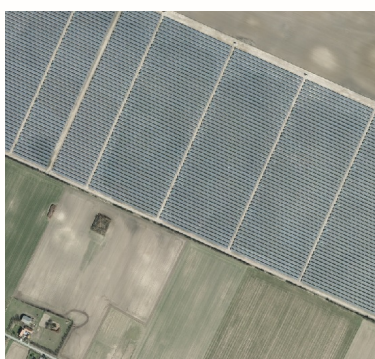
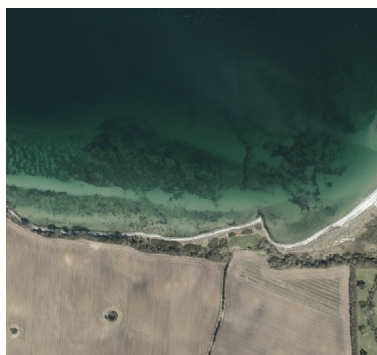
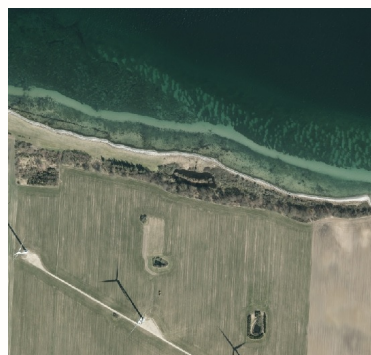




Data, tables, statistics and maps

ENERGY STATISTICS 2016



Danish Energy
Agency

CONTENTS

www.ens.dk

Please feel free to visit the Danish Energy Agency's website for statistics and data

www.ens.dk/facts_figures.

This website includes energy statistics that are far more detailed than the statistics published here. Please find the complete energy statistics, including tables and time-lines for energy consumption, emissions and assumptions for the period 1972-2016.

Descriptions of methods and revisions are also available here.

Note

Briquettes

Wood briquettes have been included in firewood, households for the years 2013-2016.

LNG

LNG (liquefied natural gas) has been included in domestic sea transport under the fuel gas/diesel in 2015 and 2016.

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Energy Statistics 2016

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Queries concerning methods and calculations should be addressed to the Danish Energy Agency, Statistics Section, tel.: +45 33 92 67 00 or statistik@ens.dk

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This publication may be quoted with source reference.

Access to the statistics or parts of the statistics before publication

The organisations below have access to the statistics under a special agreement.

Statistics Denmark

DCE – Danish Centre for Environment and Energy

Danish Energy Agency, relevant employees in the scenarios team

Increase in energy consumption and continued increase in consumption of renewable energy

Observed energy consumption increased

Observed energy consumption increased to 743 PJ in 2016; an increase of 3.0%. This should be considered in light of the fact that Denmark experienced a fall in net imports of electricity in 2016, as well as a fall in wind power production. This meant that input of energy for the domestic electricity generation increased by 8.2%. The increase in observed consumption includes higher consumption of coal of 15.3%, of oil of 0.4%, of natural gas of 1.8% and of renewable energy etc. of 4.2%.

Adjusted gross energy consumption rose 1.6%

Besides *observed energy consumption*, the Danish Energy Agency calculates *adjusted gross energy consumption*, which is adjusted for fuel linked to foreign trade in electricity and climatic variations in relation to a normal temperature year. The purpose of the adjusted calculations is to illustrate the trends underlying the development. *Adjusted gross energy consumption* was 770 PJ in 2016, which is 1.6% above the 2015 level.

Compared with 1990, adjusted gross energy consumption has fallen by 5.9%. Coal and coke account for the largest drop at 64.4%, while renewable energy, which began from a low start point, accounted for the largest increase.

Share of RE in electricity supply

In 2016, electricity from renewables accounted for 53.9% of Danish domestic electricity supply. This is a fall of 2.1 percentage points compared with 2015, primarily due to less wind in 2016. Wind power accounted for 37.5%. Biomass accounted for 12.7% and solar energy, hydro and biogas accounted for the remaining 3.7%.

Energy production and degree of self-sufficiency fell

The Danish production of crude oil, natural gas and renewable energy etc. fell to 638 PJ in 2016; a drop of 5.6%. Production of crude oil and natural gas fell by 10.0% and 2.2%, respectively.

The degree of self-sufficiency in energy for Denmark fell again in 2016 to 83%, whereas it was 89% the year before. This means that energy production in 2016 was 17% lower than energy consumption. The degree of self-sufficiency in oil consumption relative to production of crude oil has decreased from 118% in 2015 to 106% in 2016.

Increase in consumption of renewable energy

Consumption of renewable energy increased from 208 PJ in 2015 to 217 PJ in 2016, which corresponds to an increase of 4.4%. This development is due to increases in the consumption of biomass of 6.3%. Calculated according to the EU's method of calculation, renewable energy accounted for about 31.3% of energy consumption in 2016 as opposed to 30.8% in 2015.

Increase in CO₂ emissions

Observed CO₂ emissions from energy consumption increased by 4.4% in 2016, ending at 36.7 million tonnes. Adjusted for fuel consumption linked to foreign trade in electricity and climatic variations, CO₂ emissions grew by 1.8%. Since 1990, Danish adjusted CO₂ emissions have gone down by 34.6%.

Greenhouse gas emissions for 2016

A preliminary statement of total observed emissions of greenhouse gases in Denmark shows a drop of 29.1% from 1990 to 2016. An increase in observed emissions of 3.2% from 2015 to 2016 is primarily attributable to lower net imports of electricity and a drop in wind power production in 2016 and thus an increasing electricity production based on fossil fuels.

Energy consumption by area of consumption

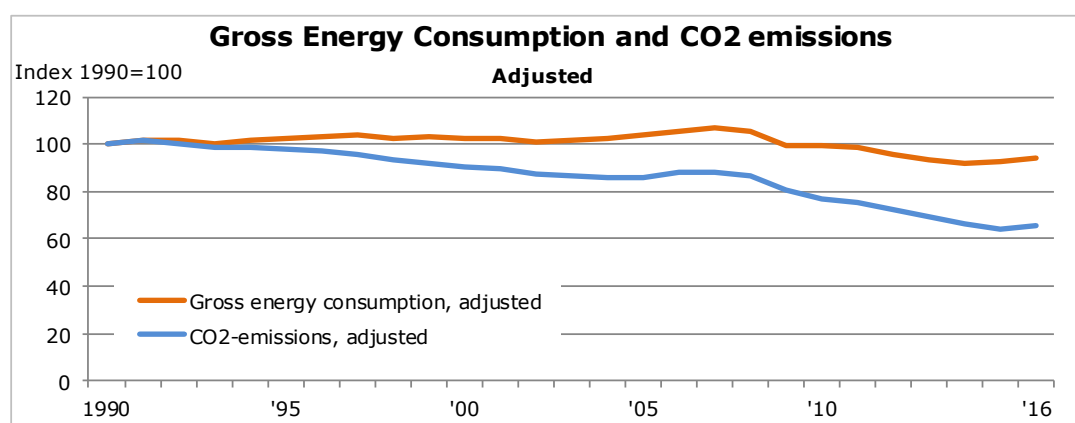
Gross energy consumption for *transport* was 2.2% higher in 2016 than the year before. Energy consumption for road transport rose by 0.4%.

The total climate-adjusted energy consumption of the *agriculture and industry sector* was 1.3% higher in 2016 than the year before. Energy consumption by *manufacturing industries* increased by 2.2%.

In *commercial and public services and households*, climate-adjusted energy consumption was respectively 2.2% higher and 1.9% higher in 2016 than in 2015.

Exports of energy technology

Exports of energy technology and equipment were DKK 75.6 billion in 2016 as opposed to DKK 76.7 billion in 2015. Exports of energy technology and equipment were thus 11.8% of total Danish goods exports. The corresponding figure for 2015 was 11.9%.

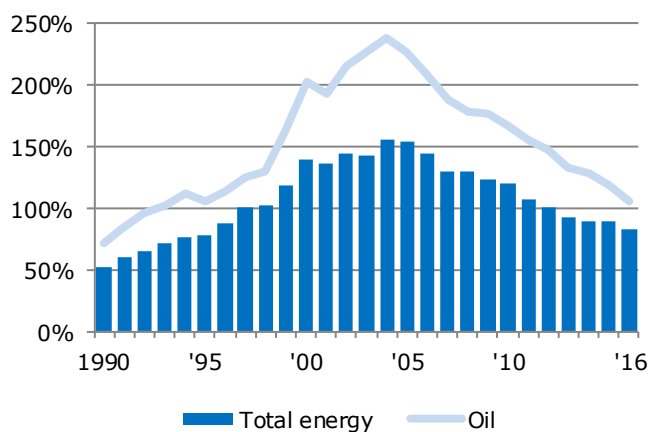


Energy balance 2016

	Total	Crude oil and refinery feedstocks	Oil products	Natural gas	Coal and coke	Waste, non-renewable	Renewable energy	Electricity	District heating	Gas works gas
Direct energy content [TJ]										
Total energy consumption										
Primary energy production	638 024	297 748	-	169 735	-	15 741	154 800	-	-	-
Recycling	39	-	39	-	-	-	-	-	-	-
Imports	767 420	164 893	386 509	25 616	70 432	2 471	63 455	53 915	128	-
Exports	-660 281	-184 098	-359 347	-79 416	- 506	-	-1 203	-35 710	-	-
Border trade	-	-	-9 925	-	-	-	-	-	-	-
International marine bunkers	-28 165	-	-28 165	-	-	-	-	-	-	-
Stock changes	-	3 427	4 133	4 564	12 704	-	454	-	-	-
Statistical differences, input from blending	-	- 67	3 582	2 082	5 515	-	- 137	-	0	-
Energy sector	-281 903	270 743	-21 933	-	-	-	-3 066	- 578	-	-
Extraction and gasification	-21 933	-	-	-21 933	-	-	-	-	-	-
Petroleum products	-	-	284 553	-	-	-	-	-	-	-
Used in refineries	-	-281 903	-13 811	-	-	-	-	-1 087	- 578	-
Used in distribution	-1 978	-	-	-	-	-	-	-1 978	-	-
Transformation	-	-4 252	-37 527	-83 376	-17 274	-143 943	103 827	134 893	735	-
Large-scale units	-	-	-1 267	-10 163	-82 909	-	-36 862	46 102	52 396	-
Wind turbines and hydropower plants	-	-	-	-	-	-	-46 084	46 084	-	-
Small-scale units	-	-	- 63	-8 953	- 405	-4 028	-16 707	8 245	18 554	-
District heating units	-	-	- 727	-14 932	- 50	- 224	-22 096	- 737	37 983	-
Autoproducers	-	-	-2 132	-2 891	- 11	-13 023	-22 047	9 446	26 754	-
Gas works	-	-	- 63	- 588	-	-	-148	-	-	735
Own use	-6 107	-	-	-	-	-	-	-5 313	- 794	-
Distribution losses etc.	-33 967	-	-	- 115	-	-	-	-6 818	-27 004	- 29
Final energy consumption	-625 745	-	-263 317	-63 006	-4 770	- 937	-73 422	-112 148	-107 439	- 706
Non-energy use	-10 474	-	-10 474	-	-	-	-	-	-	-
Transport	-213 828	-	-203 091	- 132	-	-	-9 105	-1 501	-	-
Agriculture and industry	-125 290	-	-36 786	-29 557	-4 769	- 672	-12 038	-36 792	-4 470	- 207
Commercial and public services	-82 438	-	-2 637	-7 732	-	- 265	-2 423	-36 789	-32 552	- 40
Households	-193 714	-	-10 329	-25 586	- 1	-	-49 856	-37 066	-70 417	- 459

Note: The energy balance provides an overview of supply, 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 2016 on pages 18-19.

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 constituted by oil.

In 1997, Denmark produced more energy than it consumed for the first time ever. The degree of self-sufficiency was 52% in 1990 and peaked in 2004 at 155%. Denmark was a net importer of energy in 2013 for the first time since 1996. In 2016, the degree of self-sufficiency in energy was 83% as opposed to 89% the year before.

Denmark has been more than self-sufficient in oil since 1993, resulting in annual net exports. In 2016, the degree of self-sufficiency in oil was 106% as opposed to 118% the year before. The degree of self-sufficiency in oil peaked in 2004 and has been falling ever since.

Production of primary energy

Direct energy content [TJ]	1980	1990	2000	2005	2010	2014	2015	2016	Change '90-'16
Total production	40 228	424 361	1 164 525	1 311 683	978 612	679 181	676 118	638 024	50.3%
Crude oil	12 724	255 959	764 526	796 224	522 733	349 635	330 662	297 748	16.3%
Natural gas	17	115 967	310 307	392 868	307 425	173 259	173 510	169 735	46.4%
Renewable energy	22 699	45 461	76 016	105 585	131 306	140 416	156 446	154 800	241%
Waste, non-renewable	4 787	6 975	13 676	17 006	17 148	15 872	15 500	15 741	126%

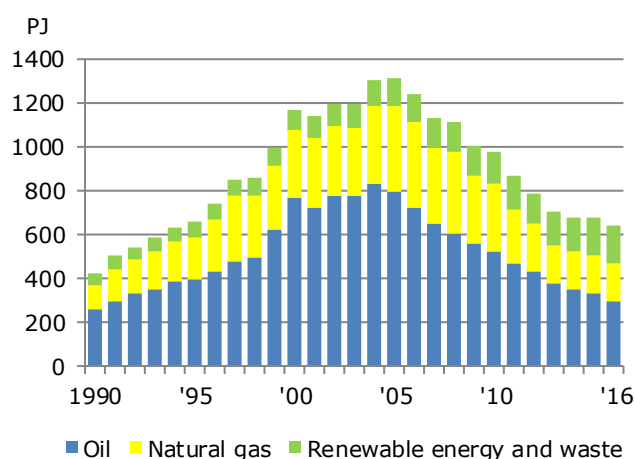
Production and consumption of renewable energy

Direct energy content [TJ]	1980	1990	2000	2005	2010	2014	2015	2016	Change '90-'16
Production of renewable energy	22 699	45 461	76 016	105 585	131 306	140 416	156 446	154 800	241%
Solar	50	100	335	419	657	3 444	3 713	4 749	4659%
Wind	38	2 197	15 268	23 810	28 114	47 083	50 879	46 014	1994%
Hydro	123	101	109	81	74	54	65	69	-31.2%
Geothermal	-	48	58	172	212	166	140	225	369%
Biomass	22 023	39 996	54 039	73 542	92 268	76 862	87 234	85 735	114%
- Straw	4 840	12 481	12 220	18 485	23 323	18 564	19 716	19 647	57.4%
- Wood chips	-	1 724	2 744	6 082	11 352	11 320	13 915	13 841	703%
- Firewood	7 621	8 757	12 432	17 667	23 779	17 872	21 943	22 492	157%
- Wood pellets	-	1 575	2 984	3 262	2 407	1 916	2 669	2 617	66.1%
- Wood waste	3 710	6 191	6 895	6 500	8 500	7 065	9 411	7 627	23.2%
- Waste, renewable	5 851	8 524	16 715	20 786	20 959	19 399	18 944	19 239	126%
- Biodiesel *)	..	..	..	..	..	..	..	..	•
- Biooil	-	744	49	761	1 949	725	636	274	-63.2%
Biogas	184	752	2 912	3 830	4 337	5 561	6 415	9 146	1116%
Heat pumps	282	2 267	3 296	3 731	5 643	7 245	8 001	8 861	291%
Imports of renewable energy	-	-	2 466	18 918	39 483	56 313	53 105	63 455	•
Firewood	-	-	-	1 963	2 939	3 007	2 547	2 611	•
Wood chips	-	-	305	1 521	4 865	5 832	3 479	6 513	•
Wood pellets	-	-	2 161	12 802	27 675	34 783	33 889	41 324	•
Waste, renewable	-	-	-	-	-	1 899	2 886	3 020	•
Bioethanol	-	-	-	-	1 118	1 998	1 818	1 593	•
Biodiesel	-	-	-	2 632	2 886	8 794	8 485	8 395	•
Exports of renewable energy	-	-	-	2 632	2 846	1 503	1 084	1 203	•
Biodiesel	-	-	-	2 632	2 846	1 503	1 084	1 203	•
Stock changes, stat. diffs. etc.	-	- 3	31	9	1	- 354	- 268	261	•
Consumption of renewable energy	22 699	45 458	78 513	121 880	167 944	194 872	208 198	217 313	378%

*) Production of biodiesel has been included in imports of biodiesel.

PRODUCTION OF PRIMARY ENERGY

Primary energy production



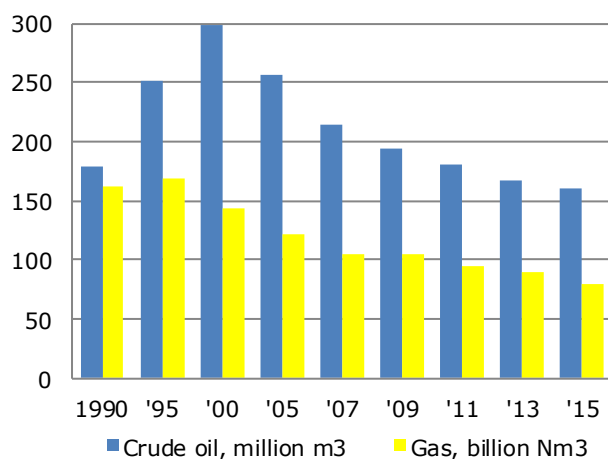
Primary energy refers to crude oil, natural gas, renewable energy (including renewable waste) and non-renewable waste.

In 2016, primary energy production was 638 PJ, as opposed to 676 PJ in 2015. This corresponds to a drop of 5.6%. Primary energy production peaked at 1312 PJ in 2005.

Production of crude oil and natural gas increased steadily up to 2004 and 2005, respectively, after which it fell.

Production of crude oil fell by 10% in 2016, while production of renewable energy etc. and natural gas decreased by 0.8% and 2.2% respectively.

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 discoveries, using known technologies. The reserves are regularly reassessed for new discoveries and changes in assumptions for calculations.

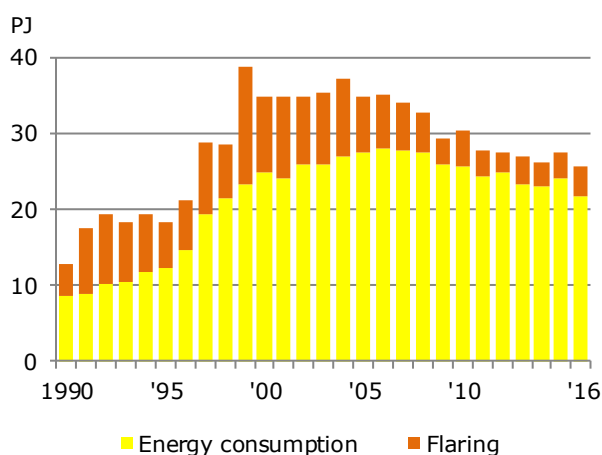
At the end of 2009, the Danish Energy Agency changed the classification system for oil and gas reserves, introducing the category *contingent resources*. For the period 2009-2015, the statement includes the sum of reserves and contingent resources so that comparison with earlier statements is possible.

At the end of 2015, the sum of reserves and contingent resources totaled 160 million m³ oil and 80 billion Nm³ gas.

