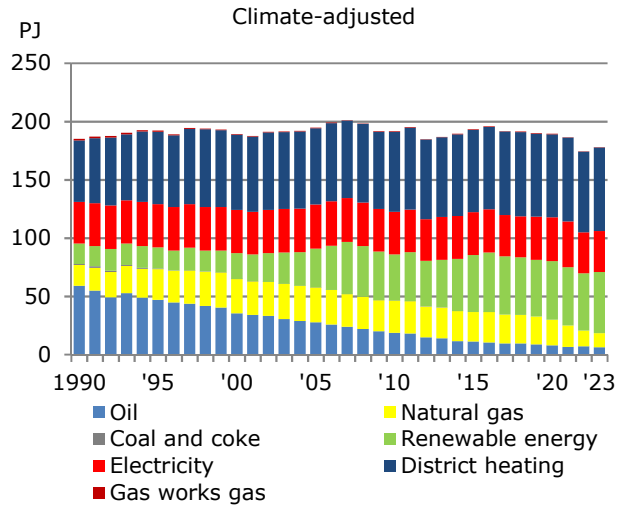


Household energy consumption is greatly influenced by the weather. The years 1990, 2000 and 2014 were very hot years with low energy consumption, whereas 1996 and 2010 were exceptionally cold.

In 2023, climate-adjusted energy consumption by households was 177.9 PJ, accounting for 30.1% of total final energy consumption in Denmark. Of the 177.9 PJ, on average 147.0 PJ were used for heating and 30.9 PJ for electrical appliances etc.

The climate-adjusted energy consumption of households was 2.0% higher in 2023 than the year before. Compared with 1990, energy consumption has fallen by 3.9%.

Household consumption by energy products

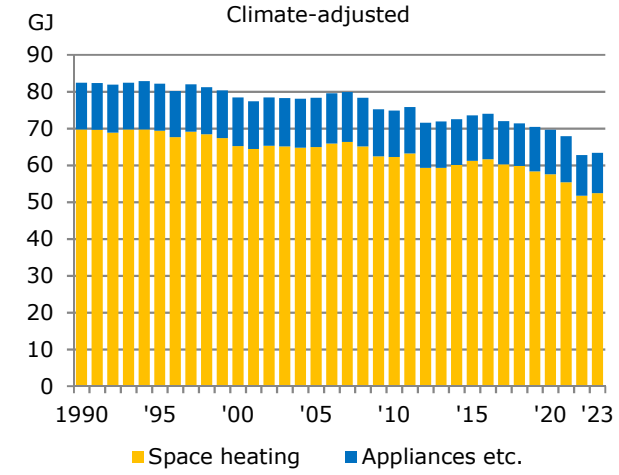


There have been significant changes in the composition of household energy consumption since 1990. Oil consumption decreased throughout the period shown due to a shift to district heating and natural gas.

In 2023, district heating amounted to 40.2% of household energy consumption, and renewable energy and electricity amounted to 29.5% and 19.8%, respectively. Consumption of natural gas, oil and gas works gas amounted to 6.7%, 3.6% and 0.2%, respectively.

Electricity consumption remained more or less constant from the 1990s until 2000. Electricity consumption showed an increasing trend from 2002 to 2006, whereas consumption in the period from 2009 to 2023 has fluctuated between 35 PJ and 39 PJ. Electricity consumption increased to 35.2 PJ in 2023, up by 0.5% relative to 2022.

Energy consumption per household

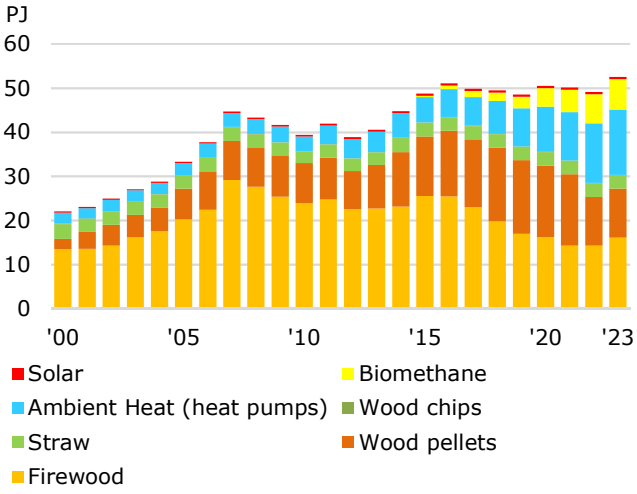


In 2023, average energy consumption per household was 63.4 GJ, which is 1.0% higher than the year before. Of this, 52.4 GJ – corresponding to 82.7% - were used for space heating and hot water. Energy consumption by households went down by 24.8% compared with 1990.

In 2023, average electricity consumption per household for electrical appliances and lighting was 10.0 GJ, corresponding to approximately 2,777 kWh. This is the same as the year before and 14.5% less than in 1990.

Households also consume a small amount of motor gasoline for garden tools etc., LPG (bottled gas) and gas works gas for other purposes. Consumption of motor gasoline and diesel oil for household vehicles has been included under road transport.

Renewable energy consumption in households by energy product

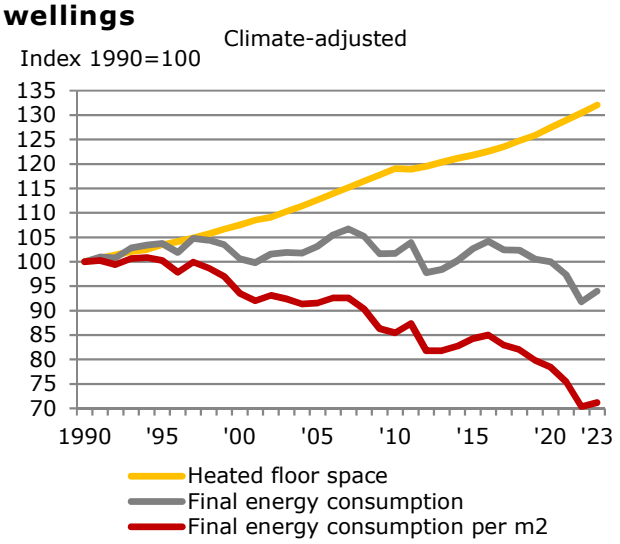


In 2023, total final renewable energy consumption by households amounted to 29.5% of total consumption of energy products, see page 35. This does not include electricity and district heating produced with renewable energy. Throughout the period from 2000 to 2023, consumption of firewood and wood pellets has accounted for a significant proportion of household renewable energy consumption, peaking at 85% in 2007. Consumption has been falling in recent years, and amounted to 52% in 2023, while consumption of ambient heat (heat pumps) and biogas in particular has risen.

In 2023, firewood accounted for 30.7% of household renewable energy consumption, followed by ambient heat and wood pellets, at 28.2% and 21.0% respectively. The consumption of bio natural gas, straw, solar energy and wood chips amounted to 13.1%, 5.8%, 1.0% and 0.2% respectively.

Consumption of renewable energy increased from 22.1 PJ in 2000 to 52.5 PJ in 2023; an increase of 138%.

Energy consumption for heating in dwellings



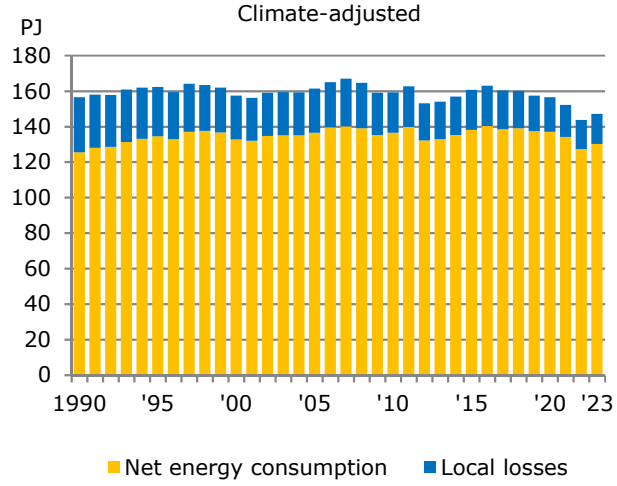
Except for in the years 2001, 2012 and 2013, climate-adjusted energy consumption for heating (space heating and hot water) has been between 0.2% and 6.7% above the 1990 level. In 2023, energy consumption was 6.0% below the 1990 level.

The background for this is a 32.1% increase in total heated area in the period from 1990 to 2023.

In the period 1990 to 2023, energy consumption for heating per m^2 fell by 28.8%. This fall can be explained by improvements in the insulation of older dwellings as well as a shift away from old oil-fired boilers to more efficient natural gas boilers and district heating installations. In addition, according to the building regulations, new homes must have lower energy consumption per m^2 than existing homes. An increase in less efficient use of biomass draws in the opposite direction.

Source: Statistics Denmark

Net energy consumption and heat loss for heating in dwellings

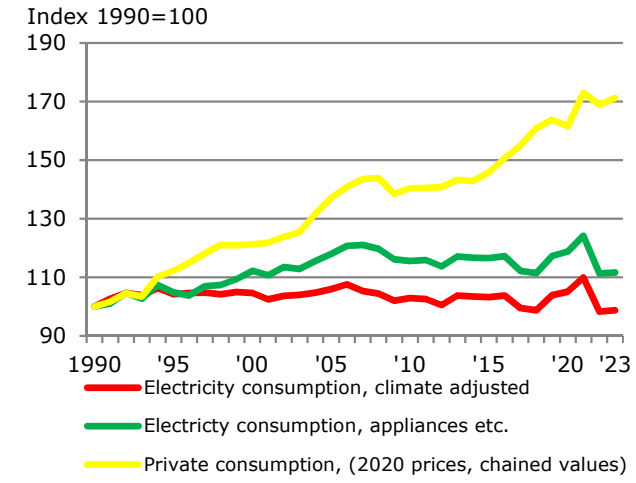


Net energy consumption means the utilized energy. The difference between final energy consumption and net energy consumption is local heat loss in individual dwellings, e.g. from oil and natural gas boilers.

While, as mentioned above, final consumption for heating has decreased from 1990 to 2023, net energy consumption for space heating and hot water in households increased by 3.8% in the same period.

The different trend is due to the shift from oil heating to district heating and later also to natural gas heating and heat pumps, and these types of heating system are associated with considerably smaller local losses. The increase in net energy consumption is due to the fact that the growth in the total heated area has been greater than the reduction in consumption per m^2.

Private consumption and electricity consumption in households



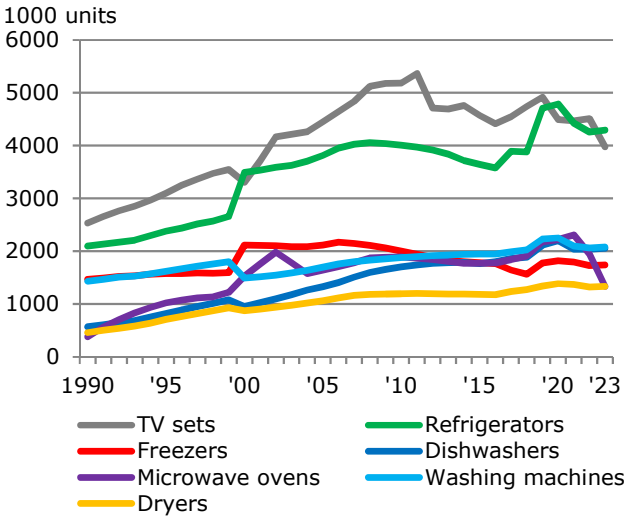
In the period 1990-2023, total household electricity consumption fell by 1.3%, while electricity consumption for appliances and lighting etc. increased by 11.7%.

Taking into account the large increase in the number of electrical appliances per household, see below, and a general increase of 71.2% in total private consumption, i.e. considerably larger growth in private consumption than in electricity consumption for appliances and lighting etc., this may seem like a surprise.

This development is due to significant decreases in the specific electricity consumption of electric appliances, see below.

Source for private consumption: Statistics Denmark

Household stock of electrical appliances

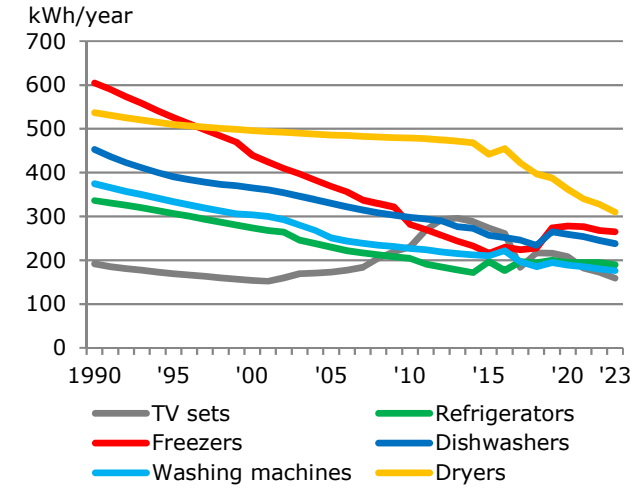


In the period from 1990 to 2010, there has been a sharp increase in the stock of almost all electricity-consuming household appliances.

From 1990 to 2023, the number of microwaves has increased by 250%, while the number of tumble dryers and dishwashers has increased by 189% and 260%, respectively. Television sets, washing machines and refrigerators have also increased considerably in numbers. The number of separate freezers has increased by 18.3% since 1990.

Source: ElmodelBOLIG

Specific electricity consumption of household appliances



All else being equal, the trend in the stock of appliances should lead to a considerable increase in electricity consumption. The reason that this has not happened is particularly due to a significant improvement in the average specific electricity consumption (kWh/year) of appliances in the same period.

For example, the average annual electricity consumption of a refrigerator fell from 336 kWh in 1990 to 190 kWh in 2023, i.e. by 43.5%. Electricity consumption for a separate freezer fell by 56.2%, while the fall for a washing machine was 53.0% in the same period.

Source: ElmodelBOLIG

Inventories of CO_2 and other greenhouse gases

Emission inventories of CO_2 and the remaining greenhouse gases (CH_4, N_2O and fluorinated gases (F-gasses)) are used to track Denmark's progress towards meeting its international GHG emissions reduction targets. Pursuant to the EU's Effort Sharing Regulation (EU ESR) on binding annual emissions reduction targets from 2021 to 2030, Denmark must reduce its greenhouse gas emissions from certain sectors within energy, industrial processes and product use, agriculture, and waste by 2030. Denmark is obligated to reduce its greenhouse gas emissions by 50% by 2030 relative to its 2005 baseline year emissions, which have been estimated at 40.4 million tonnes CO_2 equivalents. The EU ESR also sets annual emission allowances for the years 2021-2029. Denmark's emission allowances were 31.3 million tonnes CO_2 equivalents in 2022.

Total Danish observed ESR emissions amounted to 30.7 million tonnes CO_2 equivalents in 2022, which is 25.7% lower than in the 2005 baseline year.

Total Danish observed greenhouse gas emissions (including LULUCF) amounted to 41.7 million tonnes CO_2 equivalents in 2022, which is 46.8% lower than emissions in 1990.

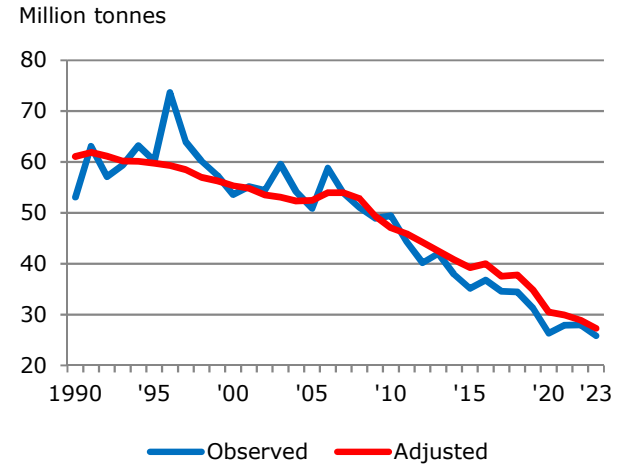
Including the energy statistics' adjustments for fluctuations in temperature and net exports of electricity, emissions (including LULUCF) in 2022 amounted to 42.6 million tonnes CO_2 equivalents, corresponding to a fall of 50.6% relative to adjusted emissions in 1990.

The GHG emissions inventory for 2023 will be ready in 2025. The total GHG emissions inventory includes CO_2 emissions from energy use (excluding emissions from international aviation and the effect of border trade in motor gasoline and diesel oil, both of which are included in the CO_2 accounts in the energy statistics), as well as CO_2 emissions from other sources (flaring of gas in the North Sea and certain industrial processes). Emissions of six other greenhouse gases are also included: methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF_6) and nitrogen trifluoride (NF_3), which are converted to CO_2 equivalents.

Danish reduction efforts contribute to meeting the EU's overall reduction target under the Paris Agreement to reduce the EU's total greenhouse gas emissions by 55% from 1990 to 2030.

Source: Danish Energy Agency and DCE - Danish Centre for Environment and Energy

CO_2 emissions from energy consumption

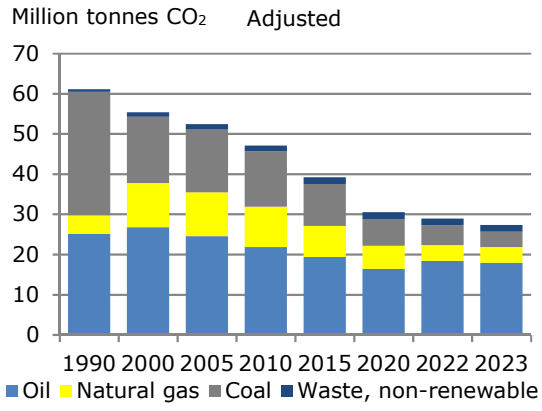


The Danish Energy Agency calculates observed CO_2 emissions as well as adjusted CO_2 emissions including international aviation and the effect border trade. The adjusted figures take annual temperature variations and foreign trade in electricity into account (see pages 18 and 19 on energy consumption). The purpose of the adjustment is to illustrate any underlying trends.

In 2023, observed CO_2 emissions from energy consumption were 25.8 million tonnes, which is 7.6% lower than in 2022. Observed CO_2 emissions dropped by 51.3% compared with 1990.

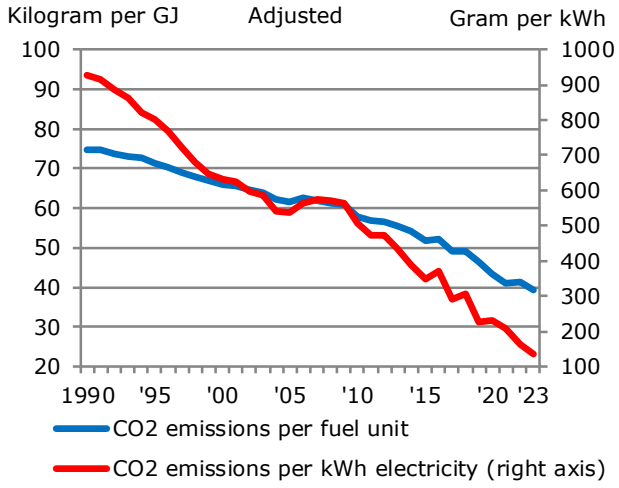
Adjusted CO_2 emissions from energy consumption fell by 5.4% to 27.3 million tonnes in 2023. Compared with 1990, the drop is 55.3%.

CO_2 emissions by fuel



Since 1990, there has been a significant shift in energy consumption analysed by fuel. Consumption of renewable energy has increased significantly, but there was also a large increase in the consumption of natural gas until 2004, while in recent years consumption has fallen significantly. In contrast, consumption of coal in particular, and also oil, has decreased since 1990. This shift in fuels has led to a reduction in CO_2 emissions, as consumption of oil and coal entails greater CO_2 emissions than consumption of natural gas and renewable energy. While gross energy consumption has fallen by 15.1% since 1990, adjusted CO_2 emissions have fallen by 55.3%.

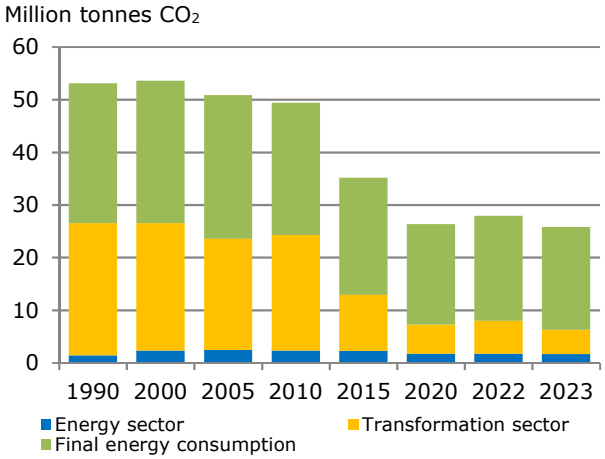
CO_2 emissions per fuel unit and per kWh electricity



From 1990-2023 gross energy consumption fell by 15.1% and the breakdown by fuel changed significantly. As a result of the shift from fossil fuels to renewables, still less CO_2 is emitted for each unit of fuel consumed. In 2023, each GJ of adjusted gross energy consumption was linked to 39.3 kg CO_2, as opposed to 74.6 kg in 1990. This corresponds to a reduction of 47.3%.

One kWh of electricity sold in Denmark in 2022 led to 138 grams of CO_2 emissions. The 200% method has been used in the breakdown of energy consumption by CHP units between electricity and district heating. In 1990, CO_2 emissions were 929 grams per kWh of electricity sold. The reasons for this large reduction are shifts to other fuels in electricity production as well as the ever-increasing significance of solar energy and of wind power, in particular.

Observed CO_2 emissions by sector

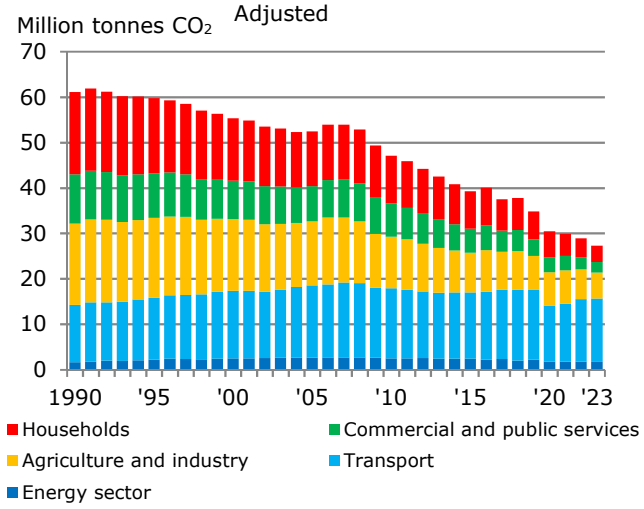


The energy system is divided into three sectors: the *energy sector* (extraction and refining), the *transformation sector* (production of electricity, district heating, and gas works gas), and *final consumption* (transport and consumption by households and industries).

In 1990, total observed CO_2 emissions were 53.1 million tonnes. Of these, 25.1 million tonnes came from the transformation sector and 26.6 million tonnes came from final energy consumption, while the energy sector emitted 1.4 million tonnes.

In 2023, total observed CO_2 emissions were 25.8 million tonnes, of which 4.6 million tonnes were from the transformation sector, 19.5 million tonnes were from final energy consumption, and 1.6 million tonnes were from the energy sector. The transformation sector saw a fall of 20.5 million tonnes of CO_2 from 1990 to 2023, although electricity and district heating production grew significantly in this period.

CO_2 emissions from end-use of energy



CO_2 emissions from energy use in the production of electricity, district heating and gas works gas can be broken down by end consumer to illustrate how emissions distribute across the energy sector, transport, industries and households.

In 2023, transport, and agriculture and industry accounted for the largest shares of total CO_2 emissions, with 51.1% and 20.9%, respectively. Households and the commercial and public services sector accounted for 13.3% and 8.5%, respectively, while the energy sector accounted for 6.1% of CO_2 emissions.

Compared with 1990, CO_2 emissions from transport increased by 10.7%. Industries and households have seen significant decreases. In the agriculture and industry sector, and the commercial and public services sectors, CO_2 emissions fell by 67.9% and 78.7% respectively, while for households they fell by 79.9%.

Observed CO_2 emissions from energy consumption

1000 tonnes									Change
Observed emissions	**1990**	**2000**	**2005**	**2010**	**2015**	**2020**	**2022**	**2023**	**'90-'23**
Total CO_2 emissions	**53 097**	**53 613**	**50 891**	**49 420**	**35 171**	**26 344**	**27 962**	**25 833**	**-51.3%**
By fuel	**53 097**	**53 613**	**50 891**	**49 420**	**35 171**	**26 344**	**27 962**	**25 833**	**-51.3%**
Oil	24 228	26 247	24 235	22 106	19 219	16 300	18 360	17 912	-26.1%
Natural gas	4 323	10 629	10 676	10 572	7 026	5 114	3 777	3 640	-15.8%
Coal	23 972	15 612	14 582	15 331	7 229	3 162	4 148	2 643	-89.0%
Waste, non-renewable	573	1 124	1 398	1 410	1 697	1 768	1 677	1 639	186%
By sector	**53 097**	**53 613**	**50 891**	**49 420**	**35 171**	**26 344**	**27 962**	**25 833**	**-51.3%**
Energy sector	**1 401**	**2 323**	**2 440**	**2 324**	**2 261**	**1 726**	**1 704**	**1 639**	**16.9%**
Transformation sector	**25 136**	**24 215**	**21 133**	**21 957**	**10 657**	**5 547**	**6 274**	**4 647**	**-81.5%**
Electricity production	20 562	20 163	17 234	17 673	7 435	3 785	4 671	3 127	-84.8%
District heating production	4 474	4 010	3 866	4 249	3 187	1 738	1 584	1 503	-66.4%
Gas works gas production	101	42	33	35	35	25	19	17	-83.3%
Final energy consumption	**26 559**	**27 075**	**27 318**	**25 139**	**22 252**	**19 071**	**19 985**	**19 554**	**-26.4%**
Transport	12 427	14 646	15 719	15 202	14 483	12 164	13 585	13 827	11.3%
Agriculture and industry	7 796	7 588	7 032	5 839	4 952	4 705	4 674	4 155	-46.7%
Commercial and public services	1 408	869	923	803	623	526	495	450	-68.1%
Households	4 928	3 971	3 645	3 295	2 194	1 675	1 231	1 115	-77.4%

Observed CO_2 emissions have been calculated based on observed energy consumption as shown in the energy balance on page 4. By using emission factors specific to fuel, energy consumption is converted to CO_2 emissions. The emission factors applied are shown on page 59. Renewable energy, including renewable waste, is not linked to CO_2 emissions in the calculations.

CO_2 emissions from energy consumption, adjusted*)

1000 tonnes									Change
Adjusted emissions	**1990**	**2000**	**2005**	**2010**	**2015**	**2020**	**2022**	**2023**	**'90-'23**
Total CO_2 emissions	**61 074**	**55 363**	**52 439**	**47 054**	**39 235**	**30 479**	**28 894**	**27 321**	**-55.3%**
By fuel	**61 074**	**55 363**	**52 439**	**47 054**	**39 235**	**30 479**	**28 894**	**27 321**	**-55.3%**
Oil	25 087	26 767	24 511	21 805	19 350	16 427	18 416	17 968	-28.4%
Natural gas	4 646	10 961	10 955	10 054	7 737	5 758	3 919	3 849	-17.2%
Coal	30 758	16 500	15 570	13 798	10 448	6 517	4 878	3 862	-87.4%
Waste, non-renewable	583	1 136	1 403	1 398	1 701	1 777	1 681	1 642	182%
By sector	**61 074**	**55 363**	**52 439**	**47 054**	**39 235**	**30 479**	**28 894**	**27 321**	**-55.3%**
Energy sector	**1 401**	**2 323**	**2 440**	**2 324**	**2 261**	**1 726**	**1 704**	**1 639**	**16.9%**
Transformation sector	**32 258**	**25 456**	**22 498**	**20 121**	**14 581**	**9 494**	**7 120**	**6 079**	**-81.2%**
Electricity production	27 071	20 965	18 418	16 576	11 084	7 283	5 272	4 371	-83.9%
District heating production	5 079	4 446	4 047	3 513	3 461	2 186	1 829	1 691	-66.7%
Gas works gas production	108	45	33	32	36	25	19	17	-84.3%
Final energy consumption	**27 414**	**27 584**	**27 501**	**24 609**	**22 394**	**19 258**	**20 070**	**19 604**	**-28.5%**
Transport	12 427	14 646	15 719	15 202	14 483	12 164	13 585	13 827	11.3%
Agriculture and industry	7 975	7 700	7 073	5 721	4 983	4 746	4 698	4 171	-47.7%
Commercial and public services	1 545	935	950	728	646	559	512	461	-70.2%
Households	5 468	4 302	3 760	2 959	2 282	1 790	1 276	1 145	-79.1%

*) Adjusted for fuel consumption linked to net import of electricity, as well as for temperature fluctuations.