Danish oil and gas reserves have been calculated every two years since and including 2011.

Source: Resources and forecasts of August 29th 2016.
Published by Danish Energy Agency.

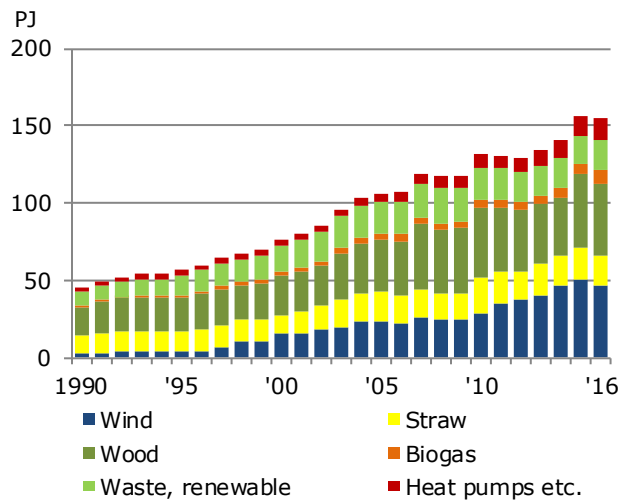
Natural gas consumption and flaring on platforms in the North Sea



Extraction of crude oil and natural gas requires natural gas consumption for production as well as for transport and off-loading ashore. In 2016 consumption was 21.9 PJ, corresponding to 17.8% of total Danish natural gas consumption. In 2015 consumption on platforms was 24.0 PJ.

Furthermore, flaring (burning) is carried out in the production of natural gas in the North Sea fields. Flaring is not included in energy consumption, but is included in Denmark's international statement of greenhouse gases, and is covered by the EU Emission Trading System (EU ETS). In 2016, flaring of natural gas was calculated at 3.9 PJ compared with 3.6 PJ in 2015.

Production of renewable energy by energy product



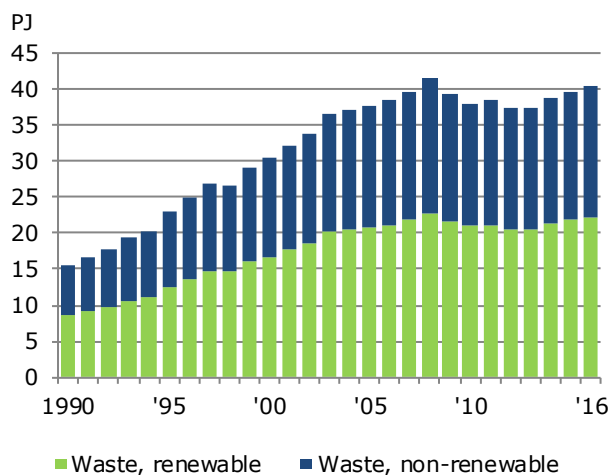
Renewable energy includes wind power, wood, straw, biogas, renewable waste and others (hydropower, geothermal energy, solar energy and heat pumps).

Production of renewable energy was 155 PJ in 2016, which corresponds to a fall of 1.1% compared with 2015. Production of renewable energy grew by 241% during the period 1990 to 2016.

In 2016 wind power production was 46.0 PJ, which is a decrease of 9.6% compared with 2015. The decrease is due to the wind conditions in 2016.

Production from straw, wood and renewable waste in 2016 was 19.6 PJ, 46.6 PJ and 19.2 PJ, respectively. Compared with 2015, the total production from the three fuels decreased by 1.3%.

Consumption of waste

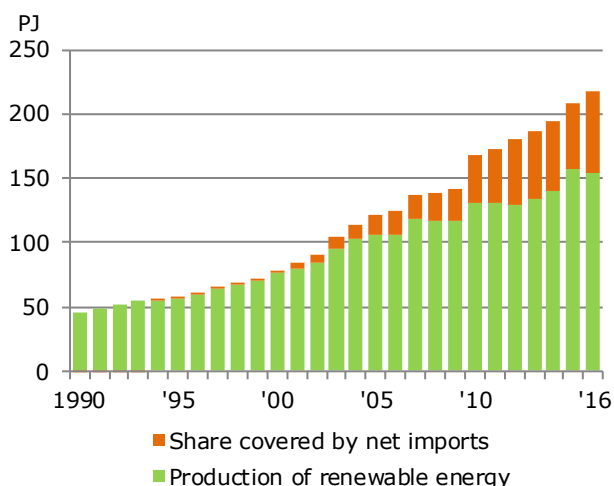


Consumption of waste for the production of electricity and district heating has increased significantly over time. Total consumption of waste increased by 2.0% in 2016 compared with 2015. Compared with 1990, waste consumption for energy purposes increased by 161% in 2016.

In statistics for energy and CO₂ emissions, waste is divided into two components: Renewable waste and non-renewable waste. According to international conventions, renewable waste is included in renewable energy.

These energy statistics assume that 55.0% of the waste consumed is renewable waste. This means that waste accounts for a considerable proportion of the total consumption of renewable energy.

Consumption of renewable energy



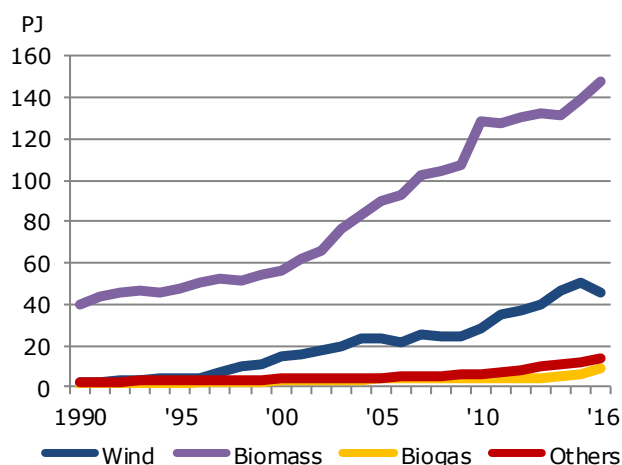
Production of renewable energy has increased dramatically since 1990. In addition, net imports have increased. Net imports of renewable energy (including stock changes etc.) were 62.5 PJ in 2016.

In 2016 consumption of renewable energy was 217.3 PJ, which is 4.4% more than the year before. Observed consumption of renewable energy was 45.5 PJ in 1990.

The increased use of renewable energy makes a significant contribution to reducing Danish CO₂ emissions.

RENEWABLE ENERGY

Renewable energy - consumption by energy product

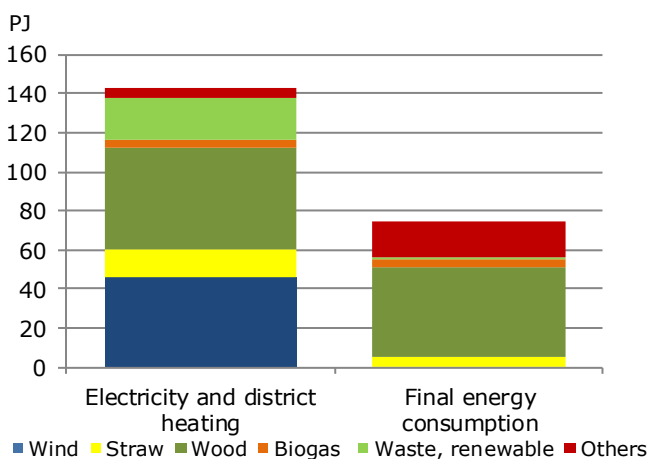


Consumption of renewable energy increased from 208.2 PJ in 2015 to 217.3 PJ in 2016.

Consumption of biomass increased from 139.3 PJ in 2015 to 148.0 PJ in 2016, while wind power fell from 50.9 PJ to 46.0 PJ.

The increasing consumption of biomass since 2000 entails higher consumption of wood chips, wood pellets and firewood. In the period 2000 to 2016 the increase was 567%, 754%, and 102%, respectively.

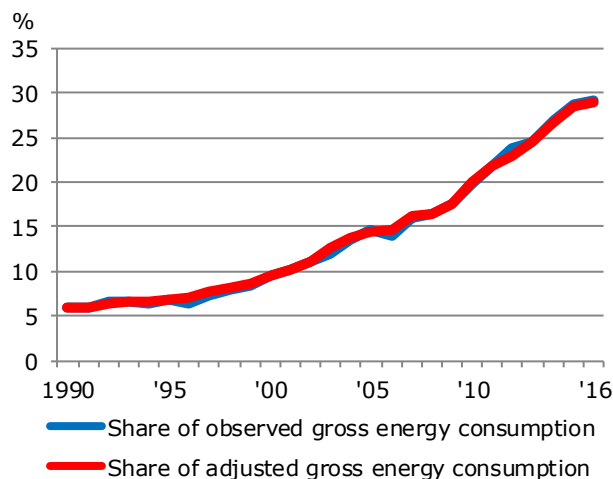
Use of renewable energy in 2016



Total consumption of renewable energy in 2016 (production plus net imports) was 217.3 PJ, of which 142.6 PJ was used in the production of electricity and district heating. Wind power, wood pellets and renewable waste were predominant in the production of electricity and district heating, accounting for 46.0 PJ, 27.2 PJ and 21.1 PJ, respectively. Consumption of wood otherwise, straw and biogas accounted for 24.1 PJ, 14.7 PJ and 4.8 PJ, respectively.

A total of 74.4 PJ of renewable energy was included in final energy consumption, i.e. for process consumption and consumption for heating in the agriculture and industry sector, in the commercial and public services sector, as well as for heating in households and for transport. In final energy consumption, wood, particularly firewood, is most prominent.

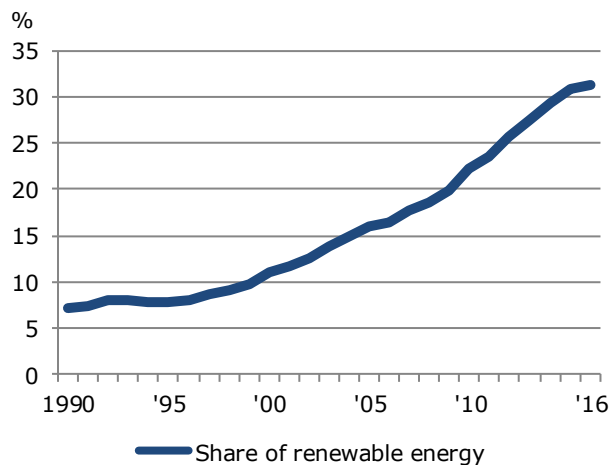
Renewable energy - share of total energy consumption



Observed energy consumption shows the registered amount of energy consumed in a calendar year. In 2016 renewable energy covered 29.2% of total observed energy consumption, as opposed to 28.8% the year before. In 1990 this figure was 6.0%.

Adjusted gross energy consumption is found by adjusting observed energy consumption for the fuel consumption linked to foreign trade in electricity, and by adjusting for fluctuations in climate with respect to a normal weather year. In 2016 renewable energy's share of adjusted gross energy consumption was 29.1%, as opposed to 28.6% the previous year. In 1990 this figure was 5.8%.

Share of renewable energy according to the EU method of calculation



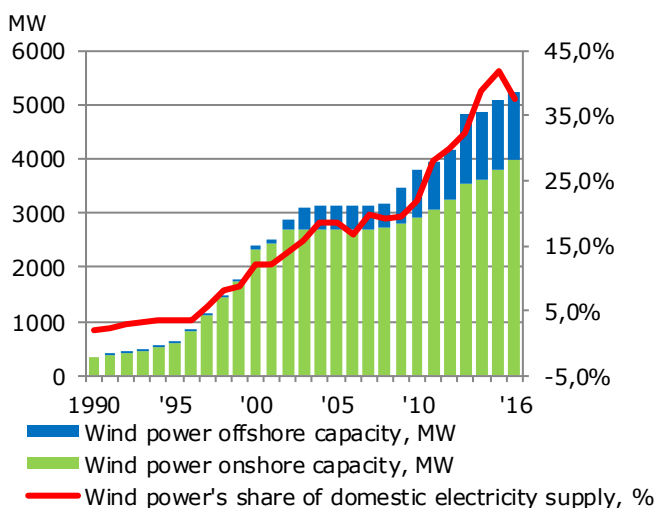
The EU Directive on renewable energy prescribes a different method for calculating the share of renewable energy than those used above.

The EU's calculation is based on final energy consumption expressed as energy consumption by end-users, excl. border trade and consumption for non-energy purposes, incl. distribution losses and own use in the production of electricity and district heating. In the EU method, renewable energy is defined as end-consumption of renewables as well as consumption of renewables for the production of electricity and district heating.

According to the EU method of calculation, the share of renewable energy was 31.3% in 2016 as opposed to 30.8% the year before, i.e. 2.1 percentage points higher than if the share of renewable energy is calculated as the share of the total energy consumption (p. 8).

Sources: 2004-2015 Eurostat. 1990-2003 and 2016 Danish Energy Agency calculations.

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

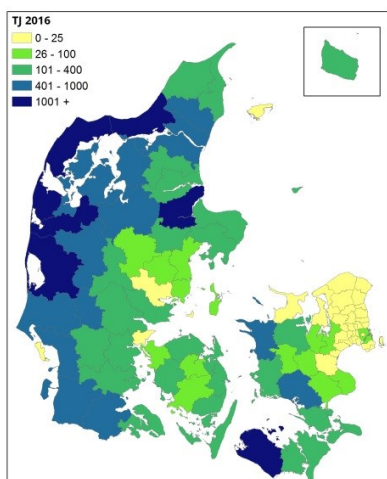


In 2016, wind power production accounted for 37.5% of domestic electricity supply, compared with 41.8% in 2015 and 1.9% in 1990.

Wind power capacity was 5245 MW in 2016, as opposed to 5076 MW the year before. In 2016 onshore and offshore wind turbine capacities were 3974 MW and 1271 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 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 46.0 PJ in 2016. Of this, onshore installations accounted for 63.6% and offshore installations accounted for 36.4%.

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.

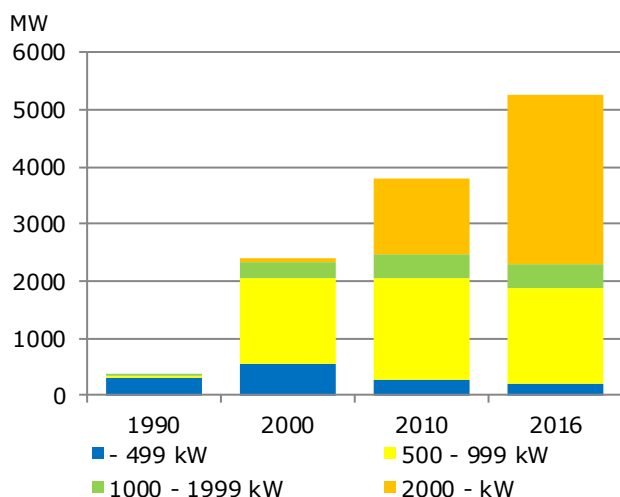
In 2016 the turbines in the ten municipalities with the highest wind power production thus together accounted for a production of 14.7 PJ, or 50.3% of total wind power production from onshore installations.

Wind power - number of turbines and capacity by size

	1980	1990	2000			2015			2016		
	Onshore	Onshore	Onshore	Offshore	Total	Onshore	Offshore	Total	Onshore	Offshore	Total
Total no. of turbines	68	2 664	6 193	41	6 234	5253	516	5 769	5 603	516	6 119
- 499 kW	68	2654	3 651	11	3 662	1 899	11	1 910	2 219	11	2 230
500 - 999 kW	-	8	2 283	10	2 293	2 473	10	2 483	2 431	10	2 441
1 000 - 1 999 kW	-	2	251	-	251	362	-	362	362	-	362
2 000 - kW	-	-	8	20	28	519	495	1 014	591	495	1 086
Total wind power capacity [MW]	3	326	2 340	50	2 390	3 805	1 271	5 076	3 974	1 271	5 245
- 499 kW	3	317	533	5	538	216	5	221	197	5	202
500 - 999 kW	-	6	1 512	5	1 517	1 683	5	1 688	1 655	5	1 660
1 000 - 1 999 kW	-	3	279	-	279	444	-	444	444	-	444
2 000 - kW	-	-	16	40	56	1 462	1 261	2 724	1 679	1 261	2 940

Note: In 2015 and 2016, a number of small wind-turbine installations were put into operation, and these have resulted in an increase in installations of less than 500 kW.

Wind power capacity by size of turbine

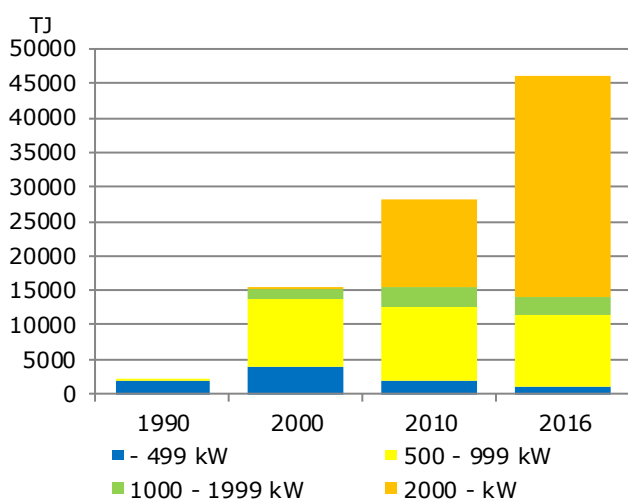


The total number of wind turbines increased by 350 from 2015 to 2016, and the total wind power capacity grew by 169 MW.

For some years now, the trend has been toward fewer but larger turbines. There were 115 fewer turbines in 2016 than in 2000. This is due to a fall of 1432 in the number of turbines with capacities of 499kW and below, as well as an increase of 1317 in the number of larger turbines.

Similarly, turbines with a capacity below 500kW accounted for only 3.9% of the total capacity in 2016, whereas this figure was 22.5% in 2000.

Wind power production by size of turbine



The development toward larger turbines is even more evident in terms of wind power production.

Where turbines larger than 2 MW accounted for 56.0% of wind power capacity, in 2016 these turbines produced 69.3% of the total energy from wind turbines.

Similarly, in 2016 wind turbines with a capacity below 500kW accounted for only 2.5% of the total production.

The most important reason for this is that by far the majority of the turbines established offshore have capacities above 2 MW, and that offshore wind turbines have a higher production in terms of their capacity than onshore wind turbines.

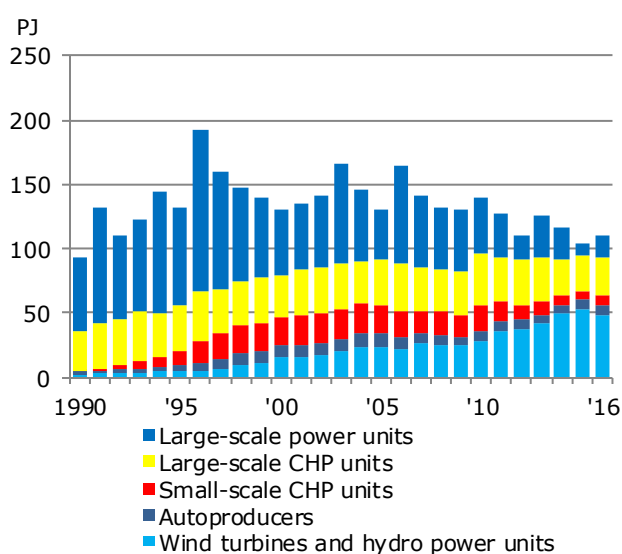
Electricity production by type of producer

Change

Direct energy content [TJ]	1980	1990	2000	2005	2010	2014	2015	2016	'90 - '16
Total electricity production(gross)	97 508	93 518	129 776	130 469	139 906	115 857	104 205	109 877	17.5%
Large-scale power units	44 155	7 494	8 871	49	336	75	45	40	-99.5%
Large-scale CHP units	52 056	80 639	73 809	74 932	83 940	52 115	37 375	46 062	-42.9%
- of which electricity production	36 026	50 157	41 584	38 402	43 221	24 504	8 936	16 977	-66.2%
Small-scale CHP units	18	988	21 547	21 254	19 216	7 162	6 350	8 245	735%
Autoproducers	1 118	2 099	10 168	10 336	8 203	7 224	7 317	6 768	222%
- Electricity production ¹⁾	-	-	9	7	6	3	3	3	•
- CHP ¹⁾	1 118	2 099	10 158	10 328	8 197	7 221	7 314	6 766	222%
Wind turbines ¹⁾	38	2 197	15 268	23 810	28 114	47 083	50 879	46 014	1994%
Hydropower units ¹⁾	123	101	109	81	74	54	65	69	-31.2%
Photovoltaics ¹⁾	-	-	4	8	22	2 144	2 175	2 678	•
Own use in production	-5 731	-6 118	-5 776	-6 599	-7 159	-4 928	-3 740	-5 313	-13.2%
Large-scale power units	- 2 787	- 590	- 312	- 2	- 17	- 5	- 0	- 3	-99.5%
Large-scale CHP units	- 2 944	- 5 509	- 4 993	- 6 033	- 6 602	- 4 505	- 3 303	- 4 831	-12.3%
Small-scale CHP units	-	- 19	- 472	- 564	- 541	- 419	- 437	- 480	2425%
Total electricity production (net)	91 777	87 400	123 999	123 870	132 747	110 928	100 466	104 564	19.6%
Net imports of electricity	- 4 453	25 373	2 394	4 932	- 4 086	10 279	21 282	18 206	-28.2%
Domestic electricity supply	87 323	112 773	126 393	128 802	128 661	121 207	121 748	122 769	8.9%
Transformation consumption	-	-	- 1	-	- 110	- 407	- 1 073	- 737	•
Distribution losses etc. ²⁾	- 7 497	- 8 886	- 7 650	- 5 573	- 9 482	- 7 153	- 6 444	- 6 818	-23.3%
Domestic electricity consumption	79 827	103 887	118 742	123 228	119 068	113 648	114 230	115 214	9.9%
Consumption in the energy sector	- 1 214	- 1 748	- 1 893	- 2 761	- 3 445	- 2 861	- 3 066	- 3 066	75.4%
Final electricity consumption	78 613	102 139	116 849	120 467	115 623	110 788	111 165	112 148	9.8%

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

Electricity production by type of producer



In 2016 electricity production was 109.9 PJ, which is an increase of 5.4% compared with 2015. The reason is due to a slight increase in domestic electricity supply as well as lower net import of electricity in 2016 as opposed to 2015.

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

Large-scale power units generate electricity, partly as separate electricity production, and partly as combined electricity and heat production. Of the total electricity production of 109.9 PJ, 46.1 PJ (42%) were generated from large-scale power units – 16.9 PJ 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 8.2 PJ and 6.8 PJ, respectively. Wind turbines generated 46.0 PJ of electricity, a decrease of 9.6% relative to 2015.

ELECTRICITY AND DISTRICT HEATING

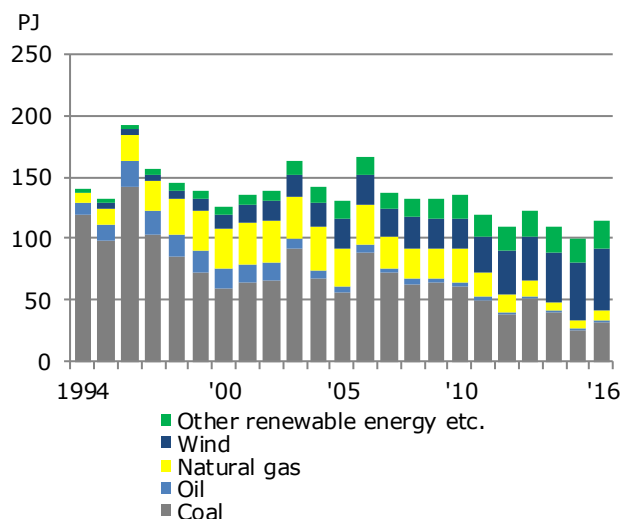
Electricity production by fuel

								Change
Direct energy content [TJ]	1994	2000	2005	2010	2014	2015	2016	'94 - '16
Total electricity production (gross)	144 707	129 776	130 469	139 906	115 857	104 205	109 877	-24.1%
Oil	9 547	15 964	4 933	2 783	1 137	1 122	1 159	-87.9%
- of which orimulsion	-	13 467	-	-	-	-	-	•
Natural gas	8 206	31 589	31 606	28 464	7 518	6 499	7 798	-5.0%
Coal	119 844	60 022	55 666	61 222	39 828	25 596	31 915	-73.4%
Surplus heat	-	139	-	-	-	-	-	•
Waste, non-renewable	836	2 002	2 938	2 689	2 607	2 706	2 542	204%
Renewable energy	6 275	20 060	35 326	44 749	64 768	68 283	66 464	959%
Solar	-	4	8	22	2 144	2 175	2 678	•
Wind	4 093	15 268	23 810	28 114	47 083	50 879	46 014	1024%
Hydro	117	109	81	74	54	65	69	-40.9%
Biomass	1 743	3 928	10 410	15 253	13 837	13 396	15 639	797%
- Straw	293	654	3 088	3 968	2 293	2 080	2 294	684%
- Wood	429	828	3 730	7 998	8 358	7 987	10 228	2281%
- Biooil	-	0	1	1	-	22	10	•
- Waste, renewable	1 021	2 447	3 591	3 286	3 186	3 307	3 107	204%
Biogas	321	751	1 017	1 285	1 649	1 768	2 063	543%

Electricity from renewable energy: Share of domestic electricity supply

								Change
[%]	1994	2000	2005	2010	2014	2015	2016	'94 - '16
Renewable energy	5,3	15,9	27,4	34,8	53,4	56,0	53,9	923%
Solar	0,0	0,0	0,0	0,0	1,8	1,8	2,2	•
Wind	3,4	12,1	18,5	21,9	38,8	41,8	37,5	989%
Hydro	0,1	0,1	0,1	0,1	0,0	0,1	0,1	-42.7%
Biomass	1,5	3,1	8,1	11,9	11,4	11,0	12,7	769%
- Straw	0,2	0,5	2,4	3,1	1,9	1,7	1,9	660%
- Wood	0,4	0,7	2,9	6,2	6,9	6,6	8,3	2208%
- Biooil	-	0	0	0	-	0	0	•
- Waste, renewable	0,9	1,9	2,8	2,6	2,6	2,7	2,5	195%
Biogas	0,3	0,6	0,8	1,0	1,3	1,4	1,5	450%

Electricity production by fuel



In 2016, 31.9 PJ (29.0%) of total electricity production was generated by coal. Natural gas accounted for 7.8 PJ (7.1%) of electricity production. Oil and non-renewable waste accounted for 1.2 PJ (1.1%) and 2.5 PJ (2.3%) of the electricity production, respectively.

Electricity production based on renewables was 66.5 PJ in 2016. This is 2.7% less than production in 2015. The decrease is due to a significant decrease in wind power production, which is only partly outweighed by an increased production from biomass.

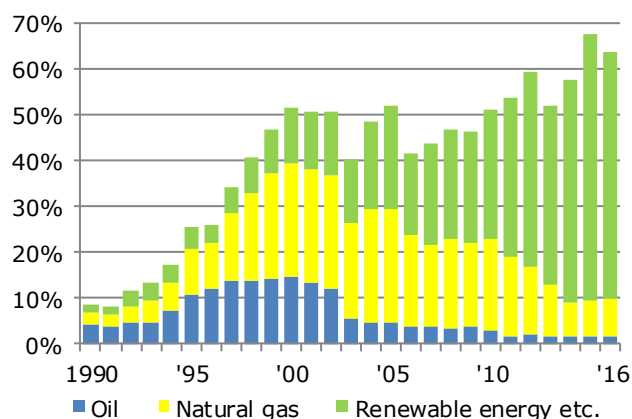
Electricity production based on biomass contributed 15.6 PJ, which is 16.7% more than in 2015. With 46.0 PJ, which is 9.6% less than in 2015, wind turbines still accounted for the greatest contribution to electricity production based on renewable energy.

Fuel consumption for electricity production

Change

Direct energy content [TJ]	1980	1990	2000	2005	2010	2014	2015	2016	'94-'16
Total fuel consumption	261 835	227 001	276 974	265 330	286 006	211 152	180 684	195 426	-13.9%
Oil	47 533	9 215	40 356	11 867	8 087	3 245	3 110	3 033	-67.1%
- of which orimulsion	-	-	33 503	-	-	-	-	-	•
Natural gas	-	6 181	68 868	65 912	57 229	15 898	14 303	16 103	161%
Coal	214 012	207 173	134 205	127 119	139 714	89 820	58 410	70 876	-65.8%
Waste, non-renewable	-	262	5 294	7 650	9 085	9 280	9 382	9 276	3442%
Renewable energy	290	4 170	28 252	52 784	71 891	92 910	95 479	96 138	2205%
Solar	-	-	4	8	22	2 144	2 175	2 678	•
Wind	38	2 197	15 268	23 810	28 114	47 083	50 879	46 014	1994%
Hydro	123	101	109	81	74	54	65	69	-31.2%
Biomass	90	1 428	11 009	26 470	40 808	40 102	38 620	43 100	2918%
- Straw	-	363	2 021	7 715	10 213	5 983	5 806	5 841	1509%
- Wood	90	745	2 518	9 405	19 492	22 777	21 241	25 897	3376%
- Biooil	-	-	0	0	-	-	107	25	•
- Waste, renewable	-	320	6 470	9 350	11 104	11 342	11 467	11 337	3442%
Biogas	39	444	1 861	2 415	2 872	3 527	3 739	4 276	863%

Other fuels than coal for electricity production

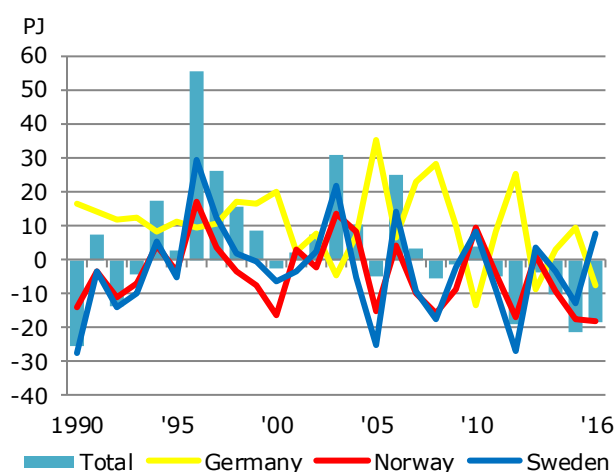


In the early 1990s, coal was the dominant fuel used in the production of electricity. In 1990, other types of fuel than coal only accounted for just 8.7% of total fuel consumption.

The share of fuels other than coal increased throughout the 1990s and in the period from 2000 to 2010 amounted to 40-53%. In recent years this share has been more than 50%, and in 2016, oil, natural gas and renewable energy etc. together accounted for 63.7% of fuel consumption for electricity production.

Even though the production based on other fuels than coal has increased from 2015 to 2016, the share has decreased compared with 2015. This is because the use of coal has increased relatively more.

Net exports of electricity by country



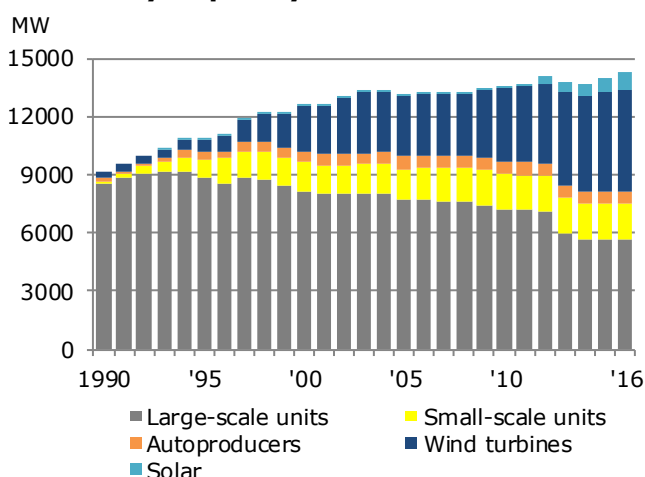
Danish foreign trade in electricity varies considerably from year to year. Foreign trade is strongly affected by price trends on the Nordic electricity exchange, Nordpool, which, in turn, is significantly influenced by varying precipitation patterns in Norway and Sweden, where electricity production is dominated by hydropower.

In 2016, Denmark had overall net imports of electricity of 18.2 PJ. This was the result of net imports from Norway and Germany of 18.2 PJ and 7.8 PJ, respectively and net exports to Sweden of 7.8 PJ. This pattern of exchange with net imports from Norway and Germany and simultaneous net exports to Sweden has not been seen before.

Electricity capacity, end of year

MW								Change
	1994	2000	2005	2010	2014	2015	2016	'94 - '16
Total	10 767	12 598	13 088	13 450	13 626	14 006	14 247	32.3%
Large-scale units	9 126	8 160	7 710	7 175	5 688	5 688	5 688	-37.7%
- Electricity	2 186	1 429	834	840	839	839	839	-61.6%
- CHP	6 940	6 731	6 877	6 335	4 848	4 848	4 848	-30.1%
Small-scale units	773	1 462	1 579	1 819	1 824	1 838	1 839	138%
Autoproducers	339	574	657	638	612	615	615	81.4%
Solar	0	1	3	7	607	782	851	•
Wind	521	2 390	3 128	3 802	4 887	5 076	5 245	906%
Hydro	8	10	11	9	9	7	9	13.3%

Electricity capacity

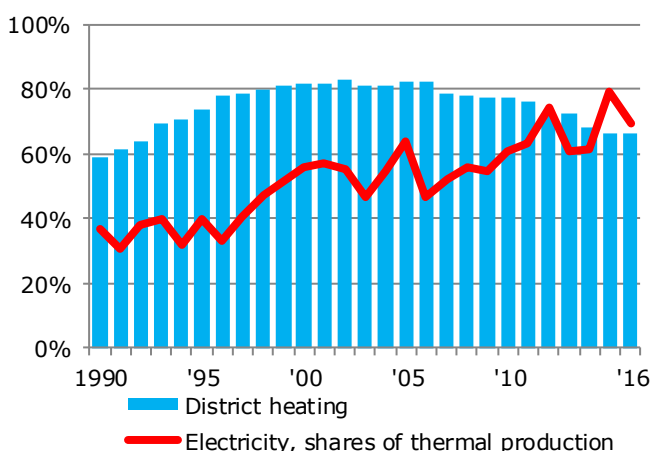


Up until the early 1990s electricity production capacity was dominated by the large-scale power units. Up through the 1990s, electricity capacity in small-scale units and secondary installations (autoproducers) increased. By the turn of the millennium, this capacity corresponded to a quarter of the capacity of the large-scale units.

A number of units at the large-scale plants which have in fact been out of operation for a number of years have now been scrapped and capacity at the large-scale plants therefore fell significantly. Capacity at small-scale units has increased slightly and has remained quite constant over recent years. Capacity at small-scale and autoproducers' installations now corresponds to one-third of the capacity of thermal plants.

Wind power capacity has also been increasing and in 2016 accounted for 5245 MW which is an increase of 169 MW or 3.3% compared with 2015.

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 2016, 69.1% of thermal electricity production (i.e. total production excl. wind, solar and hydropower) was produced simultaneously with heating. This is a decrease of 10 percentage points compared with 2015. It is primarily because electricity production without simultaneous production of heat (condensate) at thermal plants has increased because of less net imports of electricity and less wind power generation.

In 2016, 66.5% of district heating was produced with electricity. This is almost unchanged compared with 2015.

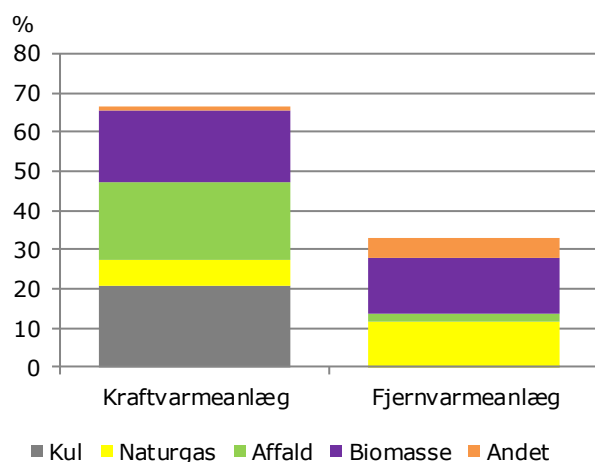
Heat production by type of production plant, 2016

	Number of units	Electricity capacity [MW]	Heat capacity [MJ/s]	Share of total heat supply [%]
Total	2 801	7 272	24 164	100
Large-scale CHP units	26	4 848	5 905	39.0
Small-scale CHP units	638	1 843	2 268	13.4
District heating units	1 731	-	13 429	28.3
Autoproducers				
- CHP units	275	581	1 543	14.4
- Heating units	131	-	1 019	5.0

Heat production by primary fuel, 2016

	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	939	7 272	9 716	66,8	1 862	14 449	33.2
Coal	10	3 163	3 266	20,6	1	10	0.0
Natural gas	508	1 895	2519	7,0	561	4 417	11.5
Oil	84	223	291	0,2	315	3 459	0.4
Waste	32	370	1 044	19,6	14	142	2.2
Biogas	156	109	142	1,0	24	47	0.1
Biomass	23	811	1 553	18,3	335	1 606	14.4
Biooil	-	-	-	-	51	675	0.2
Surplus heat	-	-	-	-	44	342	2.8
Solar heating	-	-	-	-	100	678	1.0
Heat pumps and electric boilers	-	-	-	-	61	571	0.6
No production in 2016	126	611	900	-	356	2 500	0.0

Heat supply by primary fuel, 2016



District heating supply takes place partly at CHP units and partly at units exclusively producing district heating. In 2016 CHP units produced 66.8%, of which: large-scale CHP units contributed 39.0%, small-scale CHP units contributed 13.4%, and CHP units at autoproducers contributed 14.4%.

Some CHP and district heating units use several types of fuel. A break down by types of primary fuel used by units in 2016 reveals that CHP units using coal as the primary fuel accounted for 20.6% of heat supply, while units using natural gas, waste or biomass as primary fuel accounted for 7.0%, 19.6% and 18.3%, respectively, of total district heating supply.