Adjusted CO_2 emissions have been calculated on the basis of adjusted gross energy consumption as shown in the table on page 20. In this statement, energy consumption has been adjusted for temperature fluctuations relative to a normal weather year and fuel consumption linked to foreign trade in electricity. In cold years or years with net electricity exports, the adjustment is therefore negative, while in warmer years or years with net imports of electricity, the adjustment is positive.

Total emissions of greenhouse gases

1000 tonnes CO_2 equivalents	1990	1995	2000	2005	2010	2015	2020	2022	Change '90[1)]-'22
Observed emissions in total[2)]	**71 638**	**79 858**	**72 290**	**67 975**	**64 716**	**49 667**	**42 574**	**42 055**	**-41.3%**
Of which ETS excl. aviation (ETS) [3a)]	-	-	-	26 476	25 266	15 796	10 832	11 214	-57.6%
- CO_2 from domestic aviation (ETS) [3a)]	216	209	170	155	180	131	76	118	-24.0%
- Non-ETS (ESD) [3a)]	-	-	-	41 344	39 270	33 739	31 666	30 723	-25.7%
Emissions ceiling for non-ETS (ESD) [3b)]	-	-	-	-	-	35 021	32 063	31 294	-
Over fulfillment for non-ETS (ESD) [3c)]	-	-	-	-	-	1 282	397	571	-
Observed net emissions in total [4)]	**78 332**	**85 175**	**77 378**	**72 946**	**67 076**	**49 527**	**43 866**	**41 674**	**-46.8%**
Emissions from energy consumption	**51 902**	**59 944**	**52 520**	**49 955**	**48 590**	**34 058**	**26 945**	**27 213**	**-47.6%**
Energy and transformation sector	26 249	32 603	26 105	23 229	24 103	12 902	7 350	8 197	-68.8%
Final energy consumption	25 653	27 341	26 415	26 726	24 486	21 155	19 595	19 016	-25.9%
- Transport (incl. military)	10 910	12 364	12 583	13 873	13 513	12 706	12 176	12 215	12.0%
- Industry	5 732	6 150	6 054	5 577	4 598	3 886	3 730	3 484	-39.2%
- Commercial and public services and households, agriculture etc.	9 011	8 827	7 777	7 277	6 375	4 563	3 690	3 317	-63.2%
Industrial process, flaring etc.	**2 790**	**3 711**	**4 844**	**3 787**	**2 560**	**2 286**	**2 144**	**1 872**	**-32.9%**
Transient emissions and flaring	670	887	1 291	1 050	680	455	235	193	-71.1%
Industrial process	2 119	2 824	3 553	2 737	1 881	1 831	1 909	1 678	-20.8%
Emissions from agriculture	**13 831**	**13 478**	**12 682**	**12 369**	**12 024**	**11 965**	**12 089**	**11 523**	**-16.7%**
Animals digestion	4 455	4 408	4 034	3 873	4 048	4 106	4 136	4 092	-8.1%
Animal manure	3 330	3 797	4 163	4 389	3 993	3 829	3 760	3 492	4.9%
Agricultural land	5 431	4 736	4 214	3 882	3 825	3 852	3 935	3 668	-32.5%
Others (liming of soils etc.)	616	536	270	224	158	178	257	271	-55.9%
Other emissions	**1 960**	**1 625**	**1 364**	**1 138**	**1 016**	**1 010**	**1 144**	**1 222**	**-37.6%**
Waste deposit	1 525	1 240	977	736	611	546	458	421	-72.4%
Sewage treatment	368	289	236	229	201	214	219	211	-42.6%
Other waste (biomass gasification etc.)	67	96	151	173	204	251	467	590	776%
Forestry and land use [5)]	**6 694**	**5 317**	**5 087**	**4 971**	**2 361**	**- 95**	**1 292**	**- 381**	**-106%**
Forestry [5)]	-1 201	-1 209	-1 253	- 878	-2 185	-3 979	-2 104	-3 352	179%
Land use [5)]	7 894	6 526	6 340	5 848	4 546	3 885	3 396	2 971	-62.4%
Indirect CO_2-emissions	**1 155**	**1 100**	**881**	**726**	**526**	**348**	**252**	**226**	**-80.5%**

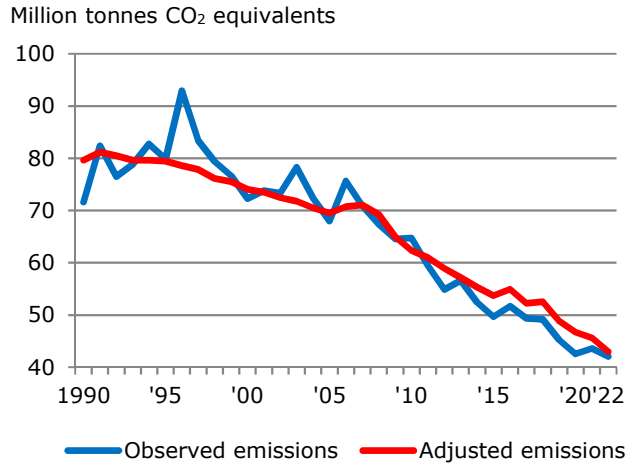
Note 1: The table includes only Danish GHG emissions and removals.
1) Changes are relative to 1990. However, for ETS, ESD/ESR, and domestic aviation reductions are relative to 2005.
2) Total emissions without contributions from "Forestry and land use".
3a) CO_2 emissions from domestic aviation are shown here separately and as part of ETS, although, in practice, these emissions were included under ESD in the period 2005-2011. ESD emissions (2005-2020) and ESR emissions (from and including 2021) have been calculated by deducting ETS emissions from total observed emissions without "Forestry and land use". This data shown us from the most recently reported inventory with recalculations, and the data therefore differs from the EU's annual compliance assessment for historical years.
3b) Emissions ceilings applicable in the EU. Under the UN Kyoto Protocol, emissions ceilings for 2017-2020 were lower.
3c) Gap towards current EU ceilings. A positive figure means emissions are below the ceiling.
4) Total net emissions including contributions from "Forestry and land use", in which CO_2 removals have been included as negative emissions.
5) The figures are not directly comparable with the contributions from forests and soils that, from 2021, are included in Denmark's climate accounts pursuant to the EU LULUCF Regulation.

Observed and adjusted emissions of greenhouse gases

1000 tonnes CO_2 equivalents	1990	2000	2005	2010	2015	2020	2022	2023*	Change '90-'23
Observed emissions, total [1)]	**71 683**	**72 290**	**67 975**	**64 716**	**49 667**	**42 574**	**42 055**	**39 604**	**-44.7%**
Adjusted emissions, total [1)]	**79 615**	**74 041**	**69 523**	**62 351**	**53 732**	**46 709**	**42 987**	**41 092**	**-48.4%**

Note 1: See note 1 above.
Note 2: Denmark's greenhouse gas inventory must be reported internationally without adjustments for fluctuations in climate or fuel consumption linked to foreign trade in electricity. The adjusted greenhouse gas inventory can only be used to illustrate the effect of initiatives and other national impacts influencing CO_2 emissions connected to Denmark's own energy consumption.
1) See 2) above.
* The preliminary emissions statement for 2023 is solely based on CO_2 emissions from energy consumption and flaring as calculated in the Energy Statistics 2023 (although excluding international aviation). Total greenhouse gas emissions are calculated by assuming that all emissions other than CO_2 from energy consumption and flaring (although excluding international aviation) are constant at the values for 2022, calculated by DCE - Danish Centre for Environment and Energy.
Source: DCE - Danish Centre for Environment and Energy

Emissions of greenhouse gases



The figure shows emissions of greenhouse gases, excluding the effects of CO_2 removal by forests and land use.

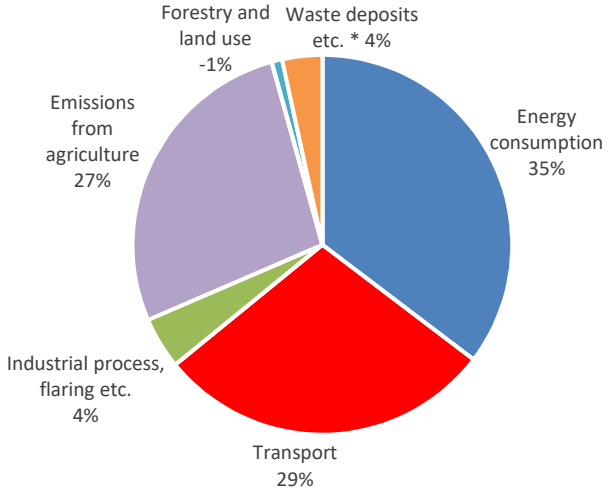
Observed emissions of greenhouse gases were 42.1 million tonnes of CO_2 equivalents in 2022, which is a decrease of 3.5% compared with 2021.

Adjusted for climate variability and fuel consumption linked to foreign trade in electricity, emissions of greenhouse gases were 43.0 million tonnes of CO_2 equivalents in 2022, which is 5.7% less than in 2021. In 2022, net imports of electricity and the number of degree days were lower than in a normal year. Both mean that adjusted emissions were higher than actual emissions.

Source: DCE - Danish Centre for Environment and Energy

www.dce.au.dk

Observed emissions of greenhouse gases distributed by origin 2022



* Landfills etc.: Landfills, Sewage treatment, Other waste (biogasification etc.), and Indirect CO_2-emissions

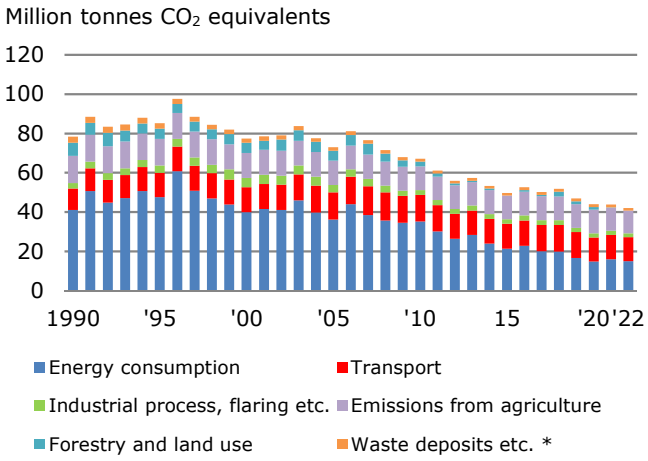
The three largest sources of emissions of greenhouse gases are energy consumption (excluding transport), transport and agriculture. Emissions from energy consumption (excluding transport) derive from the energy and transformation sector as well as final energy consumption in industry, commercial and public services, households, agriculture etc.

In 2022, CO_2 contributed 68.0%, methane (CH_4) 20.2%, nitrous oxide (N_2O) 11.2% and F gases 0.7% to total emissions of greenhouse gases (excluding forests and land use). The primary source of CO_2 emissions is fuel consumption for energy purposes, including transport. The primary source of both methane and nitrous oxide emissions is agriculture, but waste also significantly contributes to methane emissions.

Source: DCE - Danish Centre for Environment and Energy

www.dce.au.dk

Trends in observed emissions of greenhouse gases



* Waste deposits etc.: Waste deposit, Sewage treatment, Other waste and Indirect CO2-emissions

Observed net emissions of greenhouse gases fell by 46.8% from 1990 to 2022. If emissions from forestry and land use are not included, the fall for the same period is 41.3%. Energy consumption (excluding transport) saw the largest fall with a reduction of 63.4% from 1990 to 2022. Observed net emissions from transport increased by 12.0%. Emissions of greenhouse gases from agriculture fell by 16.7% from 1990 to 2022, primarily due to falling emissions of N_2O.