For units that produce district heating alone, units primarily firing with biomass contributed 14.4% and natural gas units contributed 11.5% of total district heating supply.

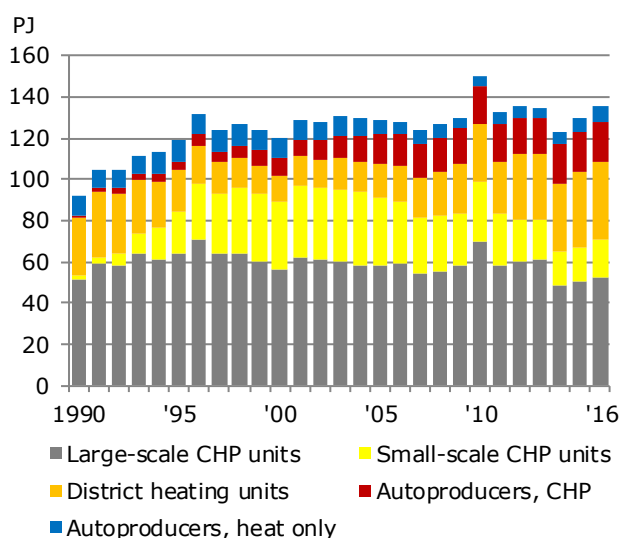
ELECTRICITY AND DISTRICT HEATING

District heating production by type of production plant

									Change
Direct energy content [TJ]	1980	1990	2000	2005	2010	2014	2015	2016	'90 -'16
Total production (gross)	79 016	92 411	119 702	128 382	150 393	122 944	129 948	135 687	46.8%
Large-scale CHP units	30 757	51 511	56 271	58 248	69 955	48 899	50 755	52 396	1.7%
Small-scale CHP units	30	2 145	33 027	32 727	28 462	15 670	15 691	18 554	765%
District heating by type of producer	43 655	27 755	12 516	16 621	28 816	33 260	37 313	37 983	36.9%
Autoproducers									
- CHP units ¹⁾	130	694	8 375	14 884	17 625	19 163	19 700	19 324	2684%
- Heating units ¹⁾	4 444	10 306	9 513	5 901	5 537	5 951	6 490	7 430	-27.9%
Consumption in production	-	-	-1 539	-1 303	-1 207	-1 198	- 680	- 794	•
Large-scale CHP units	-	-	- 866	- 384	- 331	-	-	-	•
Small-scale CHP units	-	-	- 637	- 656	- 643	- 839	- 390	- 480	•
District heating units	-	-	- 36	- 262	- 233	- 359	- 290	- 314	•
Total production (net)	79 016	92 411	118 163	127 079	149 187	121 746	129 269	134 893	46.0%
Net imports	-	122	144	153	174	141	151	128	5.0%
Domestic supply	79 016	92 533	118 307	127 232	149 360	121 887	129 419	135 021	45.9%
Consumption in refineries	-	- 428	- 275	- 355	- 584	- 578	- 578	- 578	35.0%
Distribution losses	-19 754	-18 507	-23 661	-25 446	-29 872	-24 377	-25 884	-27 004	45.9%
Final consumption	59 262	73 599	94 370	101 430	118 904	96 932	102 958	107 439	46.0%

¹⁾ Gross and net production are by definition identical.

District heating production by type of production plant



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. Throughout the 1990s, the share produced at small-scale CHP units and by auto producers such as CHP units, at CHP units at waste treatment facilities, in industry and in horticulture etc. increased.

During the last ten years the production from small-scale CHP units has decreased substantially. However from 2015 to 2016 the production once again increased slightly.

In 2016 total district heating production was 135.7 PJ, which is a rise of 4.4% compared with 2015. Compared with 2000, district heating production increased by 13.4%; compared with 1990 it increased by 46.8%.

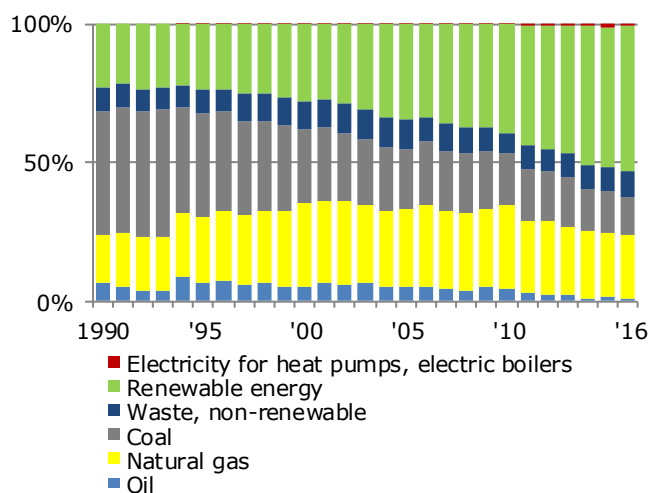
District heating production by fuel

								Change
Direct energy content [TJ]	1994	2000	2005	2010	2014	2015	2016	'94 -'16
Total production (gross)	113 103	119 702	128 382	150 393	122 944	129 948	135 687	20.0%
Oil	6 335	4 433	6 103	4 627	1 155	1 405	1 383	-78.2%
- of which orimulsion	-	1 291	-	-	-	-	-	
Natural gas	25 370	41 620	39 377	44 844	23 363	23 649	25 291	-0.3%
Coal	55 748	38 873	34 189	36 337	24 648	26 050	24 917	-55.3%
Surplus heat	2 838	3 676	3 174	2 518	2 921	3 131	3 448	21.5%
Electricity excl. heat pumps	-	-	-	110	388	1 036	697	•
Electricity, heat pumps	12	1	-	0	14	29	32	177%
Waste, non-renewable	6 084	8 651	10 713	10 627	11 396	12 251	12 583	107%
Renewable energy	16 715	22 448	34 826	51 331	59 058	62 398	67 336	303%
Solar	6	24	53	139	735	956	1 482	25689%
Geothermal	21	29	86	106	83	70	112	430%
Biomass	16 304	21 462	33 509	49 912	56 317	59 106	62 982	286%
- Straw	4 318	5 696	7 681	11 507	9 860	11 295	11 059	156%
- Wood	4 327	5 153	12 086	23 731	31 851	32 329	36 305	739%
- Biooil	223	39	650	1 685	678	508	239	7.1%
- Waste, renewable	7 436	10 574	13 093	12 989	13 928	14 974	15 380	107%
Biogas	348	903	1 169	1 173	1 874	2 184	2 659	665%
Heat pumps	36	29	9	0	49	82	100	176%

Fuel consumption for district heating production

								Change
Direct energy content [TJ]	1980	1990	2000	2005	2010	2014	2015	'90 -'16
Total fuel consumption	75 443	69 830	73 228	78 758	95 889	81 664	87 112	30.4%
Oil	51 304	4 766	3 726	4 322	4 554	1 050	1 194	-75.7%
- of which orimulsion	-	-	646	-	-	-	-	•
Natural gas	-	12 131	22 203	22 044	28 454	19 447	20 127	71.8%
Coal	13 527	30 898	19 459	17 121	18 245	12 367	13 117	-59.5%
Electricity	-	-	46	68	149	453	1 121	•
Waste, non-renewable	4 492	6 289	7 675	8 138	7 122	7 139	7 621	27.2%
Renewable energy	6 120	15 746	20 120	27 065	37 364	41 256	44 014	203%
Solar	-	6	24	53	143	736	956	24610%
Geothermal	-	48	58	172	212	166	140	369%
Biomass	6 105	15 611	19 425	26 125	36 288	39 147	41 442	184%
- Straw	290	3 640	5 013	5 934	8 269	7 760	8 996	143%
- Wood	324	3 541	4 983	9 484	17 365	21 937	22 603	618%
- Biooil	-	744	49	761	1 949	725	529	-66.6%
- Waste, renewable	5 491	7 686	9 380	9 946	8 705	8 726	9 314	27.2%
Biogas	15	81	582	707	721	1 158	1 394	1961%
Heat pumps	-	-	29	9	0	49	82	•

Fuel consumption for district heating production, percentage distribution



The upper table shows output, the amount of district heating produced, and the type of fuel used. For example, in 2016 a total of 135.7 PJ district heating was produced. The lower table shows input and the amount of fuel used to produce district heating. For example, in 2016 a total of 91.0 PJ fuel 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 combined heat and power plants produce heat with an efficiency of 200%. An example would be consumption of 12.5 PJ coal (lower table) results in district heating production of 24.9 PJ (upper table).

There has been a significant change in the fuel used in the production of district heating since 1990.

Production of district heating based on coal has fallen from about 50% to the current 13.7%. The corresponding percentage based on renewable energy - primarily biomass - has increased from around 20% to 52.5% of district heating production in 2016.

ENERGY SUPPLY AND CONSUMPTION 2016

Energy supply and consumption 2016

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		297 748	-	-	-	-	-	-	-	-	-	-	-	-
- Recycling		-	-	-	-	-	-	-	-	-	-	39	-	-
- Imports		164 893	-	-	1 449	115	21 654	-	46 091	160 090	138 705	-	7 661	10 742
- Exports		-166 714	-17 384	-	-3 591	- 49	-47 615	- 18	-3 606	-120 251	-184 005	-	- 47	- 166
- Border trade		-	-	-	-	-	1 643	-	-	-12 195	-	-	628	-
- International marine bunkers		-	-	-	-	-	-	-	-	-17 559	-10 506	-	-	- 101
- Supply from blending		- 2	-3 442	-	-	-	- 19	20	-1 464	1 548	3 179	-	-	2
- Stock changes		1 142	2 285	-	82	- 12	488	-	-4 959	647	7 892	-	6	- 12
Statistical differences		3 689	- 313	- 0	148	- 5	- 912	0	- 33	679	471	-	- 39	7
Extraction and gasification		-	-	-	-	-	-	-	-	-	-	-	-	-
Refineries														
- Input and net production		-300 757	18 855	14 916	4 333	-	81 988	-	5 665	129 280	48 371	-	-	-
- Own use in production		-	-	-13 305	-	-	-	-	-	-	- 505	-	-	-
Used in distribution		-	-	-	-	-	-	-	-	-	-	-	-	-
Large-scale power units														
- Fuel used and production		-	-	-	-	-	-	-	-	- 141	- 7	-	-	-
- Own use in production		-	-	-	-	-	-	-	-	-	-	-	-	-
Large-scale CHP units														
- Fuel used and production		-	-	-	- 0	-	-	-	-	- 30	-1 089	-	-	-
- Own use in production		-	-	-	-	-	-	-	-	-	-	-	-	-
Renewable energy, selected														
- Wind		-	-	-	-	-	-	-	-	-	-	-	-	-
- Hydro		-	-	-	-	-	-	-	-	-	-	-	-	-
Small-scale CHP units														
- Fuels used and production		-	-	-	-	-	-	-	-	- 56	- 7	-	-	-
- Own use in production		-	-	-	-	-	-	-	-	-	-	-	-	-
District heating units														
- Fuels used and production		-	-	-	-	-	-	-	-	- 568	- 158	- 1	-	-
- Own use in production		-	-	-	-	-	-	-	-	-	-	-	-	-
Autoproducers														
- Electricity units		-	-	-	-	-	-	-	-	-	-	-	-	-
- CHP units		-	-	-1 611	- 37	-	-	-	-	- 55	- 422	- 1	-	-
- Heat units		-	-	-	-	-	-	-	-	- 3	- 3	- 0	-	-
Gas works		-	-	-	-	-	-	-	-	- 63	-	-	-	-
Biogas upgrading plants		-	-	-	-	-	-	-	-	-	-	-	-	-
Distribution losses etc.		-	-	-	-	-	-	-	-	-	-	-	-	-
Final consumption														
- Non-energy use		-	-	-	-	-	-	-	-	-	-	-	-	-10 474
- Road		-	-	-	-	-	-56 303	-	-	-94 419	-	-	-	-
- Rail		-	-	-	-	-	-	-	-	-3 425	-	-	-	-
- Domestic sea transport		-	-	-	-	-	-	-	-	-6 396	- 2	-	-	-
- International aviation		-	-	-	-	- 1	-	-	-39 749	-	-	-	-	-
- Domestic aviation		-	-	-	-	- 47	-	-	-1 269	-	-	-	-	-
- Military transport		-	-	-	-	- 1	- 2	-	- 676	- 799	-	-	-	-
- Agriculture, forestry and horticulture		-	-	-	- 177	-	- 54	-	-	-13 602	- 19	-	-	-
- Fishing		-	-	-	- 12	-	- 0	-	-	-5 180	-	-	-	-
- Manufacturing		-	-	-	- 964	-	- 5	- 0	-	-2 261	-1 868	- 37	-7 574	-
- Construction		-	-	-	- 82	-	- 6	- 0	-	-4 946	-	-	-	-
- Wholesale		-	-	-	- 42	-	-	- 0	-	- 268	- 0	-	- 0	-
- Retail trade		-	-	-	- 34	-	-	- 0	-	- 115	- 0	-	- 0	-
- Private service		-	-	-	- 157	-	-	- 0	-	- 687	- 7	- 0	- 1	-
- Public service		-	-	-	- 164	-	-	- 1	-	-1 150	- 8	-	- 2	-
- Single-family houses		-	-	-	- 481	-	- 857	-	-	-6 823	-	-	- 628	-
- Multi-family houses		-	-	-	- 273	-	-	- 1	-	-1 252	- 10	-	- 4	-

ENERGY SUPPLY AND CONSUMPTION 2016

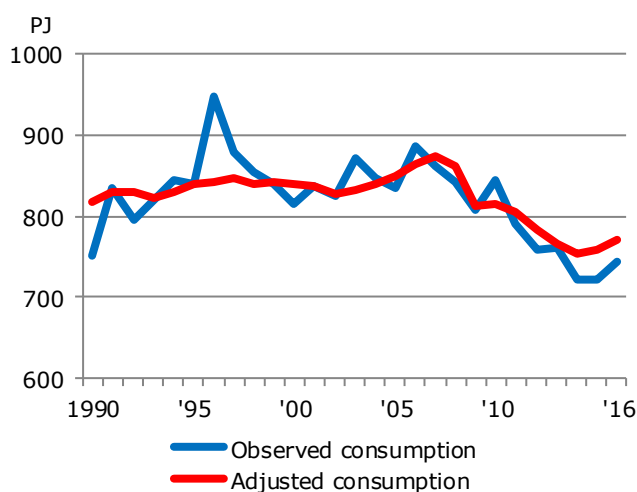
Natural gas	Coal	Coke etc.	Solar energy	Wind power	Hydro power	Geo-thermal	Straw	Wood chips	Fire-wood	Wood pellets	Wood waste	Biogas	Bio-met-hane	Waste	Biooil, biodiesel etc.	Heat pumps	Electricity	District heating	Gas-works gas
169 735	-	-	4 749	46 014	69	225	19 647	13 841	22 492	2 617	7 627	9 146	-	34 979	274	8 861	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25 616	70 108	324	-	-	-	-	-	6 513	2 611	41 324	-	-	-	5 490	9 988	-	53 915	128	-
-79 416	- 506	-	-	-	-	-	-	-	-	-	-	-	-	-	-1 203	-	-35 710	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25	-	-	-	-
4 564	12 677	26	-	-	-	-	-	-	-	-	-	-	-	-	454	-	-	-	-
2 082	5 552	- 37	-	-	-	-	- 0	-	-	0	- 0	-	0	0	- 161	-	-	0	-
-21 933	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-1 087	- 578	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-1 978	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	- 3	-	-
-10 163	-82 909	-	-	-	-	-	-5 495	-4 833	-	-24 696	-1 509	- 11	- 316	-	-	-	46 062	52 396	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-4 831	-	-
-	-	-	-	-46 014	-	-	-	-	-	-	-	-	-	-	-	-	46 014	-	-
-	-	-	-	-	- 69	-	-	-	-	-	-	-	-	-	-	-	69	-	-
-8 953	- 405	-	-	-	-	-	-3 035	-4 322	-	- 430	- 464	-3 255	- 279	-8 950	-	-	8 245	18 554	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	- 480	- 480	-
-14 932	- 50	-	-1 483	-	-	- 225	-6 130	-10 352	-	-2 100	- 713	- 105	- 465	- 498	- 249	-	- 737	37 983	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	- 314	-
-	-	-	-2 678	-	-	-	-	-	-	-	-	- 15	-	-	-	-	2 680	-	-
-2 600	- 11	-	-	-	-	-	- 2	- 155	-	- 12	- 818	-1 368	- 81	-25 458	- 25	-	6 766	19 324	-
- 291	-	-	-	-	-	-	- 26	- 417	-	-	- 485	- 42	- 9	-3 481	-	-	- 52	7 430	-
- 588	-	-	-	-	-	-	-	-	-	-	-	- 130	- 18	-	-	-	-	-	735
-	-	-	-	-	-	-	-	-	-	-	-	-3 106	3 106	-	-	-	-	-	-
- 115	-	-	-	-	-	-	-	-	-	-	-	-	- 4	-	-	-	-6 767	-27 004	- 29
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
- 132	-	-	-	-	-	-	-	-	-	-	-	-	- 4	-	-9 101	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-1 501	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-1 680	- 577	-	-	-	-	-	-1 983	- 26	-	-	- 177	- 137	- 52	-	-	- 713	-6 275	-1 585	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-27 534	-3 879	- 313	-	-	-	-	-	-	-	-1 336	-3 397	- 606	- 829	-1 494	-	-1 947	-29 174	- 2 885	- 207
- 343	-	-	-	-	-	-	-	-	-	-	-	-	- 11	-	-	-	-1 343	-	-
-1 043	-	-	-	-	-	-	-	-	-	-	-	-	- 32	-	-	-	-5 334	-4 263	-
- 805	-	-	-	-	-	-	-	-	-	-	-	-	- 25	-	-	-	-6 008	-3 291	-
-3 321	-	-	-	-	-	-	-	- 14	-	-	- 64	- 372	- 103	- 589	-	-	-16 650	-14 335	- 16
-2 562	-	-	- 88	-	-	-	-	- 151	-	-1 169	-	-	- 80	-	-	-	-8 796	-10 663	- 24
-21 575	-	- 0	- 412	-	-	-	-2 975	- 83	-25 102	-14 196	-	-	- 672	-	- 1	-6 201	-27 976	-34 368	- 250
-4 011	-	- 0	- 88	-	-	-	-	-	-	-	-	-	- 125	-	-	-	-9 091	-36 049	- 210

GROSS ENERGY CONSUMPTION AND FINAL ENERGY CONSUMPTION

Gross energy consumption

	1980	1990	2000	2005	2010	2014	2015	2016	Change '90-'16
Adjusted total gross energy consumption. Fuel equivalent [PJ]	814	819	839	850	814	755	758	770	-5.9%
By fuel	814	819	839	850	814	755	758	770	-5.9%
Oil	546	355	376	352	312	275	279	280	-21.1%
Natural gas	0	82	192	192	176	130	133	131	60.4%
Coal and coke	241	327	175	166	147	130	111	116	-64.4%
Waste, non-renewable	5	8	14	17	16	18	18	18	139%
Renewable energy	22	48	81	123	163	202	217	225	370%
By energy product	814	819	839	850	814	755	758	770	-5.9%
Oil	446	338	329	333	300	270	274	275	-18.6%
Natural gas	0	59	98	100	94	87	87	86	44.2%
Coal and coke	22	17	12	11	6	5	5	5	-72.3%
Waste, non-renewable	0	0	1	1	1	1	1	1	100%
Renewable energy	16	28	32	43	54	65	71	74	167%
Electricity	249	297	286	279	274	236	229	237	-20.3%
District heating	73	77	79	81	86	90	91	92	19.3%
Gas works gas	7	2	1	1	1	1	1	1	-65.0%
By use	814	819	839	850	814	755	758	770	-5.9%
Energy sector	17	28	44	52	46	39	42	36	28.3%
Non-energy use	16	13	13	12	11	11	11	10	-19.5%
Transport	144	172	203	218	212	209	211	215	25.6%
Agriculture and industry	228	226	226	213	187	162	161	165	-27.1%
Commercial and public services	130	132	125	127	130	117	114	118	-10.3%
Households	277	248	228	229	228	218	220	225	-9.2%
Observed total energy consumption [PJ]	830	752	816	835	846	722	722	743	-1.2%
Oil	555	343	370	348	316	272	278	279	-18.8%
Natural gas	0	76	186	188	185	119	120	122	60.9%
Coal and coke	252	255	166	155	164	107	76	88	-65.4%
Waste, non-renewable	5	7	14	17	17	17	18	18	161%
Renewable energy	23	45	79	122	168	195	208	217	378%
Foreign trade in electricity, net imports	- 4	25	2	5	- 4	10	21	18	-28.2%
Foreign trade in district heating, net imports	-	0	0	0	0	0	0	0	5.0%

Observed energy consumption and adjusted gross energy consumption

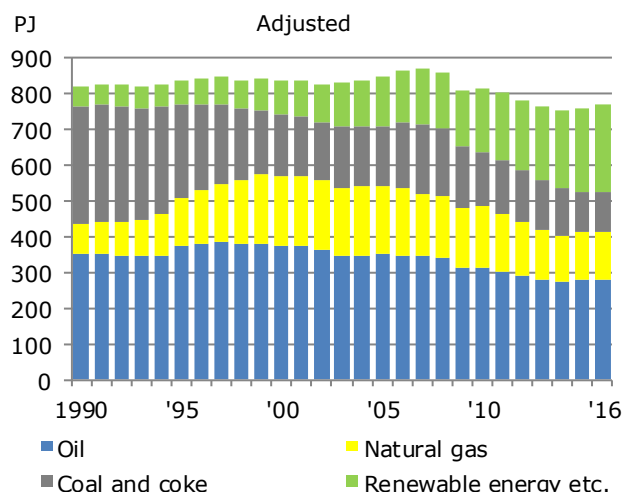


Observed energy consumption shows the registered amount of energy consumed in a calendar year. Gross energy consumption is derived by adjusting observed energy consumption for the fuel consumption linked to foreign trade in electricity. The adjusted gross energy consumption is moreover adjusted for climate variations 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 770 PJ in 2016, which is 1.6% higher than the 2015 level. Compared with 1990, consumption fell by 5.9%.

Observed energy consumption was 743 PJ in 2016, which is 3.0% higher than the 2015 level. Compared with 1990, observed energy consumption was 1.2% lower.

Gross energy consumption by fuel

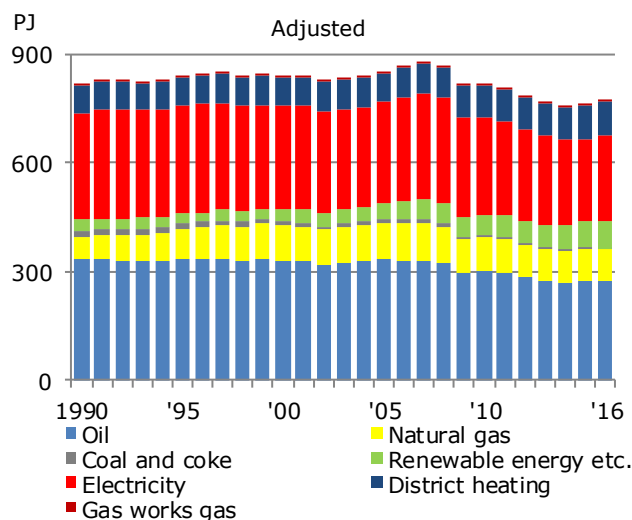


Adjusted gross energy consumption was 5.9% lower in 2016 than in 1990. However, consumption of individual fuels has followed rather varied trends.

Consumption of oil fell up until 1993, after which it rose again and stabilised, first at around 380 PJ and then at around 350 PJ. After this, there was another drop. From 1990 to 2016, oil consumption fell by 21.1%. Consumption of coal, which primarily takes place at CHP units, has decreased by 64.4% since 1990. In the period consumption of natural gas and renewable energy etc. (i.e. renewable energy and non-renewable waste) went up by 60.4% and 338%, respectively.

In 2016 consumption of oil, coal and renewable energy etc. increased by 0.2%, 5.2% and 3.4%, respectively, compared with the year before. Natural gas fell by 1.3% compared with 2015.

Gross energy consumption by energy product after transformation

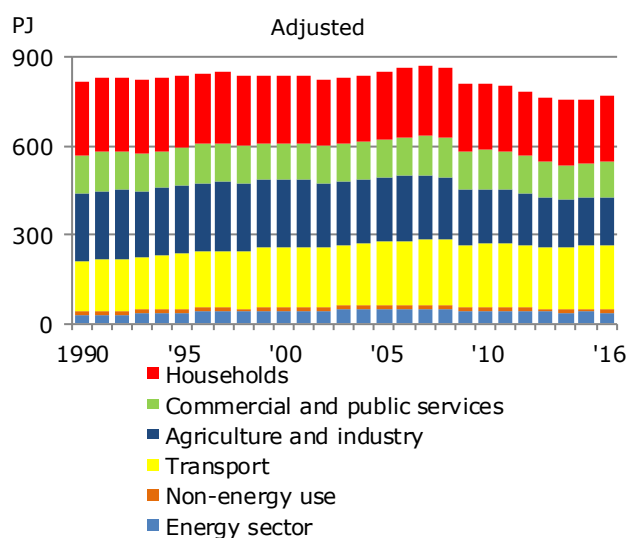


Gross energy consumption by energy product shows gross energy consumption after a number of fuels have been transformed to electricity, district heating, and gas works gas. In other words, the consumption of oil, natural gas, coal and renewable energy etc. is a statement of the volumes of these fuels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

Fuel consumption for electricity production was 237 PJ in 2016, which is 3.4% more than in 2015. Compared with 1990, fuel consumption fell by 20.3% due to more efficient electricity production and a growing share of wind power.

Fuel consumption for district heating was 92 PJ in 2016, which is 1.9% higher than in 2015. Compared with 1990, fuel consumption increased by 19.3%. Also in this regard, production has become more efficient, as district heating production has increased by 46.8% 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.

Gross energy consumption for transport and households was 2.2% and 2.7% higher respectively in 2016 than the year before, whereas in the agriculture and industry sector consumption rose by 2.3%. In the commercial and public services sector, gross energy consumption rose by 3.6%. In the energy sector (platforms in the North Sea and oil refineries) gross energy consumption fell by 14.2%.

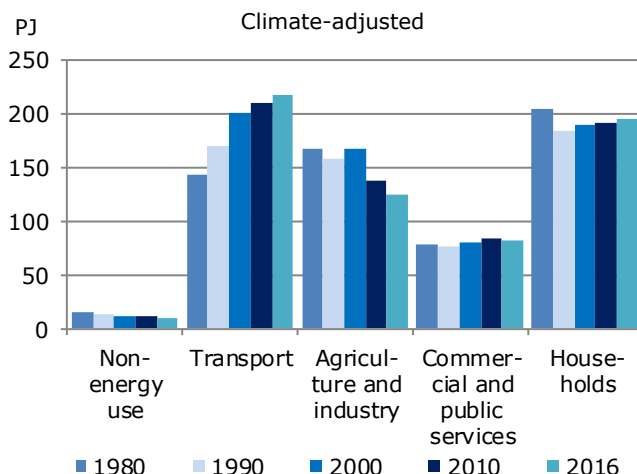
Compared with 1990, gross energy consumption for transport increased by 25.6%. In the agriculture and industry sector, gross energy consumption fell by 27.1%, while it fell by 10.3% and 9.2%, respectively, for the commercial and public services sector and for households. From 1990 to 2016, developments were affected by the fact that electricity and district heating can be generated with ever smaller fuel consumption.

GROSS ENERGY CONSUMPTION AND FINAL ENERGY CONSUMPTION

Final energy consumption

									Change
Direct energy content [TJ]	1980	1990	2000	2005	2010	2014	2015	2016	'90-'16
Total final energy consumption Climate adjusted	609 602	604 097	650 815	665 869	633 250	611 657	617 554	629 234	4.2%
By energy product									
Oil	430 738	321 946	312 354	312 290	283 644	256 677	258 959	263 693	-18.1%
Natural gas	-	50 060	72 674	72 415	67 638	63 638	62 631	63 482	26.8%
Coal and coke	21 623	17 243	12 389	10 826	5 559	5 456	4 972	4 782	-72.3%
Waste, non-renewable	288	470	763	1 239	922	1 043	866	941	100%
Renewable energy	15 928	27 833	32 228	43 216	53 578	65 468	70 818	74 271	167%
Electricity	78 378	103 212	117 590	120 731	114 700	111 528	111 468	112 266	8.8%
District heating	57 715	81 679	102 127	104 604	106 725	107 158	107 164	109 086	33.6%
Gas works gas	4 930	1 654	691	547	485	689	675	712	-57.0%
By use									
Non-energy use	16 253	13 004	12 619	12 064	11 026	10 536	10 535	10 474	-19.5%
Total transport	143 337	170 216	201 209	215 789	209 731	207 258	209 265	213 828	25.6%
Road transport	100 945	129 943	153 666	161 923	161 215	156 504	159 245	159 958	23.1%
Rail transport	5 016	4 765	4 339	4 488	4 728	4 795	4 785	4 927	3.4%
Sea transport, domestic	5 588	6 344	6 857	8 026	6 533	5 024	5 640	6 399	0.9%
Aviation	23 642	27 515	34 822	37 627	35 785	39 125	38 246	41 066	49.2%
Military transport	8 145	1 649	1 525	3 726	1 470	1 810	1 350	1 479	-10.3%
Total agriculture and industry	167 679	158 790	167 113	158 242	137 014	122 883	123 913	125 581	-20.9%
Agriculture, forestry and horticulture	29 818	33 087	32 428	29 322	29 146	27 875	27 551	27 213	-17.8%
Fishing	7 312	10 785	9 451	7 488	6 049	4 856	5 205	5 192	-51.9%
Manufacturing	124 557	108 624	117 583	113 280	94 679	83 624	84 602	86 435	-20.4%
Construction	5 992	6 295	7 651	8 152	7 140	6 528	6 554	6 741	7.1%
Total commercial and public services	78 314	77 047	80 599	85 045	83 893	81 622	81 360	83 140	7.9%
Wholesale	19 045	13 795	13 893	12 906	11 493	10 901	10 888	11 060	-19.8%
Retail trade	9 702	8 883	9 323	9 991	10 939	10 538	10 345	10 347	16.5%
Private service	25 955	28 812	32 901	36 238	36 653	36 037	35 618	36 624	27.1%
Public service	23 612	25 557	24 481	25 909	24 807	24 146	24 509	25 110	-1.7%
Total households	204 018	185 039	189 275	194 729	191 585	189 357	192 480	196 210	6.0%
Single-family houses	155 706	137 383	139 568	144 258	140 888	138 489	141 556	144 438	5.1%
Multi-family houses	48 312	47 656	49 706	50 471	50 696	50 867	50 924	51 772	8.6%
Observed consumption Total final energy consumption	616 998	580 458	632 528	658 455	659 750	590 288	608 662	625 745	7.8%

Final energy consumption by use

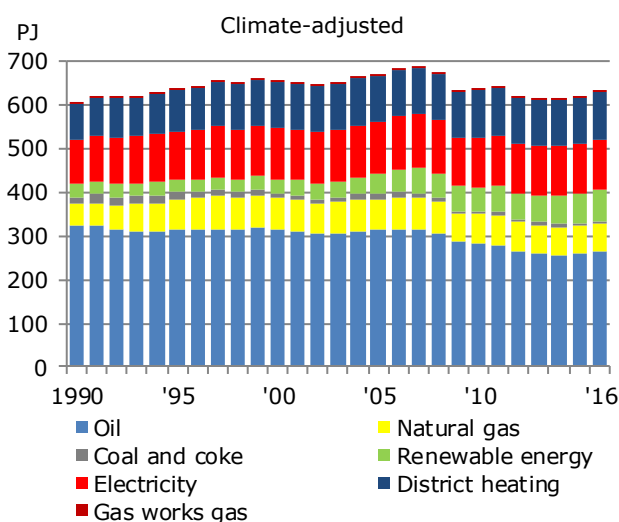


Final energy consumption includes consumption for transport and non-energy purposes (such as lubricants and asphalt), and energy consumption for production and heating by the agriculture and industry sector, the commercial and public services sector, and energy consumption by households.

Final energy consumption in 2016 was 629 PJ, which is 1.9% higher than in 2015. Final consumption was 4.2% higher compared with 1990.

Energy consumption for the transport sector increased steadily throughout most of the period. From 1990 to 2016 consumption went up by 25.6%. Energy consumption in the agriculture and industry sector fell by 20.9% from 1990 to 2016, while consumption in the commercial and public services sector and households increased by 7.9% and 6.0%, respectively.

Final energy consumption by energy product

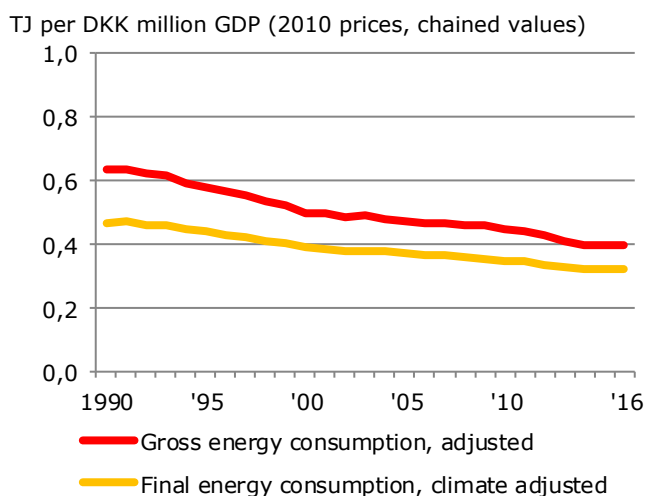


Consumption of oil rose by 1.8% and consumption of natural gas (for other uses than electricity and district heating production) increased by 1.4% from 2015 to 2016. Consumption of electricity increased by 0.7% and consumption of district heating was 1.8% higher than the year before.

Since 1990, final consumption of natural gas has increased by 26.8%, while consumption of electricity and district heating has increased by 8.8% and 33.6%, respectively. In the same period, consumption of oil and coal fell by 18.1% and 72.3%, respectively.

In 2016, final consumption of renewable energy etc. was 4.9% higher than in 2015. Consumption of renewable energy etc. has increased by 166% since 1990.

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



Economic activity in Denmark, measured in terms of gross domestic product (GDP) in 2010 prices (chained values), has increased much faster than energy consumption.

In 2016 gross energy consumption was 0.395 TJ per DKK million GDP (calculated in 2010 prices, chained values), as opposed to 0.636 TJ in 1990; i.e. fuel intensity was reduced by 37.8% during this period. Intensity in 2016 is unchanged compared with the year before.

If developments in GDP are instead compared to developments in final energy consumption, energy intensity fell by 31.2% from 1990 to 2016. This reduction is less than the figure above, because the increased efficiency of the transformation sector is not included. Intensity increased by 0.2% in 2016 compared with the year before.

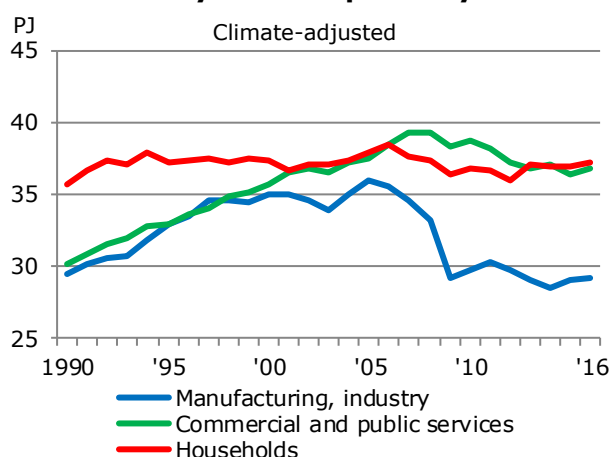
GROSS ENERGY CONSUMPTION AND FINAL ENERGY CONSUMPTION

Final electricity consumption

Change

Direct energy content [TJ]	1980	1990	2000	2005	2010	2014	2015	2016	'90-'16
Total final electricity consumption	78 378	103 212	117 590	120 731	114 700	111 528	111 468	112 266	8.8%
Climate adjusted									
Rail transport	479	736	1 253	1 351	1 455	1 387	1 429	1 501	104%
Agriculture and industry	27 724	36 633	43 283	44 092	37 851	36 253	36 787	36 805	0.5%
Agriculture, forestry and horticulture	5 553	6 143	7 047	6 874	6 841	6 463	6 441	6 281	2.2%
Manufacturing	21 404	29 436	35 022	35 943	29 638	28 505	29 046	29 181	-0.9%
Construction	767	1 054	1 214	1 274	1 372	1 285	1 300	1 343	27.3%
Commercial and public services	21 788	30 147	35 715	37 479	38 656	36 979	36 397	36 808	22.1%
Wholesale	3 599	5 451	5 936	5 973	5 740	5 449	5 293	5 336	-2.1%
Retail trade	3 784	5 202	5 742	6 260	6 543	6 368	6 102	6 010	15.5%
Private services	8 347	11 715	14 903	15 866	17 108	16 697	16 383	16 660	42.2%
Public services	6 058	7 778	9 134	9 380	9 266	8 465	8 619	8 802	13.2%
Households	28 388	35 696	37 339	37 810	36 738	36 908	36 855	37 151	4.1%
Single-family houses	21 431	27 011	28 210	28 279	27 335	27 870	27 772	28 053	3.9%
Multi-family houses	6 957	8 686	9 129	9 530	9 403	9 039	9 084	9 098	4.7%
Observed electricity consumption	78 613	102 139	116 849	120 467	115 623	112 159	110 788	112 148	9.8%

Final electricity consumption by use

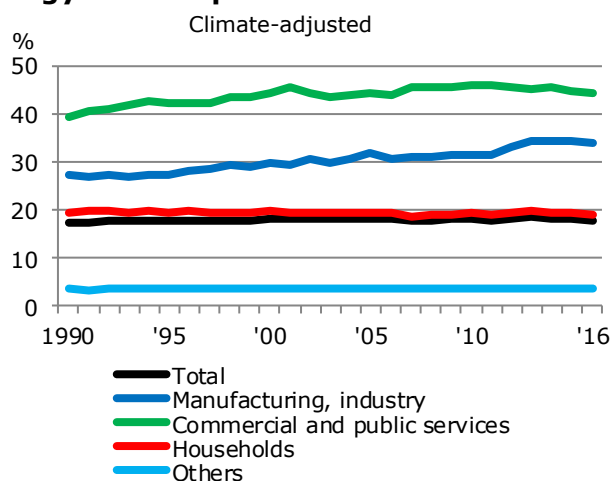


Electricity consumption by manufacturing industries was 0.5% higher in 2016 than in 2015. Compared with 1990, electricity consumption fell by 0.9%.