Note: Exclusive of LULUCF and indirect CO_2-emissions.
Source: DCE - Danish Centre for Environment and Energy.

www.dce.au.dk

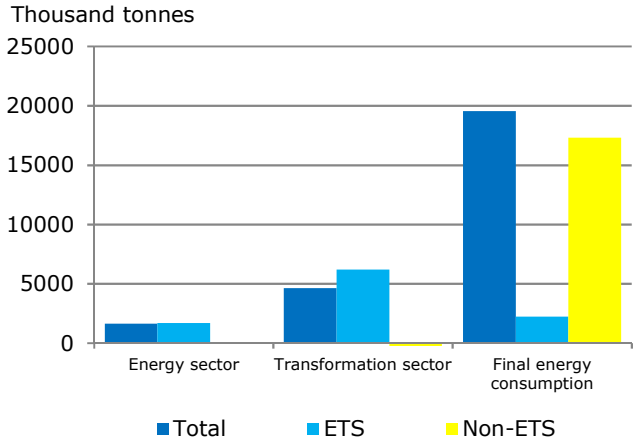
ETS and non-ETS CO_2 emissions from energy consumption 2021-2023

Observed CO_2 emissions from energy consumption

1000 tonnes	Total			EU ETS			Non-EU ETS		
	2021	2022	2023	2021	2022	2023	2021	2022	2023
Total	**27 894**	**27 962**	**25 833**	**11 546**	**12 376**	**10 729**	**16 348**	**15 586**	**15 170**
Energy sector	**1 720**	**1 704**	**1 639**	**1 720**	**1 704**	**1 639**	**-**	**-**	**-**
Transformation sector	**6 493**	**6 274**	**4 647**	**6 233**	**6 176**	**4 713**	**260**	**98**	**-**
Final energy consumption	**19 680**	**19 985**	**19 547**	**3 593**	**4 496**	**4 377**	**16 087**	**15 488**	**15 170**
Transport*	12 631	13 585	13 827	1 343	2 286	2 609	11 287	11 298	11 219
Agriculture and industry	4 922	4 674	4 155	2 250	2 210	1 768	2 672	2 464	2 387
- agriculture, forestry and horticulture	927	992	960	4	0	0	922	992	960
- manufacturing	3 114	2 787	2 274	2 245	2 210	1 768	868	577	505
- other industry	881	895	922				881	895	922
Commercial and public services	609	495	450				609	495	450
Households	1 519	1 231	1 115				1 519	1 231	1 115

Note 1: The first three columns of figures include CO_2 emissions from oil, natural gas and non-renewable waste.
Note 2: The table does not include emissions from industrial processes and flaring.
Note 3: From 2013 non-renewable waste is covered by the EU Emissions Trading System (EU ETS). CO_2 emissions from own consumption by waste incineration plants (industry code 383921) have been included under the transformation sector.
* The CO_2 emissions from domestic and international aviation, as stated in Energy Statistics, are both included under the EU Emissions Trading System (EU ETS). No distinction is made between whether aviation fuels are sold for flights covered by the EU ETS or not.

Observed CO_2 emissions from energy consumption in 2023, EU ETS and non-EU ETS sectors



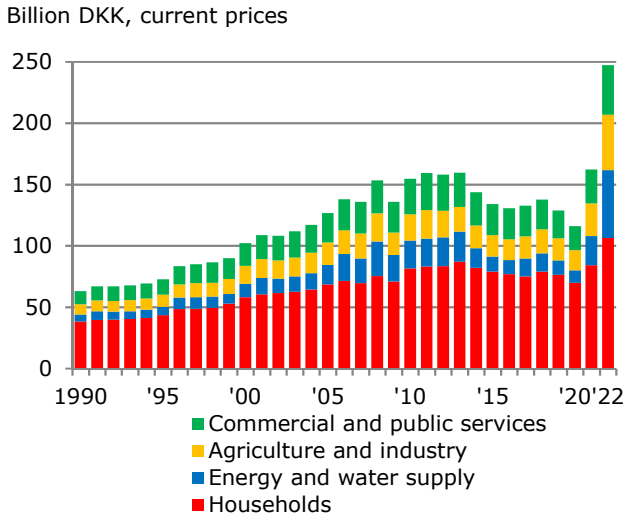
The share of CO_2 emissions covered by the EU Emissions Trading System (EU ETS) varies considerably from sector to sector.

All emissions in the energy sector (which includes refineries and oil and gas production plants in the North Sea) are covered by the EU ETS. The picture is the same for emissions in the transformation sector (which includes power plants and district heating plants) if disregarding non-renewable waste (see note 1 above).

With regard to emissions linked to final energy consumption, i.e. emissions from burning oil, natural gas and coal by enterprises, households and means of transport*, 22% of these are covered by the EU ETS.

* The CO_2 emissions from domestic and international aviation, as stated in Energy Statistics, are both included under the EU Emissions Trading System (EU ETS). No distinction is made between whether aviation fuels are sold for flights covered by the EU ETS or not.

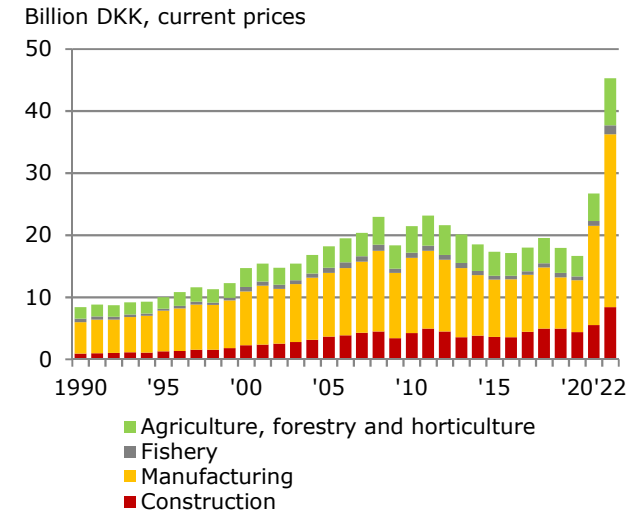
Energy expenses by industry and households



Energy expenses have been calculated based on purchase prices for the year, including taxes and VAT. For industries, as a general rule, a full refund of energy taxes (but not CO_2 taxes) and VAT applies. Total energy expenses by industries and households amounted to DKK 247.4 billion in 2022, which is 52.4% more than the year before. For households energy expenses were DKK 106.5 billion, for agriculture and industry (excluding oil refineries) expenses were DKK 45.3 billion, and for commercial and public services they were DKK 40.4 billion. Energy expenses in current prices increased during the period from 1990-2013. The fall from 2008 to 2009 is due to a reduction in energy consumption. The reason for the large drop in expenses from 2013 to 2017 is a drop in consumer energy prices. Higher costs in 2022 were the result of rising energy prices.

Source: Statistics Denmark.

Energy expenses in agriculture and industry

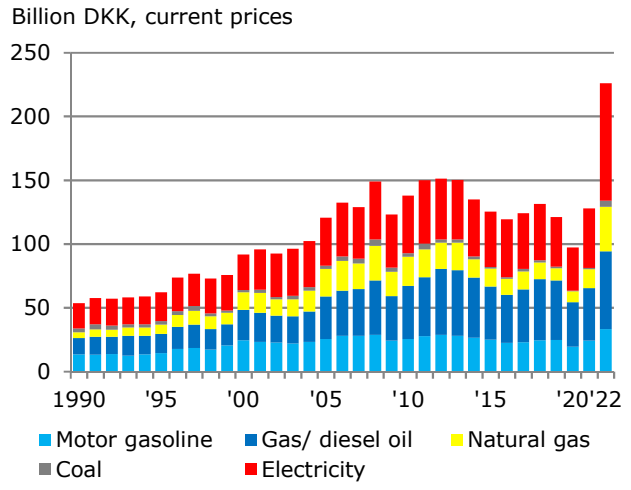


Energy expenses for agriculture and industry can be further analysed between four sub-sectors. Energy expenses for manufacturing industries (DKK 27.9 billion) accounted for the major part of the agriculture and industry sector's energy expenses in 2022 (61.6%).

With DKK 8.4 billion (18.5%), construction contributed the second-largest share. The third-largest share was contributed by agriculture, forestry and horticulture with DKK 7.5 billion. (16.7%). Finally, with DKK 1.5 billion (3.2%), fishing accounted for the smallest share of energy expenses.

In the period 1990-2019, manufacturing industries' share of the agriculture and industry sector's energy expenses followed a downward trend, while the energy expenses of construction have followed an upward trend. Higher costs in 2022 were the result of rising energy prices.
Source: Statistics Denmark

Energy expenses by fuel



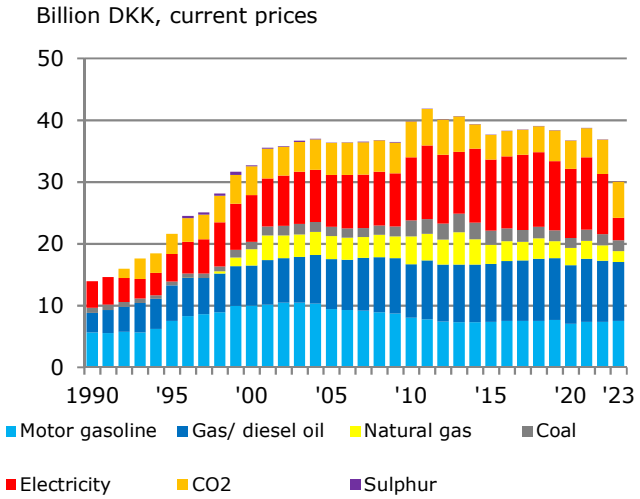
Energy expenses include expenses for motor gasoline, gas/diesel oil, natural gas, coal and electricity. These fuels account for almost 48.6% of total energy expenses of DKK 465 billion, when including expenses for foreign bunkering of Danish operated ships and oil refineries.

Of these fuels, electricity accounted for the largest share (DKK 92.2 billion) of energy expenses in 2022. Gas/diesel oil accounted for the second-largest share (DKK 61.0 billion).

This is followed by motor gasoline (DKK 33.2 billion), natural gas (DKK 34.9 billion), and coal (DKK 4.7 billion).

Source: Statistics Denmark

Revenue from energy, CO_2 and sulphur taxes



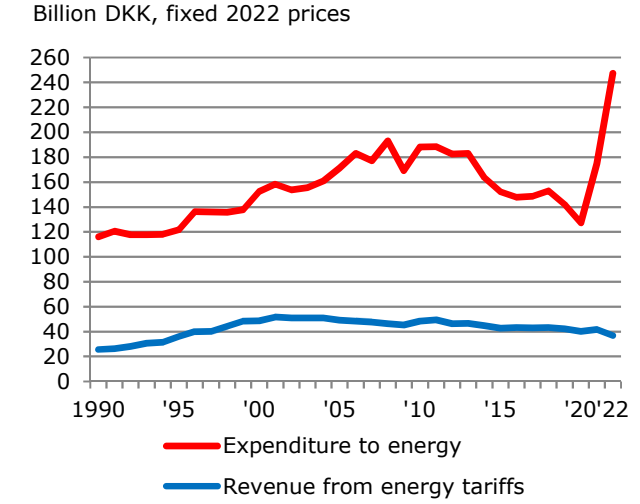
In 2023, revenues from energy taxes in current prices were DKK 30.1 billion, which corresponds to a fall of 18.4% compared with 2022. In addition to energy taxes, revenues include CO_2 and sulphur taxes. The largest contributions to revenues in 2023 came from gas/diesel oil (DKK 9.5 billion), motor gasoline (DKK 7.5 billion), CO_2 taxes (DKK 5.9 billion) and electricity (DKK 3.6 billion)

In current prices, 2023 revenues increased by 116% relative to 1990, when there were no tax on CO_2 and sulphur. Gas/diesel oil and motor gasoline have seen increases of 203% and 33.4%, respectively, while electricity has seen a decrease of 15.7%, since 1990.

In 2023, energy, CO_2 and sulphur taxes amounted to 2.5% of total tax revenues in Denmark.

Source: Statistics Denmark

Energy expenditures and tax revenues, fixed prices



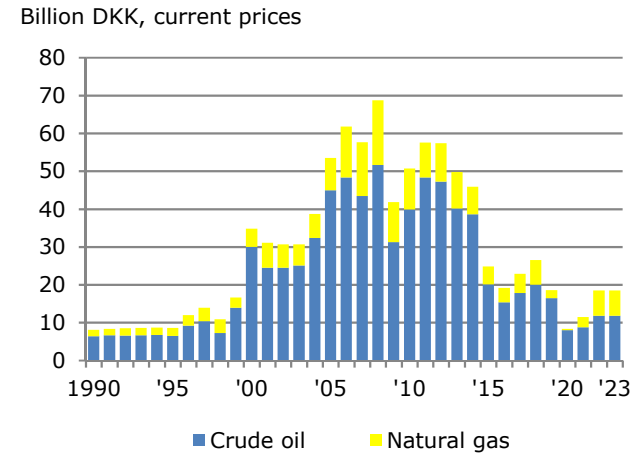
To assess changes in energy expenses and tax revenues in relation to general price fluctuations, the figures have been converted to 2022 prices.

Measured in 2022 prices, energy expenses were 41.5% higher in 2022 than the year before. Compared with 1990, energy expenses increased by 113%.

Revenues from energy taxes in 2022 prices increased by 43.9% from 1990 to 2022.

Source: Statistics Denmark

Value of crude oil and natural gas production

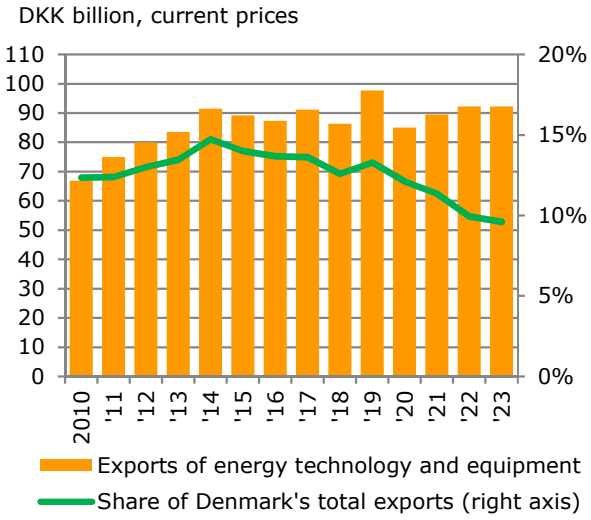


The value of crude oil and natural gas produced from the North Sea in 2023 was DKK 28.7 billion, compared with DKK 18.5 billion the previous year. The value of crude oil increased from DKK 11.8 billion to 25.0 billion, and the value of natural gas decreased from DKK 6.7 billion to 3.7 billion.

The value of the North Sea production depends on the scale of the production as well as on world market prices. The value of Danish production of natural gas decreased by 44.4% in 2023 compared with 2022, while the value of crude oil production increased by 111%. Production fell in 2023 and the change in value can be attributed to price increases (see page 6).

Source: Danish Energy Agency

Exports of energy technology and equipment



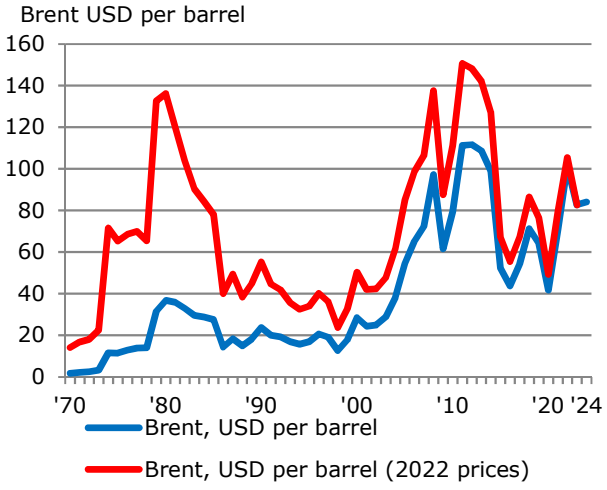
Exports of energy technology and equipment such as wind turbines, district heating pipes, thermostat valves, pumps etc. increased rapidly up to the year 2014.

From 2022 to 2023 exports fell by 2.5%. In 2023, Denmark exported energy technologies and equipment at a value of DKK 90 billion, corresponding to 9.6% of total Danish goods exports.

For more information, see the publication on Danish exports of energy technology and energy services 2023 (*Eksport af energiteknologi og -service 2023*), which is published as collaboration between the Danish Energy Agency, DI Energy and Danish Energy Association. The publication is available in Danish at the website of the Danish Energy Agency.

Source: Eksport af energiteknologi og -service 2023

Spot market prices for crude oil



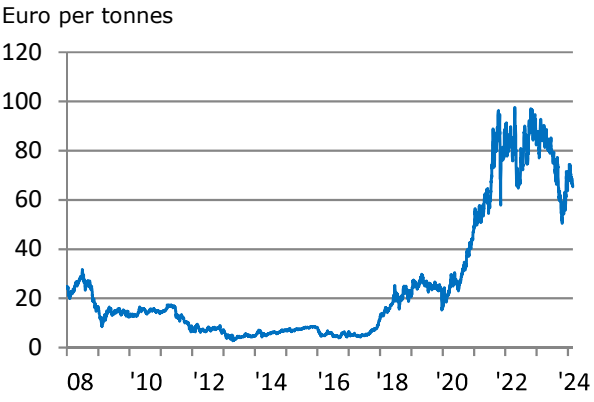
*Prices for 2023 cover only the first six months.

The average crude oil price was USD 82.64 per barrel in 2023. This is a relatively high price compared with the level in the mid-1990s, but it is a relatively low price compared with the level just before and during the economic crisis in 2008.

The current price level was established in 2014, when, in the second half of 2014 up to the start of 2015, the price halved from around USD 100 to about USD 50 per barrel. The price of oil fell by approx. 18.4% in 2023 compared with the previous year because of increased production in multiple high producing countries. The price of oil increased to USD 84.0 during the first half of 2024.

Source: BP and the World Bank (prices for 2024)

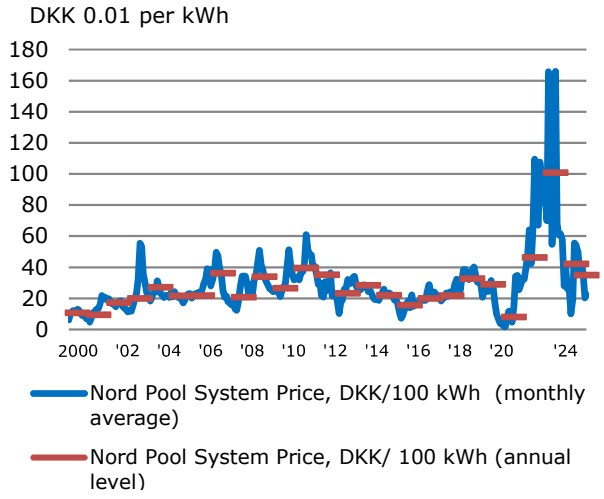
CO_2 prices



The average allowance price was EUR 83.5 in 2023. The EU ETS allowance price has varied since the beginning of 2008. The allowance price for the period 2008-2012 started to fall in the summer of 2008 as the financial crisis led to expectations for lower energy consumption and fewer emissions in the following years. The allowance price was relatively stable from April 2009 to June 2011. The allowance price fell further after this time in step with an increasing surplus of allowances due to continuing economic slowdown and the steeply falling price of international climate credits. In 2017, an EU agreement was reached on revision of the EU Emissions Trading System Directive (EU ETS) for the period 2021-2030, which included a series of structural reforms aimed at addressing the large surplus of emissions allowances. Since the conclusion of the agreement, the price of emissions allowances has increased significantly.

Source: Point Carbon and European Energy Exchange

Spot market prices for electricity



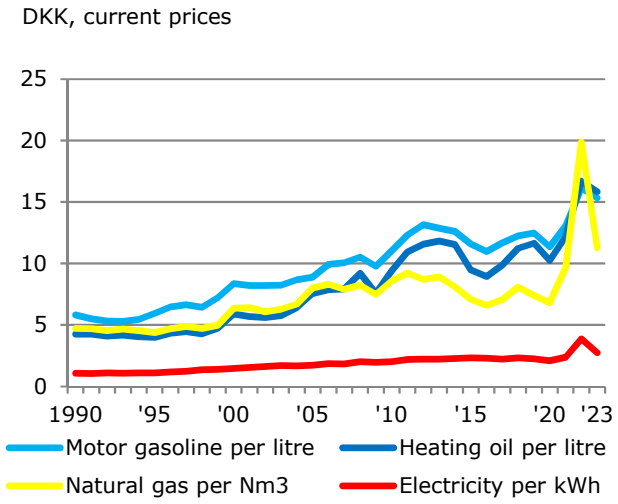
The system price of electricity on Nord Pool is set hour by hour on the basis of supply and demand. The price is affected by a number of factors, including wind, sun, precipitation and temperature. For example, the winter 2010/2011 was affected by concerns over water shortages and increasing electricity consumption in Norway because of low temperatures. This resulted in high prices. The market price of electricity in Denmark may deviate from the system price because of restrictions in transfer capacity between electricity price areas.

The average system price of electricity per kWh was DKK 0.4219 in 2023, as opposed to DKK 1.009 in 2022.

In the first half of 2024, the average system price was DKK 0.349 per kWh.

Source: Nord Pool

Energy prices for households



The energy prices shown are annual averages of current consumer prices, i.e. including energy and CO_2 taxes and VAT. 2021 to 2023 saw high energy prices and this was evident in the energy prices for households in particular.

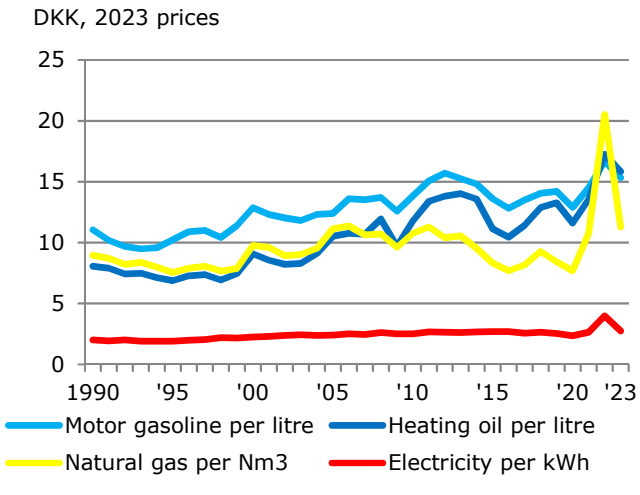
The price of natural gas for households was DKK 11.3 per m^3 in 2023, compared with DKK 19.88 per m^3 the year before, corresponding to a decrease of 43.2%.

The price of heating oil was DKK 15.84 per litre in 2023, as opposed to DKK 16.71 per litre the year before, corresponding to a decrease of 5.2%. In the period 1990-2023, the price increased by 274%.

The price of a litre of motor gasoline was DKK 15.35 in 2023, as opposed to DKK 16.14 in 2022, corresponding to a decrease of 4.9%. The tax on motor gasoline has varied considerably over time and this has affected the price.
The price of electricity was DKK 2.74 per kWh in 2023, compared with DKK 3.87 kWh in 2022, corresponding to an increase of 29.1%.

Source: Eurostat (electricity and natural gas) and Drivkraft Danmark (oil products)

Energy prices for households



Household energy prices have been calculated at fixed 2023 prices by adjusting current prices for changes in the general price level as stated in the consumer price index.

Measured in 2023 prices, the price per litre of natural gas decreased by 45.0% in 2023 relative to 2022.

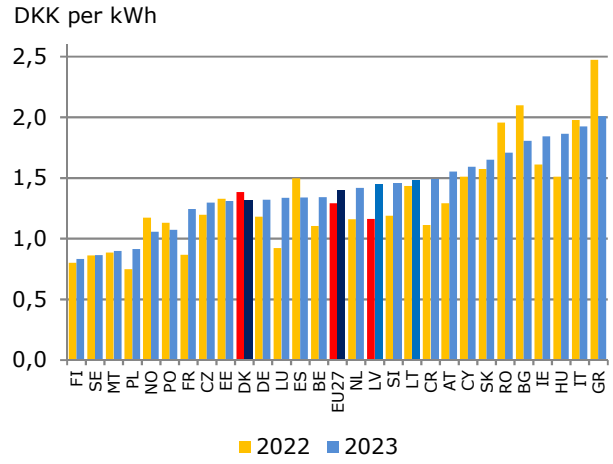
Over a period in the 1990's the price of heating oil fluctuated around DKK 6 per litre. Since 2000, however, the price has been above this level, and in 2023 it was 8.2% lower than in 2022.

Measured in 2023 prices, the price per litre of motor gasoline decreased by 7.9% in 2023 relative to 2022.

The price of electricity in 2023 prices was 31% lower in 2023 than the year before.

Source: Eurostat (electricity and natural gas) and Drivkraft Danmark (oil products), DEA

Electricity prices for industrial customers



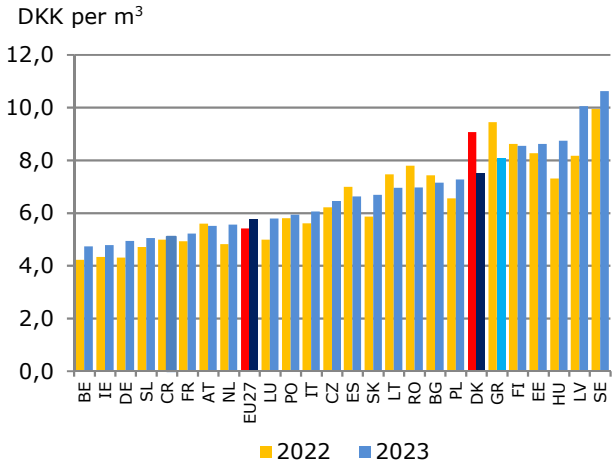
Electricity prices are shown in current prices (DKK per kWh) exclusive of taxes for corporate and industrial customers with annual consumption of between 2 - 20 GWh.

2023 saw both decreasing prices in some EU countries and increasing prices others. The price of electricity per kWh varied among EU Member States (EU27), from DKK 0.93 in Finland to DKK 2.40 in Greece. Norway had an electricity price of DKK 1.06 per kWh.

The Danish electricity price was DKK 1.32 per kWh in 2023. This was 5.7% lower than the average price in EU27, which was DKK 1.39 per kWh. The 2023 Danish electricity price fell by 4.9% relative to the year before. In EU27, the average electricity price was 8.0% higher than the year before.

Source: Eurostat

Natural gas prices for industrial customers



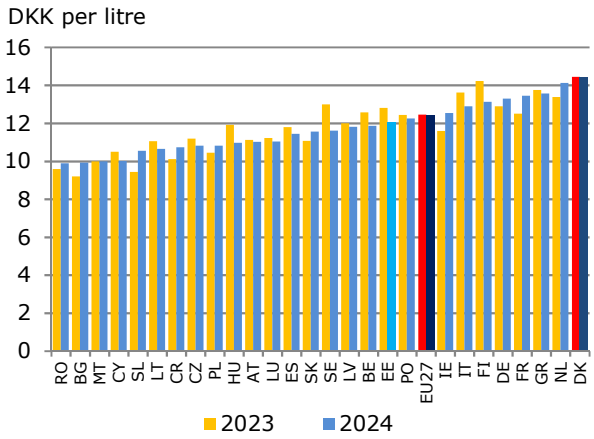
Natural gas prices are shown in current prices (DKK per m^3) exclusive of taxes for corporate and industrial customers with annual consumption of between 10 - 100 TJ.

In 2023, the price of natural gas per m^3 varied in the EU27, from DKK 4.73 in Belgium to DKK 10.62 in Sweden. The average EU27 price was DKK 5.78.

In 2023, at DKK 7.52 per m^3, the Danish price of natural gas was 17% lower than in 2022, while the average EU27 price was 6.5% higher in 2023 compared to the year before.

Source: Eurostat

Motor gasoline prices

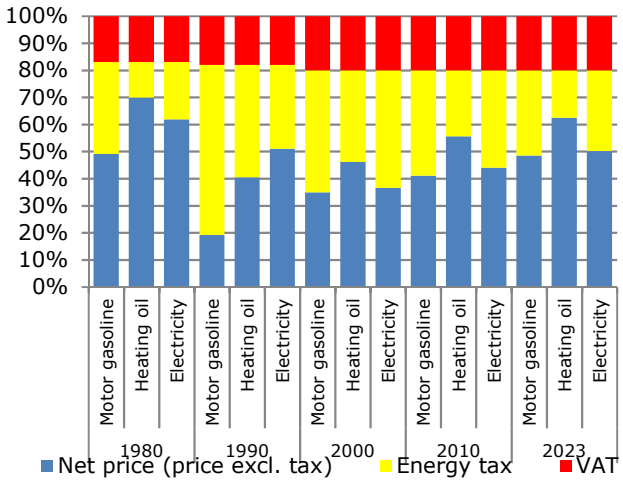


The price of motor gasoline in week 1 in 2024 and 2023, respectively, is shown in current prices (DKK per litre). Prices are for motor gasoline 95 unleaded, including taxes. The average for the EU27 Member States is a weighted average.