In the commercial and public services sector, electricity consumption increased until 2008, after which it fell. In 2016, electricity consumption was 1.1% higher than the year before. From 1990 to 2016 electricity consumption went up by 22.1%.

The electricity consumption of households increased slightly from 1990 to 2006. Consumption has remained almost stable from 2009 to 2011. Electricity consumption decreased by 0.8% in 2016. Consumption increased by 4.1% relative to 1990.

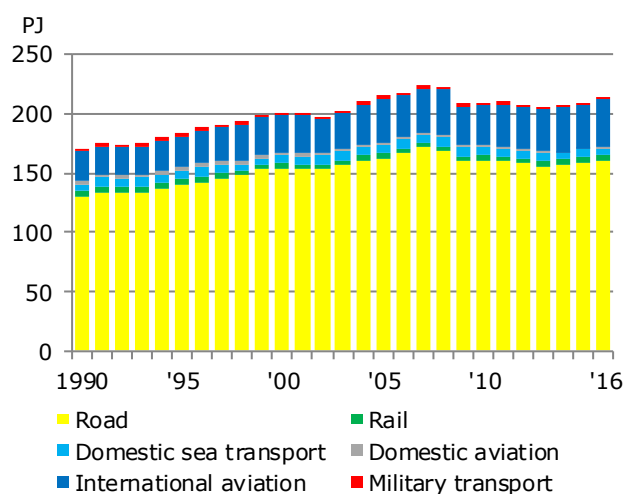
Electricity consumption's share of total energy consumption



During the period from 1990 to 2016 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 2016 it was 17.8%.

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%. Since 2002 the share has fluctuated between 43.4% and 46.1%. In 2016, electricity consumption accounted for 44.3% of the sector's total energy consumption. Manufacturing industries has seen a steady increase across the period 1990-2016; with the share of electricity at 33.8% in 2016 compared with 27.1% in 1990. Electricity consumption's share for households remains more or less unchanged with 19.3% in 1990 and 18.9% in 2016.

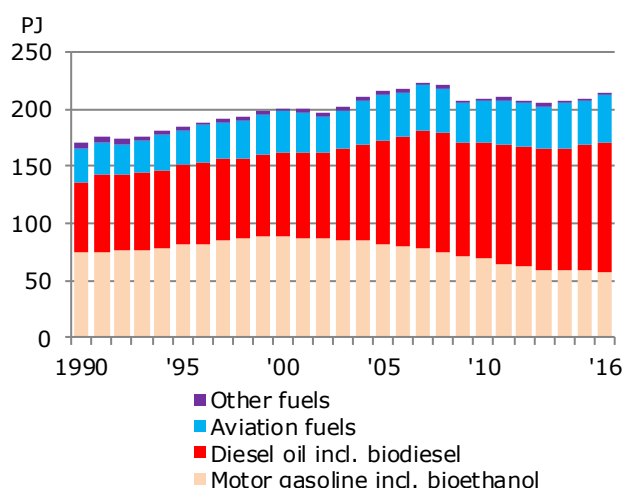
Energy consumption for transport by type



Energy consumption for transport followed an upward trend until 2007, when energy consumption was at 224.0 PJ. In 2009 energy consumption fell to 208.4 PJ. In 2016, energy consumption was calculated at 213.8 PJ, which is 2.2% higher than in 2015. Compared with 1990, energy consumption for transport has increased by 25.6% in 2016.

Energy consumption for road transport was 160.0 PJ in 2016, which is 0.4% higher compared with 2015. 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 1990-2016. In 2016, consumption increased by 7.5%.

Energy consumption for transport by fuel type

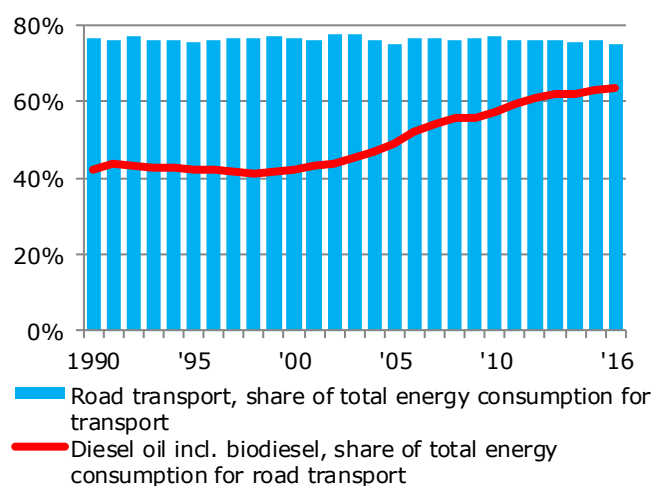


Consumption of motor gasoline (including bioethanol) fell by 1.9% from 2015 to 2016, while consumption of diesel oil (including biodiesel) increased by 2.6%. Consumption of bioethanol and biodiesel together is almost unchanged from 2015 to 2016.

Considering developments from 1990 to 2016, consumption of motor gasoline (including bioethanol) fell by 21.8%, while consumption of diesel oil (including biodiesel) grew by 82.1%. Consumption of aviation fuels increased by 44.0%.

Consumption of other types of fuel fell by 68.6% in the same period. Other types of fuel include electricity consumption by railways.

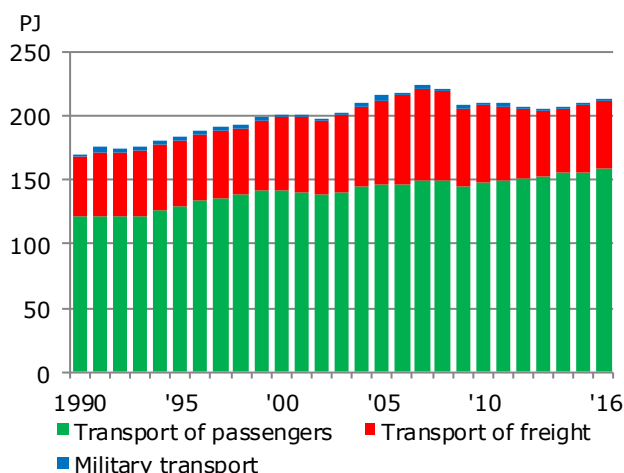
Energy consumption for road transport



Energy consumption for road transport is by far the largest contributor to total energy consumption for transport. This contribution was almost unchanged from 1990 to 2016. In 2016, road transport accounted for 74.8% of total energy consumption for transport.

Consumption of diesel oil has increased significantly and diesel oil has been the most common fuel for road transport since 2006. In 2016, diesel oil (including biodiesel) accounted for 63.6% of total energy consumption for transport, as opposed to 42.1% in 1990.

Final energy consumption by passenger and freight transport

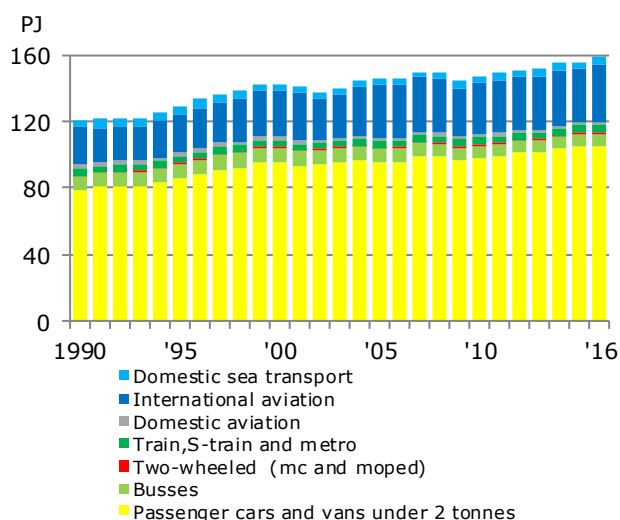


In the distribution of energy consumption for transport of passengers and freight, vans less than two tonnes are included under passenger transport, whereas vans of 2-6 tonnes are included under freight transport.

Out of the total energy consumption for transport in 2016, which amounted to 213.8 PJ, passenger transport accounted for 159.4 PJ, corresponding to 74.6%. Energy consumption for freight transport was 52.9 PJ, corresponding to 24.7%, while energy consumption for transport by Danish military was 1.5 PJ.

Energy consumption for passenger transport increased by 2.3% from 2015 to 2016, while energy consumption for freight transport grew by 1.6%. Considering the trend from 1990 to 2016, energy consumption for passenger transport increased by 31.4%, while energy consumption for freight transport increased by 12.1%.

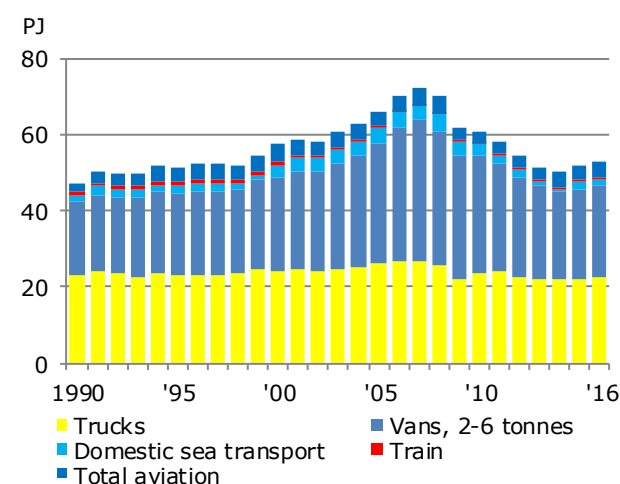
Energy consumption for passenger transport by means of transport



Energy consumption for passenger transport is mainly used for transport by car and for international aviation. In 2016, energy consumption for these categories made up 65.8% and 22.4%, respectively, of total energy consumption for passenger transport.

Energy consumption for cars and vans (less than 2 tonnes) decreased by 0.2% from 2015 to 2016, while energy consumption for international aviation grew by 7.9%. From 1990 to 2016, energy consumption for cars and vans increased by 33.2%, while energy consumption for international aviation grew by 60.2%.

Energy consumption for freight transport by means of transport



Energy consumption for freight transport is mostly by trucks and vans (2-6 tonnes). In 2016, energy consumption by these types of vehicle made up 43.0% and 44.7%, respectively, of total energy consumption for freight transport.

Energy consumption for trucks grew by 2.6% from 2015 to 2016, while energy consumption for vans increased by 0.9%. Energy consumption for trucks dropped by 1.9% from 1990 to 2016, while energy consumption for vans increased by 23.9%.

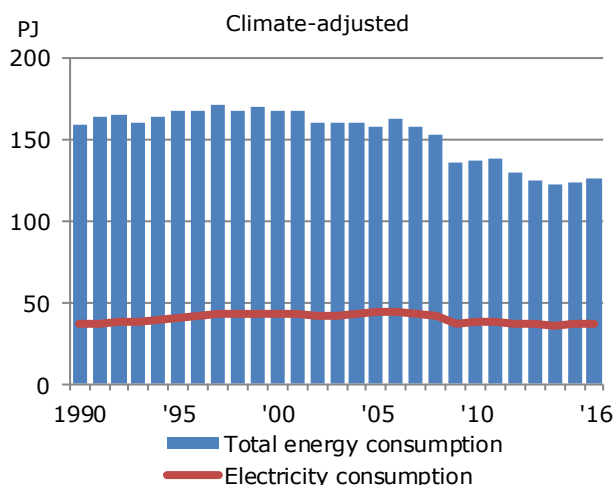
Final energy consumption for transport

Direct energy content [TJ]	1980	1990	2000	2005	2010	2014	2015	2016	Change '90-'16
Total transport Observed consumption	143 337	170 216	201 209	215 789	209 731	207 258	209 265	213 828	25.6%
LPG	880	464	425	323	3	0	-	-	-100%
Aviation gasoline	201	155	119	107	76	48	57	49	-68.4%
Motor gasoline	67 830	74 327	88 976	82 126	67 726	57 932	57 443	56 305	-24.2%
JP4	7 500	-	-	-	-	-	-	-	•
Petroleum	129	462	39	14	0	-	-	-	-100%
JP1	23 473	28 828	35 810	39 959	36 577	40 046	38 927	41 695	44.6%
Gas/diesel oil	41 053	61 685	73 077	90 529	101 893	98 364	102 325	105 041	70.3%
Fuel oil	1 791	3 560	1 509	1 379	868	546	39	2	-99.9%
Natural gas							76	132	•
Bio methane							1	4	•
Bioethanol	-	-	-	-	1 118	1 872	1 840	1 838	•
Biodiesel	-	-	-	-	16	7 063	7 129	7 263	•
Electricity	479	736	1 253	1 351	1 455	1 387	1 429	1 501	104%
Road	100 945	129 943	153 666	161 923	161 215	156 504	159 245	159 958	23.1%
Rail	5 016	4 765	4 339	4 488	4 728	4 795	4 785	4 927	3.4%
Domestic sea transport	5 588	6 344	6 857	8 026	6 533	5 024	5 640	6 399	0.9%
Domestic aviation	1 850	3 177	2 191	1 809	1 858	1 370	1 267	1 316	-58.6%
International aviation	21 792	24 338	32 631	35 818	33 927	37 755	36 979	39 749	63.3%
Military transport	8 145	1 649	1 525	3 726	1 470	1 810	1 350	1 479	-10.3%
Passenger transport	100 889	121 356	142 254	145 934	147 332	155 226	155 851	159 435	31.4%
Freight transport	34 303	47 212	57 430	66 129	60 929	50 221	52 064	52 915	12.1%
Military transport	8 145	1 649	1 525	3 726	1 470	1 810	1 350	1 479	-10.3%

Final energy consumption in agriculture and industry

Direct energy content [TJ]	1980	1990	2000	2005	2010	2014	2015	2016	Change '90-'16
Total for agriculture and industry Climate adjusted	167 679	158 790	167 113	158 242	137 014	122 883	123 913	125 581	-20.9%
By energy product									
Oil	112 269	65 613	58 460	53 743	44 071	35 220	35 755	36 850	-43.8%
Natural gas	-	25 281	35 606	32 433	30 901	30 527	29 452	29 656	17.3%
Coal and coke	19 126	16 315	12 339	10 817	5 531	5 455	4 972	4 781	-70.7%
Waste, non-renewable	25	13	72	591	759	672	672	672	5229%
Renewable energy	5 174	9 377	8 098	7 759	11 509	9 717	11 460	12 087	28.9%
Electricity	27 724	36 633	43 283	44 092	37 851	36 253	36 787	36 805	0.5%
District heating	2 949	5 409	9 210	8 788	6 353	4 827	4 607	4 521	-16.4%
Gas works gas	413	149	45	19	41	212	208	207	38.6%
By use									
Agriculture, forestry and horticulture	29 818	33 087	32 428	29 322	29 146	27 875	27 551	27 213	-17.8%
Fishing	7 312	10 785	9 451	7 488	6 049	4 856	5 205	5 192	-51.9%
Manufacturing industries	124 557	108 624	117 583	113 280	94 679	83 624	84 602	86 435	-20.4%
Construction	5 992	6 295	7 651	8 152	7 140	6 528	6 554	6 741	7.1%

Energy and electricity consumption in agriculture and industry

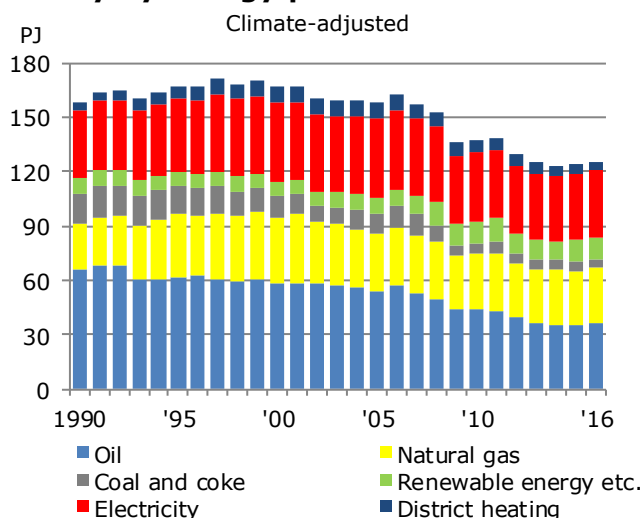


Agriculture and industry covers agriculture, forestry and horticulture, fishing, manufacturing industries (excl. refineries), as well as construction.

In 2016 climate-adjusted energy consumption in agriculture and industry was 125.6 PJ, which is 1.3% higher than the year before. Compared with 1990, energy consumption decreased by 20.9%.

Electricity consumption in 2016 was 36.8 PJ after adjusting for climate variation. This is unchanged compared with the year before. Compared with 1990, electricity consumption increased by 0.5%.

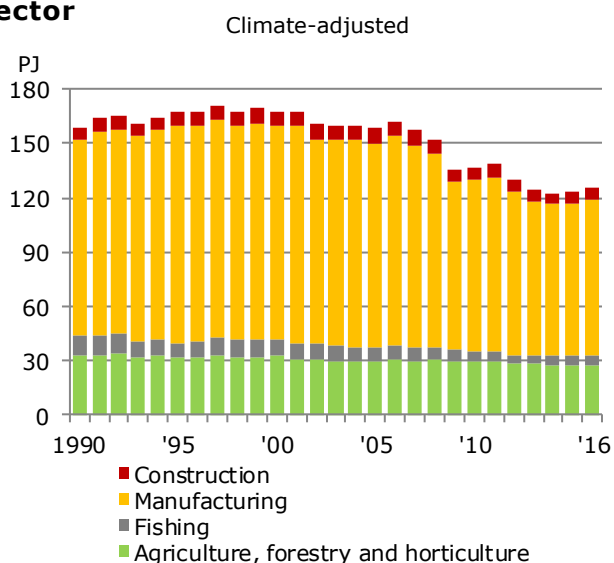
Energy consumption in agriculture and industry by energy products



In 2016 consumption of oil, natural gas and renewable energy etc. for agriculture and industry grew by 3.1%, 0.7% and 5.2%, respectively, compared with 2015, while coal decreased by 3.8%. Consumption of electricity was unchanged, while consumption of district heating was 1.9% lower in 2016 than the year before.

Consumption of natural gas in the period 1990-2016 increased by 17.3%, while consumption of oil and coal fell by 43.8% and 70.7%, respectively. Consumption of renewable energy etc. increased by 35.9%. Consumption of electricity has increased by 0.5% and district heating has decreased by 16.4% since 1990.