In 2024, the lowest price, DKK 9.90 per litre, was in Romania, while the highest price, DKK 14.42, was in Denmark. The average price in the EU27 was DKK 12.42 per litre.

Source: Oil Bulletin, European Commission. The prices cover the first week of 2023 and 2024.

Composition of energy prices for households



The tax share increased considerably from 1980 to 1990. Since then, the tax share of the consumer price has been falling for motor gasoline and for heating oil. For electricity, the tax share continued to increase up to 2000, after which it went down again. In 2023, the tax share increased for electricity as a result of a lower tax rate and increasing electricity prices.

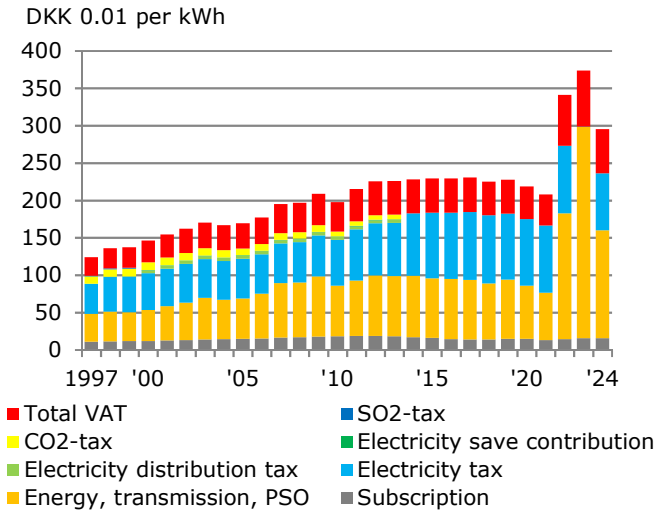
The price of motor gasoline in 2023 of DKK 15.35 per litre was made up as follows: Price exclusive of taxes and VAT 48.5%, taxes 31.5% and VAT 20.0%.

The price of heating oil in 2023 of DKK 15.84 per litre was made up as follows: Price exclusive of taxes and VAT 62.5%, taxes 17.5% and VAT 20.0%.

The price of electricity in 2023 of DKK 2.74 per kWh was made up as follows: Price exclusive of taxes and VAT 50.1%, taxes 29.9% and VAT 20.0%.

Source: Eurostat (electricity) and Drivkraft Danmark (oil products)

Electricity prices for households 1997-2024 (as of 1 January), consumption of 4000 kWh



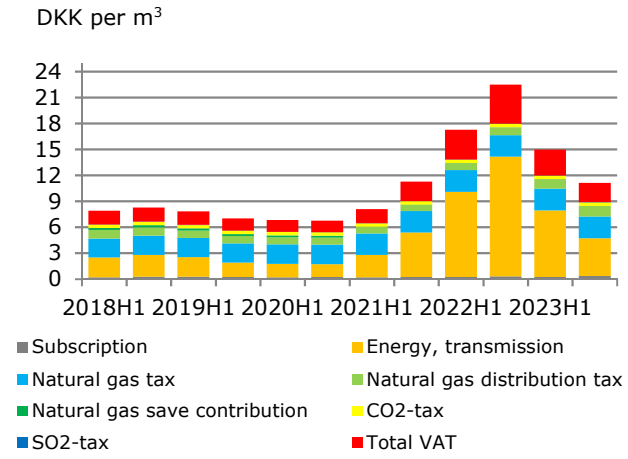
In January 2024, the average price of electricity for household customers with an annual consumption of 4,000 kWh was DKK 2.95 per kWh. This represents a decrease of 21% from the year before. The electricity price has increased by 42.0% since January 2021.

Taxes and VAT in total amounted to DKK 1.35 per kWh in 2024, as opposed to DKK 1.55 per kWh in 2002. Before 2014 there were the following types of taxes: electricity tax, electricity distribution tax, electricity-savings contribution, CO_2 (energy-savings tax) and VAT. From 2014, there has only been electricity tax and VAT. The electricity price was DKK 0.008 per kWh in the first half of 2023.

The price of energy per kWh (including PSO and electricity transmission) was DKK 1.44 in 2024, as opposed to DKK 0.46 in 2001, while subscription costs per kWh were DKK 0.16 in 2023, which is slightly higher than in 2001.

Source: Danish Energy and Danish Utility Regulatory

Natural gas prices for households 2018H1-2023H2



The natural gas price for households is shown in current prices (DKK per m^3).

The natural gas price followed a downward trend in 2019 and 2020. From the first half of 2021 to the second half of 2022, the natural gas price increased. Since then, the price has decreased in 2023.

The average price of natural gas for households in the second half of 2023 was DKK 11.1 per m^3. The price has halved since the second half of 2022. The price increases in 2022 were due to uncertainty about the supply of gas from Russia, as well as less wind and hydropower production due to weather conditions.

Source: Danish Energy Agency

Energy consumption in EU27 and other countries 2022 - by share of renewable energy

	Energy consumption[1], PJ	Share in percentage						
		Oil	Natural gas	Coal	Nuclear power	Renewable energy and waste[2]	Waste, non-renewable	Net import of electricity
Sweden	1915	20	1	3	27	52.0(66.0)	2	-6
Latvia	184	35	16	0	0	43.3(43.3)	1	5
Denmark	697	40	9	6	0	41.8(41.6)	3	1
Finland	1360	24	3	7	19	39.8(47.9)	1	3
Austria	1357	35	21	7	0	31.7(33.8)	1	2
Portugal	946	46	21	0	0	28.9(34.6)	0	4
Estonia	203	4	6	0	0	27.2(38.5)	1	2
Croatia	356	39	25	5	0	26.2(27.9)	0	5
Lithunaia	299	41	18	2	0	25.1(29.6)	1	10
Italy	6199	35	38	5	0	19.0(19.1)	1	2
Romania	1326	33	26	11	9	19.0(24.3)	0	0
EU27	56698	35	22	12	11	18.4(23.1)	1	0
Germany	11818	35	24	20	3	17.4(20.8)	1	-1
Greece	914	55	20	7	0	16.8(22.7)	0	1
Spain	5003	45	24	3	13	16.4(22.1)	0	-1
Slovenia	267	37	11	12	21	16.4(25.0)	0	2
Bulgaria	819	25	12	32	22	14.1(19.3)	0	-5
France	9204	31	15	3	35	13.7(20.3)	1	1
Poland	4382	31	14	40	0	13.0(16.9)	0	0
Czech Republic	1753	23	15	32	18	13.0(18.2)	0	-3
Slovakia	696	23	23	14	25	12.9(17.5)	0	1
Hungary	1080	31	31	5	15	12.9(15.2)	0	4
Netherlands	2812	42	35	8	1	12.6(15.0)	1	-1
Ireland	614	49	30	5	0	12.6(13.1)	1	0
Cyprus	108	85	0	1	0	11.9(19.4)	2	0
Luxembourg	160	61	14	1	0	10.6(14.4)	1	12
Belgium	2189	39	25	5	20	10.1(13.9)	1	-1
Malta	38	52	35	0	0	6.9(13.4)	0	6
Norway	1118	28	15	3	0	56.6	1	-4
UK	6406	36	39	3	8	14.8	1	0
USA	90979	44	35	11	10	8.8	0	0
Japan	16428	35	21	28	4	7.5	0	0

[1] Source: Eurostat (Gross inland consumption). Corresponds to "gross energy consumption". However without e.g. adjustments for conversion loss in connection with foreign trade in electricity.

[2] The statement figures in brackets are according to the EU Directive on renewable energy. The percentage share for other fuels is the Danish Energy Agency's calculation based on figures from Eurostat. For a more detailed explanation, see page 9.

[3] The UK is excluded from EU27.

Source: Eurostat and IEA (figures for USA and Japan).

Consumption of renewable energy in EU27 and other countries in 2022

		Share in percentage					
	Consumption of renewable energy and waste, PJ	Hydro	Wind	Solar	Geo-thermal	Biomass, incl. waste	Biofuels
Sweden	997	25.2	12.0	0.8	0.0	47.0	8.3
Latvia	80	12.4	0.9	0.2	0.0	85.5	1.0
Denmark	**292**	**0.0**	**23.5**	**3.9**	**0.0**	**62.3**	**3.8**
Finland	541	9	8	0	0	71.5	5.2
Austria	431	29.0	6.1	4.9	0.3	50.8	2.0
Portugal	273	8.6	17.5	6.3	2.7	46.5	4.4
Estonia	55	0.1	4.4	3.9	0.0	89.5	0.0
Croatia	93	21.1	8.3	1.3	1.9	65.9	0.5
Lithuania	75	2.2	7.3	1.6	0.0	77.5	6.0
Italy	1179	8.7	6.3	9.5	18.4	40.4	7.0
Romania	252	20.0	10.0	2.9	0.5	57.4	9.3
EU27	**10435**	**9.5**	**14.5**	**8.7**	**2.7**	**50.6**	**7.3**
Germany	2060	3.1	21.8	12.2	0.8	52.4	6.4
Greece	153	9.1	25.6	25.5	0.2	27.5	0.0
Spain	821	7.7	27.5	21.5	0.0	30.2	7.0
Sloveniea	44	25.9	0.0	6.3	1.3	52.9	7.1
Bulgaria	115	11.9	4.7	7.7	1.3	61.9	6.9
France	1259	13.0	10.9	6.4	1.5	44.1	11.1
Poland	571	1.2	12.5	5.9	0.2	67.5	8.1
Czech Republic	228	3.3	1.0	4.5	0.0	77.8	6.8
Slovakia	90	14.7	0.0	3.0	0.4	69.8	9.2
Hungary	139	0.5	1.6	12.7	5.0	68.9	5.8
Netherlands	355	0.1	21.7	17.6	1.9	45.0	14.5
Ireland	77	3.3	52.1	1.5	0.0	25.8	9.2
Cyprus	13	0.0	6.3	42.0	0.0	27.4	2.8
Luxembourg	17	1.4	6.6	6.6	0.0	51.8	0.0
Belgium	222	0.4	20.0	11.7	0.1	47.9	15.5
Malta	3	0.0	0.0	44.7	0.0	4.9	20.8
Norway	633	72.9	8.4	0.1	0.0	9.8	2.4
UK	950	2.1	30.4	5.2	0.0	47.2	9.4
USA	8005	11.5	19.8	10.2	5.0	30.4	21.2
Japan	1233	22.5	2.7	27.5	9.1	35.1	1.5

[1)]The UK is excluded from EU27.
Source: Eurostat and IEA (figures for USA and Japan).

Key figures 2022 – ranked by degree of self-sufficiency

	Self-sufficiency, %			Energy consumption per capita, GJ		Energy intensity, gross energy consumption in toe per 1 million EUR (2010 prices)	
	Total	Oil	Natural gas	Gross energy consump-tion	Final energy consump-tion	2000	2022
Estonia	97	0	0	153	90	384	239
Sweden	78	0	0	183	130	149	99
Romania	70	29	90	70	54	400	166
Bulgaria	67	0	1	120	63	692	395
Latvia	66	0	0	98	87	273	181
Czech Republic	60	1	3	167	108	363	212
Finland	60	0	0	245	184	189	157
Denmark	60	49	86	119	96	88	56
Poland	57	3	22	119	87	353	189
France	49	1	0	135	88	140	97
Slovenia	47	0	1	127	97	225	138
Croatia	44	18	29	92	75	241	148
EU27	42	4	12	127	91	151	107
Hungary	41	13	15	111	85	306	185
Slovakia	41	0	1	128	85	410	185
Austria	37	5	8	151	124	104	94
Netherland	36	3	55	160	118	157	102
Germany	34	3	5	142	106	135	94
Belgium	30	0	0	188	134	197	138
Spain	30	0	0	105	73	149	108
Portugal	30	0	0	91	69	149	117
Lithuania	29	1	0	106	90	367	170
Greece	24	0	0	87	62	173	120
Italy	23	9	5	105	79	106	90
Ireland	21	0	26	121	93	101	37
Cyprus	10	0	0	119	77	186	114
Luxembourg	9	0	0	248	198	106	68
Malta	5	0	0	74	48	243	233
Norway	811	1 247	2 735	206	152	97	68
UK	68	70	54	95	70	115	0
USA	107	81	111	273	198	0	0
Japan	13	0	2	131	87	0	0

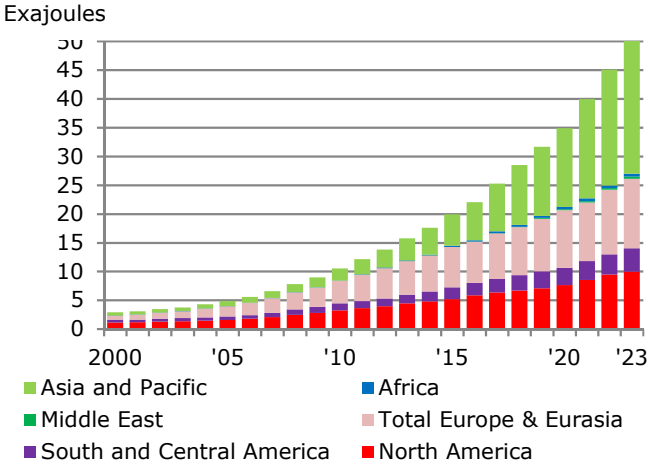
[1)]The UK is excluded from EU27.
Source: Eurostat and IEA (figures for USA and Japan)