Energy consumption by individual industry in the agriculture and industry sector

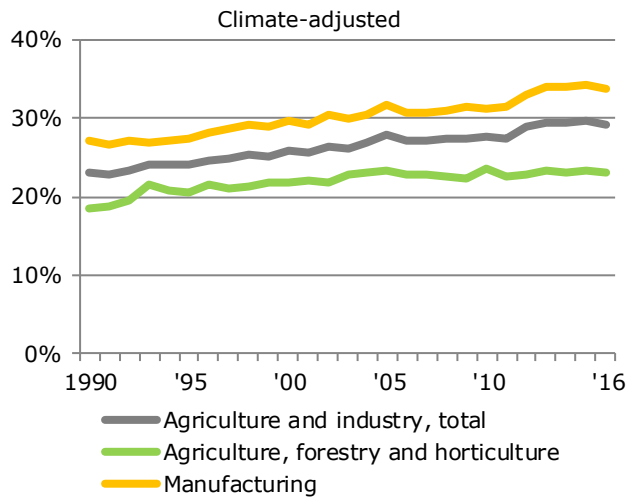


Compared with 2015 energy consumption grew by 2.2% and 2.8%, respectively, in manufacturing industries and in construction. Energy consumption in agriculture, forestry and horticulture fell by 1.2% in 2016.

From 1990 to 2016, energy consumption in manufacturing industries fell by 20.4%. Energy consumption in agriculture, forestry and horticulture fell by 17.8%, while in construction consumption increased by 7.1%. In fishing, energy consumption fell by 51.9%.

In 2016, agriculture, forestry and horticulture's share of total energy consumption by the agriculture and industry sector was 21.7%, while the share of manufacturing industries was 68.8%. In 2016, fishing and construction accounted for 4.1% and 5.4%, respectively, of energy consumption in the agriculture and industry sector.

Electricity consumption's share of total energy consumption

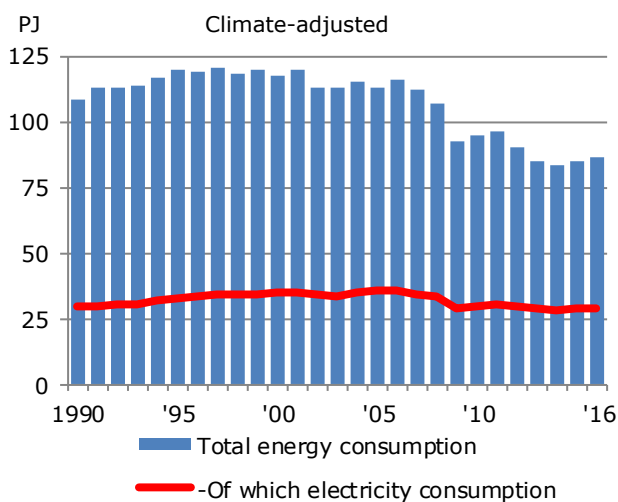


Electricity consumption's share of total energy consumption in the agriculture and industry sector increased from 23.1% in 1990 to 29.3% in 2016.

In manufacturing industries the share of electricity increased from 27.1% in 1990 to 33.8% in 2016.

In agriculture, forestry and horticulture the share of electricity was 18.6% in 1990. In 2016 this share was 23.1% of total energy consumption in agriculture, forestry and horticulture.

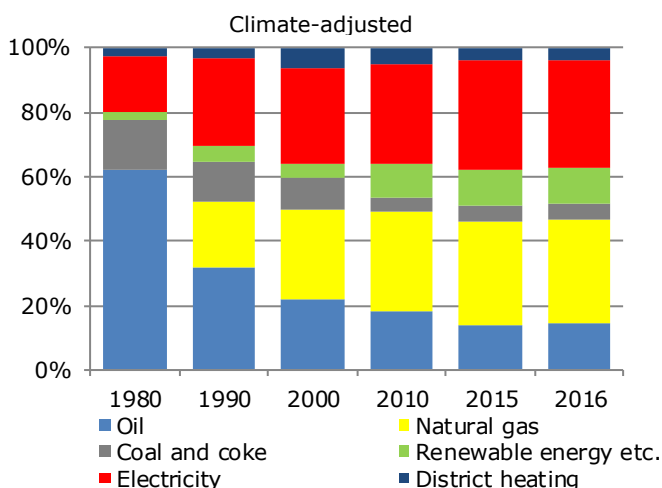
Energy and electricity consumption in manufacturing industries



Climate-adjusted energy consumption in manufacturing industries increased from 84.6 PJ in 2015 to 86.4 PJ in 2016, corresponding to a rise of 2.2%. Compared with 1990, energy consumption decreased by 20.4%.

In 2016, electricity consumption was 29.2 PJ, which is 0.5% higher than the year before. Electricity consumption has fallen by 0.9% since 1990.

Composition of energy consumption in manufacturing industries



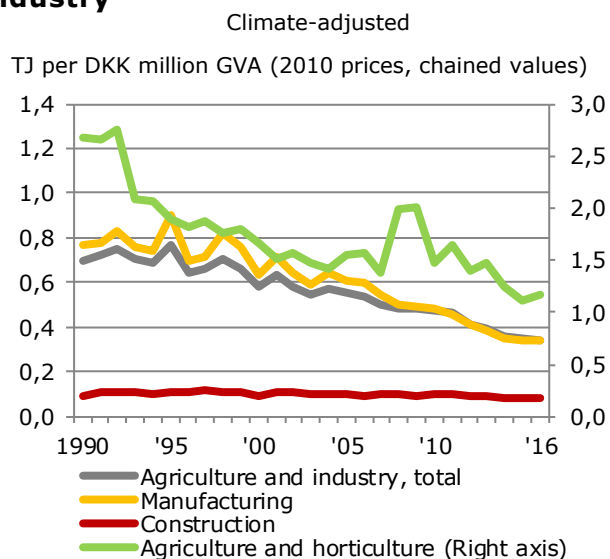
The composition of energy consumption in manufacturing industries has changed significantly since 1980, when oil consumption was dominant by 62.2% of the total energy consumption. In 1990, oil consumption accounted for almost one-third of total energy consumption. In 2016 this figure was 14.7%.

Consumption of natural gas accounted for 31.9% of energy consumption in manufacturing industries in 2016, as opposed to 20.8% in 1990.

Coal's share of energy consumption has gone down from 12.3% in 1990 to 4.9% in 2016. The contribution from renewable energy etc. and district heating has increased from 1990 to 2016. In 2016, their shares were 11.1% and 3.4%, respectively.

The share of electricity consumption grew from 27.1% in 1990 to 33.8% in 2016.

Energy intensities in agriculture and industry



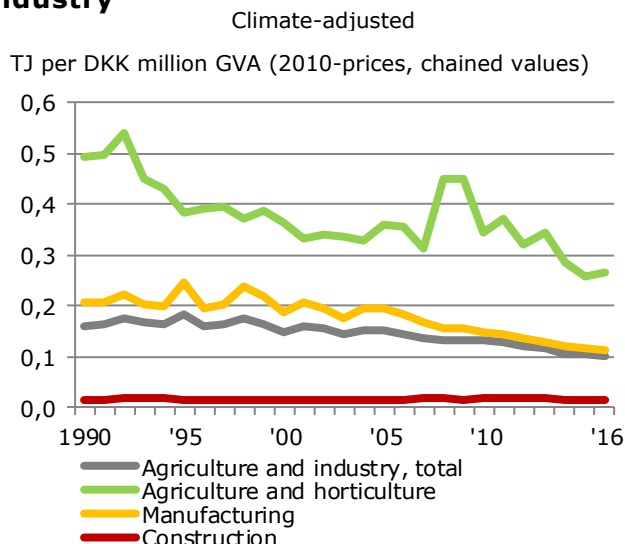
Energy intensity has been calculated as climate-adjusted energy consumption in relation to the gross value added (GVA), measured at 2010 prices, chained values.

Energy intensity in agriculture and industry dropped by 51.1% from 1990 to 2016. The annual average fall in energy intensity from 1990 to 2016 was 2.7% per year.

In manufacturing industries, energy intensity fell by 56.0% from 1990 to 2016. In 2016, energy intensity fell by 2.1% compared with 2015.

In agriculture, forestry and horticulture, energy intensity increased by 4.7% in 2016. The energy intensity has fallen by 56.5% since 1990. Since 2005, the trend has been influenced by significant fluctuations in agricultural, forestry and horticultural GVA.

Electricity intensities in agriculture and industry

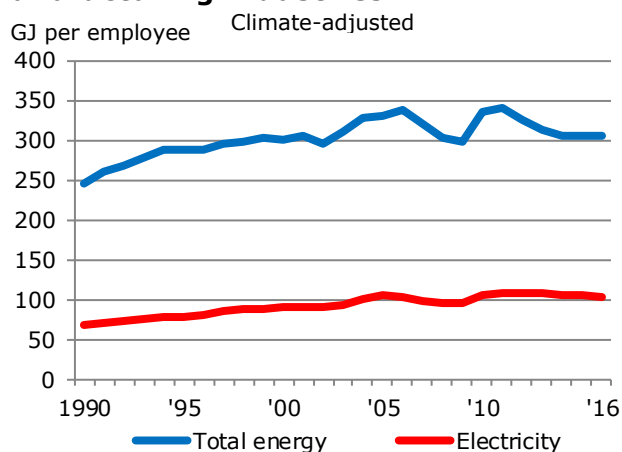


Electricity intensity has been calculated as climate-adjusted electricity consumption in relation to GVA, measured at 2010 prices, chained values.

After a period of fluctuating electricity intensity in agriculture and industry in the 1990s, it fell steadily up to 2016. In the period 1990 to 2016, electricity intensity fell by 37.9%. In 2016, electricity intensity was 0.100, i.e. 0.100 TJ of electricity (corresponding to 27.748 kWh) were used for every DKK 1 million GVA in the agriculture and industry sector. In 2016, electricity intensity fell by 3.7% compared with 2015.

Electricity intensity in manufacturing industries fell by 3.7% in 2016. In agriculture, forestry and horticulture intensity grew by 3.4%. Both compared with 2015. Electricity intensity in construction fell by 2.0%.

Energy consumption per employee in manufacturing industries

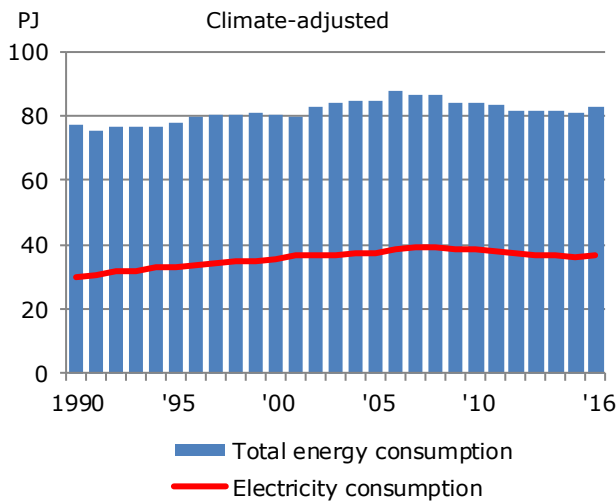


Energy and electricity consumption per employee in manufacturing industries have developed differently than the intensities shown above. This is due to a considerable increase in productivity, i.e. measured as GVA per employee in this sector.

Energy consumption per employee was 307.1 GJ in 2016, as opposed to 305.8 GJ the year before. This corresponds to an increase of 0.4%. Compared with 1990, energy consumption per employee grew by 24.5%.

Electricity consumption per employee was 103.7 GJ in 2016, which is 1.2% lower than the year before. Compared with 1990, electricity consumption per employee increased by 55.2%.

Energy and electricity consumption in the commercial and public services

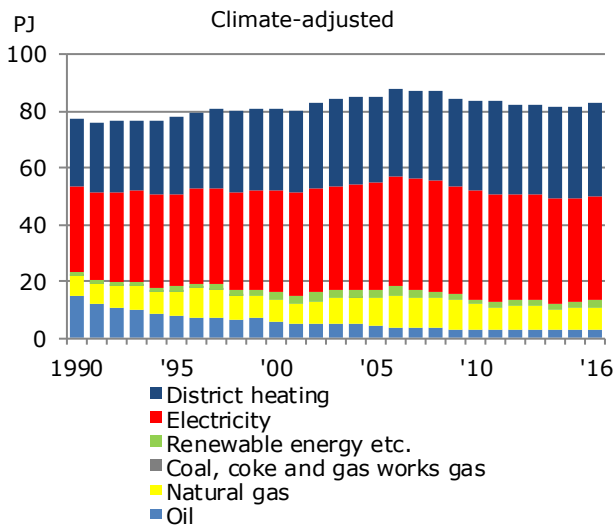


The commercial and public services sector includes wholesale, retail, private and public services.

Climate-adjusted energy consumption was 83.1 PJ in 2016, which is 2.2% higher than the year before. Compared with 1990, consumption increased by 7.9%.

In 2016, climate-adjusted electricity consumption was 36.8 PJ, which is 1.1% higher than the year before. Compared with 1990, electricity consumption increased by 22.1%.

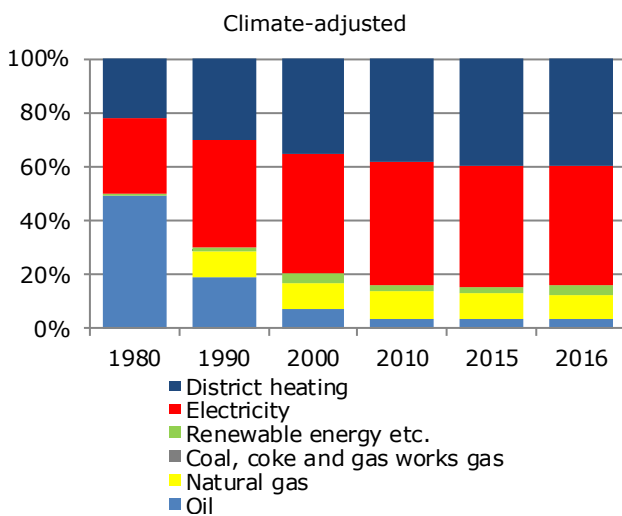
Energy consumption by energy product



Electricity and district heating are predominant energy sources in the commercial and public services sector. In 2016, consumption of electricity grew by 1.1%, while consumption of district heating was 2.0% higher than the year before.

Compared with 1990, oil consumption fell by 82.0%, while natural gas consumption increased by 13.6%. In 2016, consumption of electricity and district heating was 22.1% and 41.0% higher, respectively, compared with 1990.

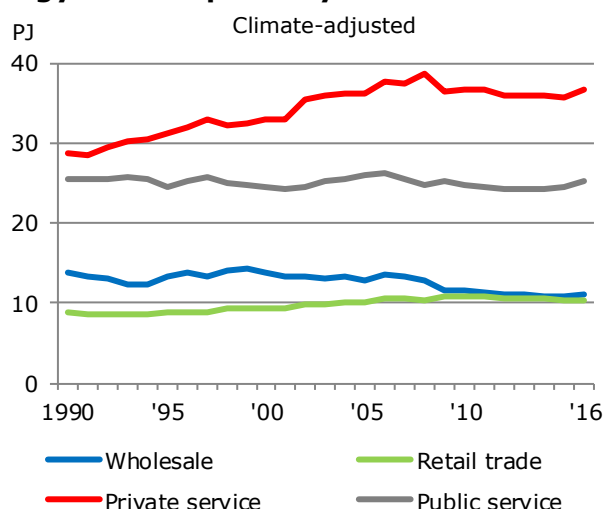
Composition of energy consumption in the commercial and public services



In 1990, electricity and district heating together accounted for 69.6% 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 2016, electricity and district heating consumption together accounted for 84.0% of total energy consumption (electricity 44.3% and district heating 39.8%). The share of oil was 3.2%, while the share of natural gas was 9.4%. Renewable energy etc. was 3.3%.

Energy consumption by sector



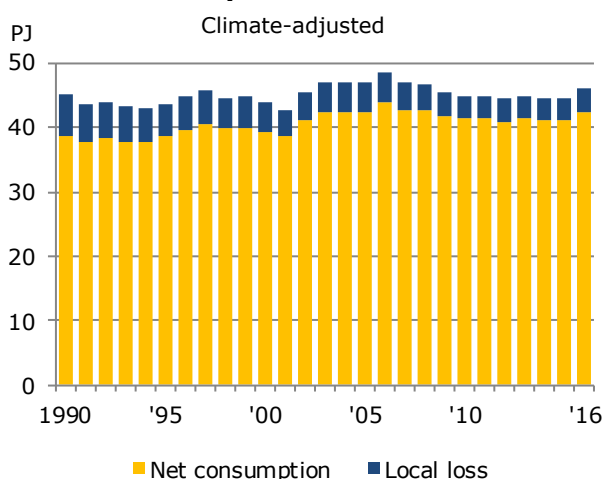
In 2016, 74.3% of energy consumption in the commercial and public services sector was in private and public services, while wholesale and retail accounted for the remaining 25.7%.

From 2015 to 2016, energy consumption in private services grew by 2.8%. Energy consumption in public services increased by 2.5%. Energy consumption in wholesale grew by 1.6% and in retail it was unchanged.

Compared with 1990, energy consumption in wholesale fell by 19.8%, while energy consumption in retail grew by 16.5%.

Energy consumption in the private service sector is higher today than in 1990. Since 1990, growth has been 27.1%. In the public service sector, energy consumption is 1.7% lower compared with 1990.

Energy consumption for heating in the commercial and public services

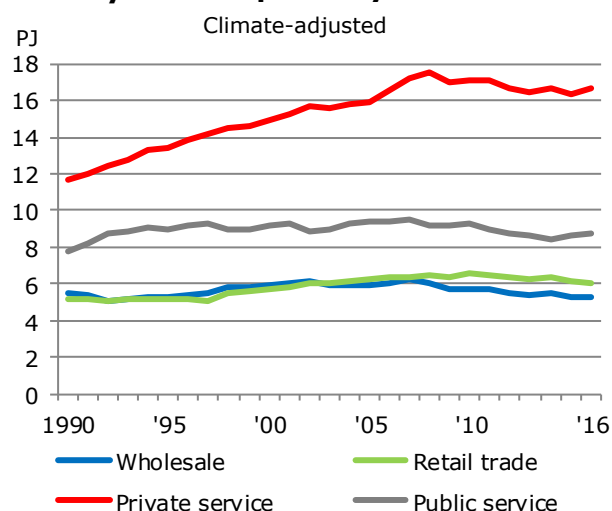


Energy consumption for heating (space heating and hot water) can be calculated in different ways. While final energy consumption is the volume of energy paid for, net energy consumption is the volume of energy utilised. The difference is local losses by the individual consumers, e.g. from oil and natural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

Final energy consumption for heating in the commercial and public services sector was 45.9 PJ in 2016, which is 3.0% higher than the year before. Compared with 1990, consumption grew by 2.1%.

Net energy consumption was 42.4 PJ in 2016, which is 2.8% higher than the year before. Compared with 1990, net energy consumption increased by 10.0%.