Reserves, production, stocks and consumption of oil by regions

	1990	2000	2005	2010	2015	2020	2021	2022[2)]	Change '90 - '23
Oil reserves[1)], 1000 million barrels									
The world	**1001**	**1301**	**1372**	**1637**	**1684**	**1732**			**73.1%**
North America	101	237	223	220	229	243			140%
South and Central America	71	96	101	320	323	323			356%
Europe and Eurasia	76	141	139	158	155	160			111%
Middle East	660	697	756	766	803	836			26.7%
Africa	59	93	112	125	128	125			113%
Asia and the Pacific	35	38	41	48	47	45			30.3%
Oil production, million tonnes									
The world	**3 158**	**3 600**	**3 933**	**3 979**	**4 364**	**4 188**	**4 424**	**4 514**	**42.9%**
North America	655	643	638	639	911	1 060	1 134	1 208	84.5%
South and Central America	234	345	375	379	411	313	340	378	61.6%
Europe and Eurasia	788	730	850	861	850	827	831	827	5.0%
Middle East	837	1 129	1 222	1 209	1 406	1 300	1 442	1 414	68.8%
Africa	318	371	464	487	386	334	334	342	7.5%
Asia and the Pacific	326	381	383	403	399	353	344	346	6.1%
Oil stocks*), million tonnes									
The OECD	**217**	**212**	**209**	**216**	**225**	**221**	**198**	**197**	**-9.0%**
North America	90	75	78	84	87	81	73	72	-19.9%
Europe	106	110	108	109	114	115	101	101	-4.6%
Pacific	22	27	22	22	24	24	24	25	15.0%
Oil consumption, million tonnes									
The world	**3 141**	**3 577**	**3 912**	**3 995**	**4 234**	**4 051**	**4 422**	**4 531**	**44.2%**
North America	926	1 064	1 135	1 017	1 008	901	1 000	1 005	8.5%
South and Central America	168	231	245	281	301	243	291	301	79.4%
Europe and Eurasia	1 136	934	957	894	864	801	867	864	-24.0%
Middle East	164	236	291	348	391	362	412	421	157%
Africa	95	117	137	162	183	170	195	195	106%
Asia and the Pacific	653	995	1 147	1 294	1 488	1 574	1 657	1 744	167%
Total energy consumption, Mtoe									
The world	**8 215**	**9 490**	**10 995**	**12 163**	**13 073**	**13 557**	**14 506**	**14 800**	80.1%
North America	2 316	2 742	2 814	2 737	2 749	2 621	2 816	2 787	20.3%
South and Central America	344	497	552	644	706	643	725	747	117%
Europe and Eurasia	3 256	2 868	3 006	2 982	2 874	2 793	2 867	2 832	-13.0%
Middle East	257	410	546	702	832	872	939	966	276%
Africa	224	275	325	383	434	457	500	498	122%
Asia and the Pacific	1 818	2 698	3 752	4 716	5 478	6 170	6 659	6 969	283%
Oil dependency, %									
The world	**38**	**38**	**36**	**33**	**32**	**30**	**30**	**31**	
North America	40	39	40	37	37	34	36	36	
South and Central America	49	46	44	44	43	38	40	40	
Europe and Eurasia	35	33	32	30	30	29	30	30	
Middle East	64	57	53	50	47	42	44	44	
Africa	42	43	42	42	42	37	39	39	
Asia and the Pacific	36	37	31	27	27	26	25	25	

[1)] Crude oil, at the end of the year
[2)] 2022 and 2023 was not available at the date of publication
*) At the end of the year
Sources: BP Statistical Review of World Energy
IEA, International Energy Agency, Paris

Consumption of renewable energy



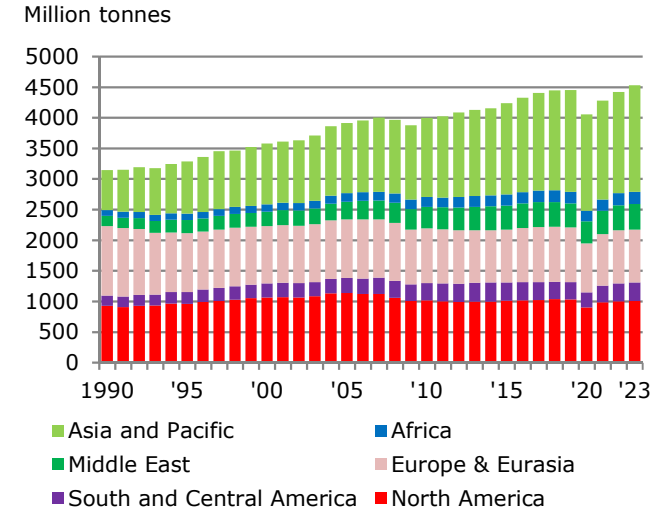
Renewable energy has seen increasing consumption, from around 3 Exajoules in 2000 to more than 50 Exajoules in 2023.

In 2023, Asia and the Pacific accounted for 47% of world renewable energy consumption and for 47% of total world energy consumption. Europe and Eurasia, and North America accounted for 24% and 20%, respectively, of world renewable energy consumption. South and Central America accounted for 8%, and Africa and the Middle East for 1% og 0.5%, respectively.

World renewable energy consumption increased by 12.1% from 2022 to 2023. The increase in consumption was greatest in the Asia and the Pacific, with 17.2%. Consumption of renewable energy increased by 14.9% in South and Central America, and by 5.6% in North America. Renewable energy consumption in Europe and Eurasia increased by 7.4% from 2022 to 2023.

Source: BP Statistical Review of World Energy

Oil consumption by region



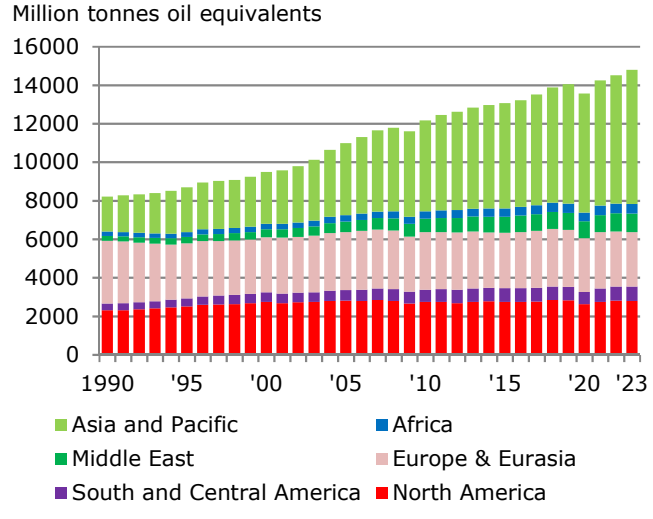
In 2023, total world oil consumption was 4.5 billion tonnes, which is 2.5% more than the year before. A total of 22.2% of this oil was consumed in North America, which accounted for 26.8% of world crude oil production. Europe and Eurasia accounted for 19.1% of oil consumption and 18.3% of crude oil production. Neither North America nor Europe and Eurasia are self-sufficient in oil, as their consumption is greater than their production.

Asia and Pacific's share of consumption was 38.5% in 2023, the Middle East's share was 9.3%, South and Central America's share was 6.6%, while Africa's share was 4.3%.

Total world oil consumption made up 30.6% of total world energy consumption in 2023, which is on a par with consumption 2022. For Europe and Eurasia, this figure was 30.5%, as opposed to 30.3% in 2022.

Source: BP Statistical Review of World Energy

Energy consumption by region



World energy consumption was 14.80 billion tonnes oil equivalents in 2023, which is 1.8% higher than in 2022. Except for in 2009 and 2020, world consumption increased steadily over the period 1990-2022. The fall from 2008 to 2009 was due to economic recession, especially in North America and in Europe and Eurasia. The drop in 2020 is attributable to the unusual circumstances created by the Covid-19 pandemic.

In 2023, energy consumption increased in Asia and the Pacific, South and Central America, and the Middle East with 4.7%, 3.0% and 3.0%, respectively. In Europa and Eurasia, North America and Africa consumption decreased by 1.2%, 1.0% and 0.4%, respectively.

Asia and Pacific accounted for 47.1% of total world energy consumption and Europe and Eurasia and North America accounted for 19.1% and 18.8%, respectively.

Source: BP Statistical Review of World Energy

Adjustments for trade in electricity

In the case of net imports of electricity, fuel consumption is added corresponding to the average consumption of a Danish condensation plant if the electricity had been produced in Denmark. For net exports, consumption will be deducted correspondingly.

Agriculture and industry

Includes agriculture, forestry, horticulture, fishing, manufacturing and construction.

Autoproducers

Producers of electricity and/or district heating, whose primary activity is not transformation, e.g. manufacturing companies, horticulture or waste treatment facilities.

Bitumen

A tar-like oil product, the heaviest part of the distillation residue in refining. Bitumen is used as a binding material for the stone material in road asphalt and as a sealing material in construction.

Border trade with oil products

Motor gasoline, gas/diesel oil and petrole coke purchased by private persons and haulage contractors on one side of the border and consumed on the other side due to differences in consumer prices. Reporting to the IEA and Eurostat does not include border trade.

CO_2 emissions

Emissions of carbon dioxide, mainly from use of energy. There are also a number of other sources, including flaring of gas in the North Sea, incineration of plastic waste and certain industrial processes. Energy statistics only include emissions from the consumption of oil, natural gas and coal.

Calorific value

The amount of energy released when combustible matter is burned. Distinction is made between "net" and "gross" calorific values. Gross calorific value is the amount of heat released if the combusted products are cooled enough for their water vapour content to condense completely. The water vapour comes from the actual content of the fuel itself and the combustion of the hydrogen compounds in the fuel. The "net" calorific value is the amount of energy attained when the water remains as vapour. Net calorific value is used in the national Danish energy statistics.

Climate adjustment

Energy consumption for heating in Denmark is somewhat dependent on outdoor temperature, which varies from year to year. A measurement of climatic variations is "degree days", registered by the Danish Meteorological Institute (DMI). The number of "degree days" is calculated as the sum of the days when the mean outdoor temperature is below 17 degrees Celsius multiplied by the difference between 17 degrees Celsius and the mean temperature of the 24-hour period. The climate-adjusted energy consumption for heating purposes is therefore the consumption that would have taken place, had the year been a normal weather year. From the 2005 statistics, the "degree days" of a normal weather year have been fixed as the moving average of degree days in the last twenty years. This causes the amount of degree days to show a declining tendency when looking over a longer period of years.
For each fuel, the proportion of fuel consumption used for heating purposes and the proportion of this consumption that is independent of the outdoor climate is determined for each industry/sector, e.g. if the consumption is used for heating water, heat loss from installations and transmission loss etc. As a general rule, it is assumed that 100% of fuel consumption in households is used for heating, but that only 65% of this is degree-day dependent. For manufacturing industries, for example, both the share for heating and degree-day dependency vary between 0% and 50%, depending on the fuel type.

Combined heat and power production (CHP)

Simultaneous production of electricity and heat.

Commercial and public services

Includes wholesale, retail, private services and public services. Public services are limited to administration and services available to society on non-market terms.

Condensing production of electricity

Condensing production of electricity at large-scale power plants is defined as a method of production, where the surplus heat from electricity generation is eliminated. In Denmark, this typically takes place when the heat is released into the sea.

Consumption in distribution

Consumption of electricity in connection with electricity, district heating and gas works gas supply.

Consumption in production/own use

Difference between gross and net production of an energy product. Consumption in production comprises the extraction of natural gas (on platforms), the refining of oil products and the conversion of electricity.

Degree of self-sufficiency

In Danish energy statistics, degree of self-sufficiency is calculated as production of primary energy in relation to climate-adjusted energy consumption. In international statistics, production is in relation to observed energy consumption.

Direct energy content

Amount of energy contained in a product. This is calculated on the basis of calorific value per unit of weight or volume for the different energy products and as the energy delivered in the form of electricity, district heating and gas works gas.

Distribution loss

Difference between supply and final consumption of an energy product. For electricity production, it is calculated as the difference between the supply and sale of electricity. In the case of district heating, distribution loss is estimated to comprise 20% of the district heating supplied to the grid. For gas works gas, the loss is estimated to be 4%. In the case of natural gas, the loss is calculated from year to year.

TERMINOLOGY AND DEFINITIONS

Electricity capacity	The maximum instantaneous electricity production from a power plant, combined heat and power plant, wind turbine etc. Electricity capacity is measured in MW (megawatt) or kW (kilowatt). Electricity capacity does not indicate a plant's actual production; rather, the maximum a plant can produce at a given moment.
Electricity intensity	Electricity consumption in relation to gross domestic product (GDP) or gross value added (GVA) at 2010 prices, chained values.
Electricity plant coal	Hard coal used in Danish power plants.
Energy consumption, observed	Registered energy consumption for a given calendar year.
Energy intensity	Energy consumption in relation to gross domestic product (GDP) or gross value added (GVA) at 2012 prices, chained values.
Extraction and refining	Production of natural gas and crude oil and the processing of crude oil and refinery feedstocks.
Final energy consumption	Sum of the consumption by the final users, i.e. private and public enterprises and households. The energy is used in the production of goods and services, heating, lighting, other usage of appliances and transport. There is also consumption for non-energy purposes, e.g. lubrication, cleaning, and bitumen for roads. Energy consumption in connection with extraction of energy, refining and transformation is not included in final energy consumption. Identification and division of final energy consumption is in accordance with the guidelines from the IEA and Eurostat. Energy consumption for road, rail, sea, air and pipeline transport, irrespective of consumer, is classified in a special main category. Hence, energy used in industry and households is calculated excluding consumption for transportation purposes.
Fuel equivalent	Energy content of a quantity of fuel used for producing a given amount of electricity, district heating or gas works gas. In the case of oil, coal, natural gas and renewable energy etc., there is no difference between the amount of energy measured in direct energy content and in fuel equivalent.
Gas/diesel oil	Gas and diesel oils have the same boiling point interval in the refining process. They can be used for the same purposes to a great extent. No distinction is therefore made between the two products in the Danish energy statistics. There are usually more stringent environmental and safety specifications for automotive diesel oil than for heating gas oil. The requirements for marine diesel are less stringent.
Gas works gas	Gas produced in urban gas stations. Gas works gas was formerly produced from coal and oil, but production since 1990 has almost exclusively been by transforming natural gas.
Geothermal energy	Heat energy from the core of the earth. The energy is used to heat water which then is used to either produce district heating or power. In Denmark, geothermal energy is used only for production of district heating.
Gross domestic product (GDP)	The total market value of all final goods and services produced within the borders of a nation during a specified period.
Gross energy consumption	Observed energy consumption adjusted for fuel consumption related to foreign trade in electricity. See "Adjustments for trade in electricity" above.
Gross energy consumption, adjusted	Observed gross energy consumption adjusted for climatic variations in relation to a normal weather year.
Gross value added (GVA)	Equal to GDP at base prices and calculated for the individual enterprise as production at base prices minus production-related consumption at purchasing prices.
Heat pumps	The volume of energy produced by heat pumps is calculated as the difference between the amount of energy supplied and the electricity consumed by heat pumps. An energy-producing appliance regarded as a form of renewable energy.
Imports and exports	Imports and exports refer to goods that have crossed national borders. Greenland and the Faroe Islands are regarded as abroad.
International marine bunkers	Includes deliveries of energy products (oil) in Denmark to sea-going ships of all flags, including warships and foreign fishing vessels. Deliveries to domestic shipping and Danish fishing vessels are not included. International marine bunkers are not included in national energy consumption.
Joule	Unit of measurement of energy. In Danish energy statistics, the following units are used: 1 PJ (Peta Joule) = 10^3 TJ (Tera) = 10^6 GJ (Giga).
JP1 (Kerosene type jet fuel)	Jet Petroleum 1. Designates a petroleum quality different from other types of petroleum in terms of stringent requirements for low water content and unsaturated compounds. Used in aviation.
Large-scale power plants	Plants at 16 specific power stations. East of the Great Belt are Amager, Asnæs, Avedøre, H.C. Ørsted, Kyndby, Svanemølle, Stigsnæs and Rønne power stations. West of the Great Belt are Ensted, Esbjerg, Fyn, Herning, Randers, Skærbæk, Studstrup and Nordjylland power stations. Earlier Aalborg, Århus and Masnedø have also been defined as large scale power plants.
LNG	Liquefied Natural Gas. Use as a fuel. In Denmark LNG is kept secret with a rounded figure.
LPG	Liquefied Petroleum Gas (liquid gas, bottled gas). The term for propane, butane and combinations of the two. Used in industry and heating, food preparation and as a propellant. Previously, LPG was also used as a raw material for producing gas works gas.

LVN	Light Virgin Naphtha (light petrol). Used as a component for petrol production and as a raw material for the petrochemical industry. Previously, LVN was also used to produce gas works gas.
Manufacturing	The Danish Energy Agency defines manufacturing differently than Statistics Denmark. In the Danish Energy Agency's statistics, manufacturing industries do not include refineries which have been separated into a separate consumption category, whereas the sector extraction of gravel and stone has been included under manufacturing industries.
Non-energy use	Energy products included in Total energy consumption, which are not used for energy purposes. This category includes products such as white spirit, lubricants and bitumen.
Orimulsion	Type of heavy oil emulsified in water. It comes from the area around the Orinoco River in Venezuela.
Petroleum coke	A solid oil by-product appearing when refining fuel oil in a so-called coker. Approximately 10 % of the material is deposited in the coker as petroleum coke. Primarily used in industry.
Primary production	Production of crude oil, coal, natural gas, renewable energy etc.
PSO	PSO include costs for public service obligations in connection with electricity supply. Such costs are paid by all electricity consumers. PSO includes support to the production of environment-friendly electricity, grid connection of small-scale combined heat and power plants and wind turbines, security of supply, environmental studies about offshore wind turbines, and research and development related to environment-friendly electricity generation as well as compensation for CO_2 taxes.
Recycling	Understood as energy products included in the energy balance for a second time. Currently includes lubricants that have previously been included in final energy consumption for non-energy purposes and which are subsequently included as waste oil.
Refinery feedstocks	Processed oil destined for further processing, products in a stage between raw materials and finished products.
Refinery gas	The lightest fractions obtained in the distillation of crude oil. Refinery gas is non-condensable at normal atmospheric pressure. Primarily used as refinery fuel.
Renewable energy	Renewable energy is defined as solar energy, wind power, hydropower, geothermal power, biomass (straw, wood chips, firewood, wood pellets, waste wood, liquid biofuels, and renewable wastes unless otherwise stated), biogas and heat pumps.
Renewable energy etc.	Renewable energy etc. is defined as "renewable energy" including non-renewable wastes.
Revision of energy statistics	The energy statistics are based on information from multiple sources and a range of assumptions. Insofar as new data about energy supply or consumption become available for a given year, the energy statistics will be revised accordingly. Every year, energy consumption in manufacturing is revised as the statement is partly based on an estimate, which can be replaced by factual data from Statistics Denmark the following year. Also new information concerning production and consumption of renewable energy, including biomass may be provided. Finally, revision of the statistics may be based on a change in delimitations and calculation assumptions.
Small-scale combined heat power (CHP) plants	Plants not included in the list of large-scale power plants, where the production of power and heat is the main activity.
Statistical difference	The difference between calculations of energy consumption based on different sources, which theoretically ought to produce identical results.
Structure effect	Changes in energy consumption owing to shifts in the structure of industry.
Surplus heat	Residual heat from industrial production. Autoproducers sell a great deal of surplus heat from processing to district heating network. District heating resulting from surplus heat is not added to fuels in the energy statistics. Transformation gains are therefore to be made in the case of district heating from autoproducers.
Thermal electricity generation	Thermal electricity generation is defined as electricity generated by the combustion of fuels. Thus, it is electricity not generated using wind power, hydropower, wave power or photovoltaics.
Total energy supply	Denmark's total energy supply is domestic production of energy adjusted for imports and exports (including cross-border trade) in oil products, international marine bunkers, and stock changes. The difference between *total energy supply* and *energy consumption, observed* is the *statistical difference*.
Transformation	Production of electricity, district heating and gas works gas.
Transformation loss	Difference between total input and output in the transformation process.
Transport	All transport activity with the exception of transport within the company's premises. In the Danish statistics energy consumption for road transport is adjusted for border trade, as opposed to international statistics. International statistics is based solely on data from sales.
Volume weight	The relationship between the weight of a specific volume of liquid and the weight of an equal volume of water at 4 degrees Celsius, measured in tonne/m^3.
Waste oil	Oil used as fuel in industry and transformation, previously included in the energy statistics as lubricants.

Danish key figures for energy and emissions

Denmark	1990	2000	2005	2010	2015	2020	2022	2023	Change '90-'23
Energy intensity, gross energy consumption [TJ per million GDP]	0.568	0.447	0.423	0.402	0.351	0.303	0.276	0.268	-52.9%
Energy intensity, final energy consumption [TJ per million GDP]	0.419	0.347	0.331	0.312	0.286	0.250	0.233	0.227	-45.8%
Gross energy consumption per capita [GJ]	159	157	157	147	133	121	119	117	-26.5%
Final energy consumption per capita [GJ]	118	122	123	114	109	100	101	100	-15.3%
Degree of self-sufficiency [%]	52	139	154	120	90	56	60	59	14.5%
Oil consumption - share of gross energy consumption [%]	43	45	41	38	37	34	38	37	-15.5%
Renewable energy - share of gross energy consumption [%]	5.8	9.6	14.5	20.0	28.6	40.1	43.0	45.9	687%
Refinery capacity [million tonnes per year]	9.0	9.2	9.0	9.0	9.0	9.0	9.0	9.0	•
Electricity capacity [MW]	9 124	12 598	13 088	13 450	13 995	15 164	17 588	18 204	99.5%
Wind turbine capacity – share of total electricity capacity [%]	3.6	19.0	23.9	28.3	36.3	41.3	40.3	40.0	1019%
Net electricity import - share of domestic supply [%]	22.5	1.9	3.8	-3.2	17.5	19.8	3.8	8.7	•
CHP production - share of total thermal electricity production [%]	37	56	64	61	82	80	72	84	127%
CHP production - share of total district heating production [%]	59	82	82	77	66	65	65	62	5.4%
Renewable electricity - share of total domestic electricity supply [%]	2.6	15.9	27.4	34.8	56.0	68.0	81.4	82.1	3058%
CO_2 emission per capita [tonnes]	11.9	10.4	9.7	8.5	6.9	5.2	4.9	4.6	-61.3%
CO_2 emissions per GDP [tonnes per million GDP]	42	30	26	23	18	13	11	11	-75.2%
CO_2 emissions per fuel unit [kilogram per GJ]	75	66	62	58	52	43	41	39	-47.3%
CO_2 emissions per kWh electricity sold [gram per kWh]	929	632	537	505	350	231	164	138	-85.2%
CO_2 emissions per consumed unit of district heating [kilogram per GJ]	62	43	39	33	32	20	17	15	-75.2%

Note: 1: Data on energy consumption and emissions have been adjusted for the fuel consumption linked to foreign trade in electricity and climate variations relative to a normal weather year.

Note: 2: The gross domestic product (GDP) is in 2020 prices, chained values.

The Danish Energy Agency's climate variation adjustment method

The purpose of adjusting for climate variations is to show figures for energy consumption which are independent of climate fluctuations in individual years. Climate adjustment takes place by adjusting - for each of the areas of consumption included in the statistics - the share of the energy consumption that consists of space heating and depends on the climate.

The adjustment takes place by comparing annual degree-day figures to the degree-day figure in a normal weather year. A high number of degree days relative to a normal year indicates a relatively cold year and the annual observed energy consumption is therefore adjusted downward to indicate what the energy consumption would have been had it been a normal weather year. In contrast a low number of degree days lead to an upward adjustment of the observed energy consumption.

Ideally. the degree-days for the various years should distribute fairly evenly around the normal year. Previously. a fixed normal year was used. However, due to an increasingly milder climate, for a considerable number of years with only few exceptions, the degree-day figure was lower than "normal". In order to arrive at an adjustment that takes into account an ever warmer climate, the Danish Energy Agency has decided to use a normal year derived by taking a moving average of the degree-day figures for the last 20 years.

The degree-day figure is calculated by the Danish Meteorological Institute.

The calorific value and CO_2 content in 2023

	Calorific values	CO_2 emissions factors
	GJ/ton	Kg/GJ
Crude oil/ North Sea	43.00	
Refinery feedstocks	42.70	
Refinery gas	52.00	56.49
LPG	46.00	64.80
LVN	44.50	73.30
Motor gasoline	43.80	73.00
Aviation gasoline	43.80	73.00
JP4	43.80	72.00
Other kerosene	43.50	71.90
JP1	43.50	72.00
Gas/diesel oil	42.70	74.10
Fuel oil	40.65	79.15
Orimulsion	27.65	80.00
Petroleum coke	31.40	93.00
Waste oil	41.90	73.30
White spirit	43.50	
Bitumen	39.80	
Lubricants	41.90	
Natural gas. GJ/1000 Nm^3	38.03	57.14
Natural gas, North Sea. GJ/1000 Nm^3	38.54	57.44
Bio Natural gas. GJ/1000 Nm^3	38.03	
Gas works gas/1000 m3	20.84	
Coal in electricity plants	23.49	94.51
Other hard coal	23.86	94.51
Coke	29.30	107.00
Brown coal briquettes	18.30	97.50
Straw	14.50	
Wood chips	10.40	
Firewood, hard wood GJ/m3	10.40	
Firewood, soft wood GJ/m3	7.60	
Wood pellets	17.50	
Wood waste	14.70	
Wood waste. GJ/m3 loose volume	3.20	
Biogas, GJ/1000 m3	23.00	
Bio methane (GJ/1000 m3)	37.41	
Waste	10.60	
Biodiesel	37.50	
Bioethanol	26.70	
Bio oil	37.20	

Climate adjustments

		Degree days
Year	Specific year	Normal year
2018	2900	3041
2019	2847	3030
2020	2715	3021
2021	3098	3012
2022	2834	3003
2023	2864	2989

Tax rates in 2023

	Energy taxes	CO_2 taxes
Transport		
Motor gasoline (DKK 0.01 per l)	530.1	43.6
Light diesel oil (DKK 0.01 per l)	320.4	48.2
Low-sulphur diesel oil (DKK 0.01 per l)	284.4	44.9
Other uses		
LPG (DKK 0.01 per l)	193.9	29.3
Other kerosene (DKK 0.01 per l)	320.4	48.2
Heating diesel oil (DKK 0.01 per l)	229.3	48.2
Fuel oil (DKK 0.01 per kg)	259.8	57.6
Petroleum coke (DKK 0.01 per l)	320.4	48.2
Natural gas (DKK 0.01 per Nm^3)	253.1	41.0
Electricity plant coal (DKK per tonne)	1790	483.3
Coke (DKK per tonne)	2110	551.6
Brown coal (DKK per tonne)	1215	328.0
Electricity (DKK 0.01 per kWh)	82.0	
Electricity for space heating[1)] (DKK 0.01 per kWh)	0.8	

[1)] For consumption of more than 4000 kWh per year in households.

Source: Ministry of Taxation

Volume weights in 2023	
	tonne/m^3
Motor gasoline	
Aviation gasoline	0.75
JP4	0.71
Other kerosene	0.76
JP1	0.80
Gas-/diesel-oil	0.80
Bioethanol	0.84
Biodiesel	0.79
	0.88

Conversion factors

In order to make comparison easier, all the figures for energy consumption are stated in Tera Joules (TJ) or Peta Joules (PJ).

1 kilo Joule	=	1000 J
1 Mega Joule	=	1000 kJ
1 Giga Joule	=	1000 MJ
1 Tera Joule	=	1000 GJ
1 Peta Joule	=	1000 TJ
1 kWh	=	3.6 MJ
1 MWh	=	3.6 GJ
1 GWh	=	3.6 TJ
1 Btu (British thermal unit)	=	1055.66 J
1 Barrel (barrel. bbl)	=	158.987 liters
1 mtoe (mill. tonne oil equivalent)	=	41.868 PJ

Symbols

- • Not applicable
- - Nil
- 0 Less than half

Do you need more data?

www.ens.dk/facts_figures

Here you can find:

Energy Statistics 2023

- Publications as pdf
- Figures in PowerPoint
- Time series and tables
- Denmark's energy flows 2023

Data

- Monthly energy statistics
- Wind turbine data

Maps

- Electricity generation and transmission
- Heat supply

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