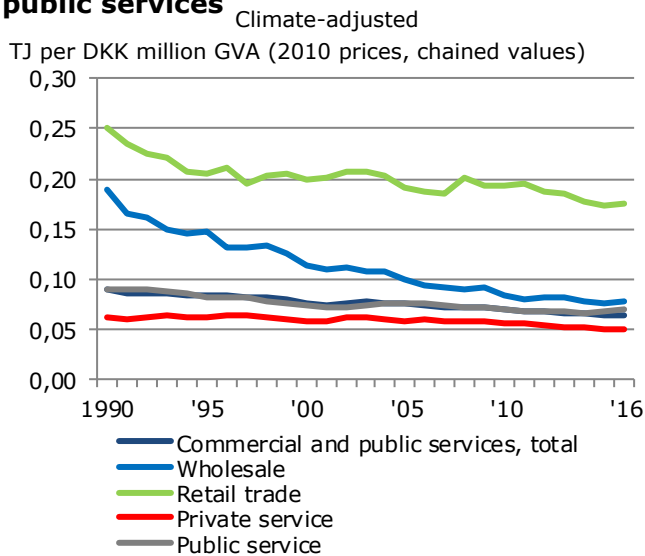
Electricity consumption by sector



Electricity consumption generally increased in the commercial and public services sector up to 2008, after which it decreased. In 2016, electricity consumption was 0.8% higher in wholesale and 1.5% lower in retail, compared with 2015. In private service, electricity consumption increased by 1.7% and electricity consumption in public services increased by 2.1%.

From 1990 to 2016, electricity consumption in wholesale fell by 2.1% and retail increased by 15.5%. Electricity consumption in the public service sector increased by 13.2%. In the private service sector the increase was significantly higher, reaching 42.2%.

Energy intensities in the commercial and public services

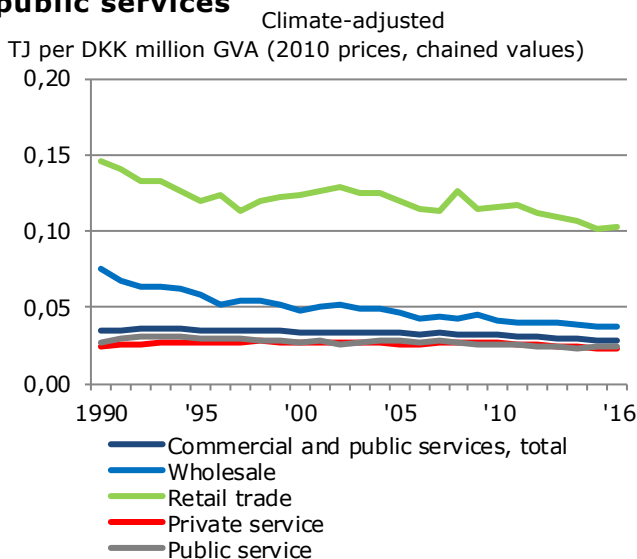


Energy intensities have been calculated as climate-adjusted energy consumption in relation to gross value added (GVA), measured at 2010 prices, chained values.

Energy intensity was 0.065 in 2016, i.e. for every DKK 1 million GVA in the commercial and public services sector, 0.065 TJ of energy were used. This is 1.1% more than the year before.

Energy intensity in the commercial and public services sector fell by 27.5% from 1990 to 2016. For wholesale and retail, energy intensities fell by 59.2% and 29.5%, respectively. For the private service sector and the public service sector, intensities fell by 16.7% and 23.4%, respectively.

Electricity intensities in commercial and public services

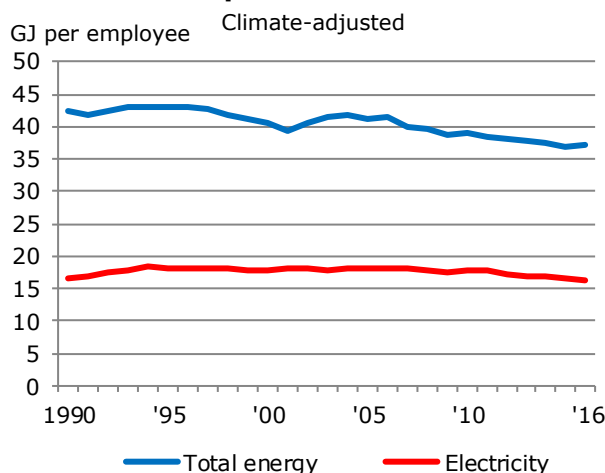


Electricity intensities have been calculated as climate-adjusted electricity consumption in relation to GVA, measured at 2010 prices, chained values.

In 2016 electricity intensity was 0.029, i.e. for every DKK 1 million GVA in the commercial and public services sector, 0.029 TJ of electricity (corresponding to 7,963 kWh) were used. Electricity intensity is unchanged relative to the year before.

Electricity intensity in the commercial and public services sector fell by 17.9% from 1990 to 2016. For wholesale, retail and public services, electricity intensities fell by 50.2%, 30.1% and 11.8%, respectively. In private services, electricity intensity fell by 6.8%.

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 37.1 GJ in 2016, as opposed to 36.8 GJ the year before. This corresponds to an increase of 0.8%. Compared with 1990, energy consumption per employee fell by 12.8%.

In 2016, electricity consumption per employee was 16.4 GJ as opposed to 16.5 GJ the year before, which is a fall of 0.3%. Compared with 1990, electricity consumption per employee decreased by 1.3%.

COMMERCIAL AND PUBLIC SERVICES/HOUSEHOLDS

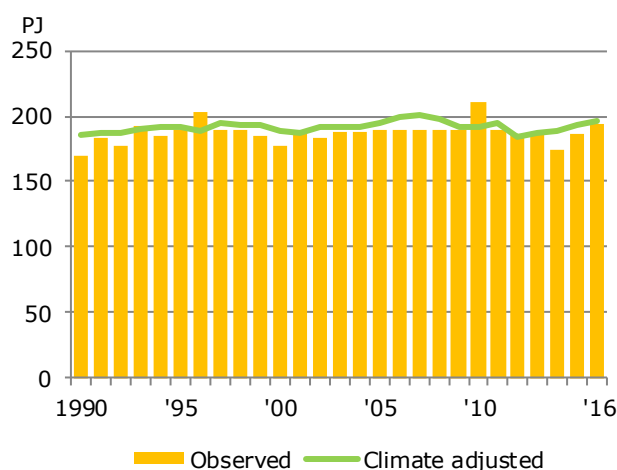
Final energy consumption in the commercial and public services

Direct energy content [TJ]									Change
	1980	1990	2000	2005	2010	2014	2015	2016	'90-'16
Total commercial and public services. Climate adjusted	78 314	77 047	80 599	85 045	83 893	81 622	81 360	83 140	7.9%
Oil	38 337	14 850	5 874	4 428	2 810	2 557	2 697	2 669	-82.0%
Natural gas	-	6 902	7 739	9 989	8 977	7 313	7 740	7 842	13.6%
Coal and coke	-	98	-	-	-	-	-	-	-100%
Waste, non-renewable	263	457	691	648	163	371	194	269	-41.2%
Renewable energy	448	1 022	2 078	2 178	1 491	2 045	1 885	2 459	141%
Electricity	21 788	30 147	35 715	37 479	38 656	36 979	36 397	36 808	22.1%
District heating	17 117	23 449	28 451	30 281	31 761	32 320	32 410	33 052	41.0%
Gas works gas	361	121	52	42	35	38	37	40	-66.5%
By use									
Wholesale	19 045	13 795	13 893	12 906	11 493	10 901	10 888	11 060	-19.8%
Retail	9 702	8 883	9 323	9 991	10 939	10 538	10 345	10 347	16.5%
Private service	25 955	28 812	32 901	36 238	36 653	36 037	35 618	36 624	27.1%
Public service	23 612	25 557	24 481	25 909	24 807	24 146	24 509	25 110	-1.7%

Final energy consumption in households

Direct energy content [TJ]									Change
	1980	1990	2000	2005	2010	2014	2015	2016	'90-'16
Total households. Climate adjusted	204 018	185 039	189 275	194 729	191 585	189 357	192 480	196 210	6.0%
Oil	121 022	58 998	35 444	27 617	18 595	11 429	11 105	10 474	-82.2%
Natural gas	-	17 877	29 329	29 993	27 761	25 798	25 439	25 984	45.4%
Coal and coke	2 498	830	49	8	28	0	-	1	-99.9%
Renewable energy	10 305	17 434	22 052	33 279	39 444	44 770	48 505	50 624	190%
Electricity	28 388	35 696	37 339	37 810	36 738	36 908	36 855	37 151	4.1%
District heating	37 649	52 820	64 466	65 536	68 612	70 011	70 147	71 513	35.4%
Gas works gas	4 157	1 384	594	486	408	439	429	464	-66.5%
Single-family houses	155 706	137 383	139 568	144 258	140 888	138 489	141 556	144 438	5.1%
Oil	102 281	52 233	32 741	25 032	16 910	9 706	9 408	8 911	-82.9%
Natural gas	-	15 143	24 907	25 472	23 554	21 833	21 530	21 910	44.7%
Coal and coke	1 249	136	17	0	13	0	-	0	-99.7%
Renewable energy	10 298	17 420	22 006	33 226	39 370	44 672	48 376	50 408	189%
Electricity	21 431	27 011	28 210	28 279	27 335	27 870	27 772	28 053	3.9%
District heating	18 190	24 685	31 364	31 985	33 486	34 170	34 236	34 902	41.4%
Gas works gas	2 258	754	323	264	221	239	234	252	-66.5%
Multi-family houses	48 312	47 656	49 706	50 471	50 696	50 867	50 924	51 772	8.6%
Oil	18 740	6 766	2 703	2 585	1 685	1 723	1 696	1 562	-76.9%
Natural gas	-	2 733	4 422	4 522	4 207	3 966	3 908	4 074	49.1%
Coal and coke	1 249	693	32	8	15	0	-	0	-99.9%
Renewable energy	8	14	46	54	74	99	128	215	1429%
Electricity	6 957	8 686	9 129	9 530	9 403	9 039	9 084	9 098	4.7%
District heating	19 459	28 135	33 103	33 550	35 125	35 842	35 911	36 610	30.1%
Gas works gas	1 899	630	271	222	187	200	196	212	-66.4%

Energy consumption in households



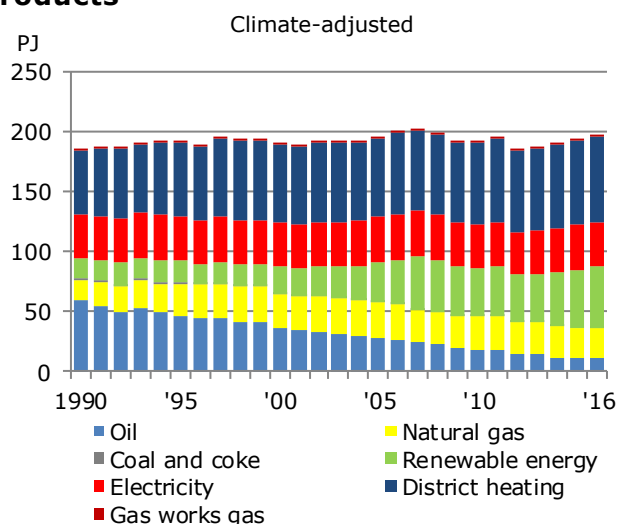
Household energy consumption is greatly influenced by the weather. The years 1990, 2000 and 2014 were very hot years with low energy consumption, whereas 1996 and 2010 were exceptionally cold.

In 2016 climate-adjusted energy consumption by households was 196.2 PJ, accounting for 31.2% of total final energy consumption in Denmark. 163.4 PJ of the 196.2 PJ was used for heating and 32.8 PJ were used for electrical appliances etc.

The climate-adjusted energy consumption of households was 1.9% higher in 2016 than the year before. Compared with 1990, energy consumption grew by 6.0%.

A contributing explanation of the increase in energy consumption may be that forms of heating with a relatively low efficiency, such as biomass, have gained an increasing footing.

Household consumption by energy products

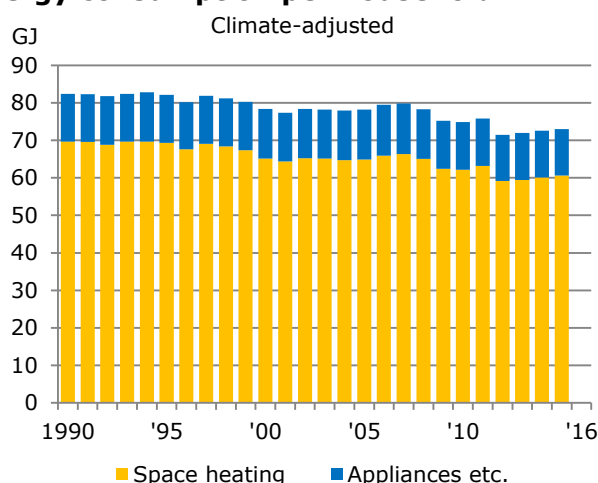


There have been significant changes in the composition of household energy consumption since 1990. Oil consumption decreased throughout the period shown due to a shift to district heating and natural gas. Firewood and wood pellets consumption has increased significantly since 2000.

In 2016 district heating amounted to 36.4% of household energy consumption, and renewable energy and electricity amounted to 25.8% and 18.9%, respectively. Consumption of natural gas, oil and gas works gas amounted to 13.2%, 5.3% and 0.2%, respectively.

The 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 2016 has fluctuated around 36 and 37 PJ. Electricity consumption increased by 0.8% in 2016 compared with 2015.

Energy consumption per household

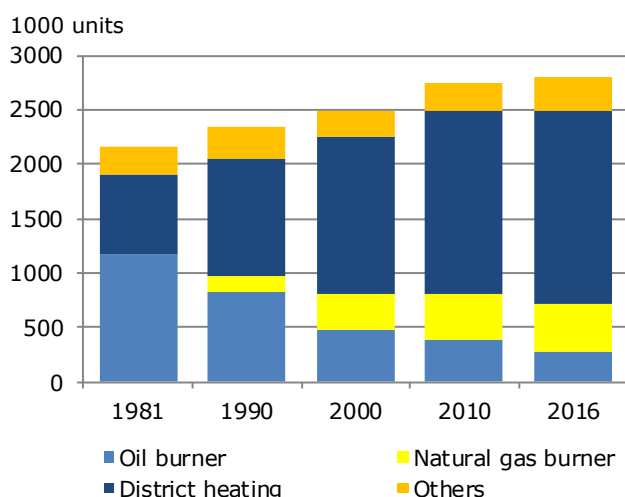


In 2016, average energy consumption per household was 74.1 GJ, which is 1.2% higher than the year before. Of this, 61.8 GJ – corresponding to 83.3% – were used for space heating and hot water. Energy consumption by households went down by 10.0% compared with 1990.

In 2016, average electricity consumption per household for electrical appliances and lighting was 12.4 GJ, corresponding to approximately 3440 kWh. This is unchanged compared with the year before and 2.6% 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.

Heating installations in dwellings

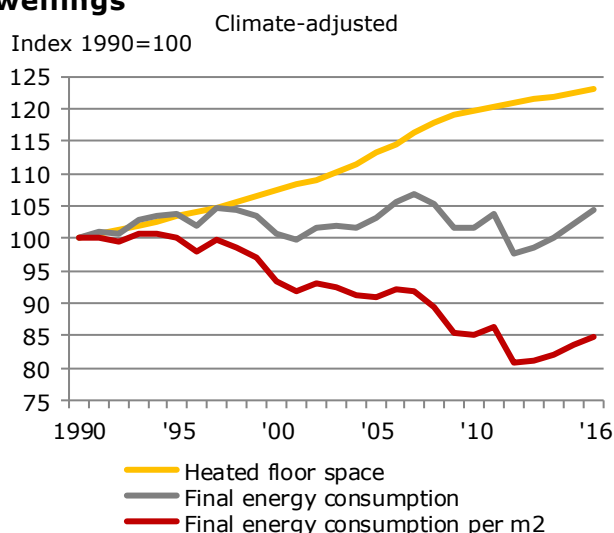


The significant changes in the composition of energy consumption by energy type reflect changes in the composition of heating installations in dwellings over time. Until the mid-1980s, oil-fired boilers clearly dominated the market, after which district heating became the most common source of heating. Thus since the late 1980s and during the 1990s, the number of district heating installations and natural gas boilers continued to increase at the cost of oil-fired boilers.

As of 1 January 2016, the total of 2.80 million heating installations could be analysed as follows: District heating installations 63.6%, natural gas boilers 15.3%, oil-fired boilers 10.0% and other installations, including heat pumps, electric heating and wood-fired boilers 11.0%.

Source: Statistics Denmark

Energy consumption for heating in dwellings

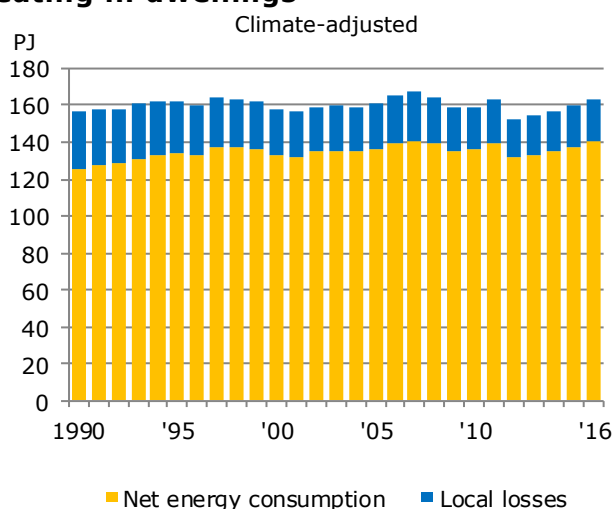


Except from 2001, 2012 and 2013, climate-adjusted energy consumption for heating (space heating and hot water) has been between 0.2% and 6.7% above the 1990 level. In 2016, energy consumption was 4.5% higher compared with 1990.

The background for this is a 23.0% increase in total heated area in the period from 1990 to 2016.

In the period 1990 to 2016, energy consumption for heating per m² fell by 15.1%. 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 m² than existing homes. An increase in less efficient use of biomass draws in the opposite direction.

Net energy consumption and heat loss for heating in dwellings

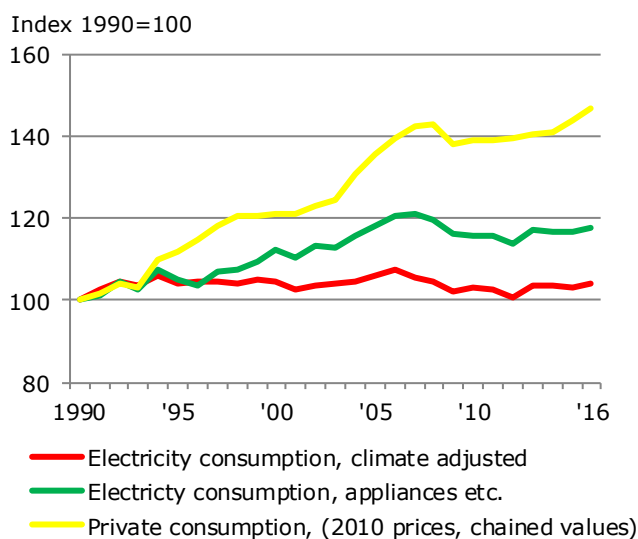


Net energy consumption means the energy utilised. The difference between final energy consumption and net energy consumption is local heat loss in individual dwellings, e.g. from oil and natural gas boilers.

While final consumption for heating as mentioned increased by 4.5% from 1990 to 2016, net energy consumption for space heating and hot water in households increased by 12.1% 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, where the local losses are considerably smaller. 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 m².

Private consumption and electricity consumption in households

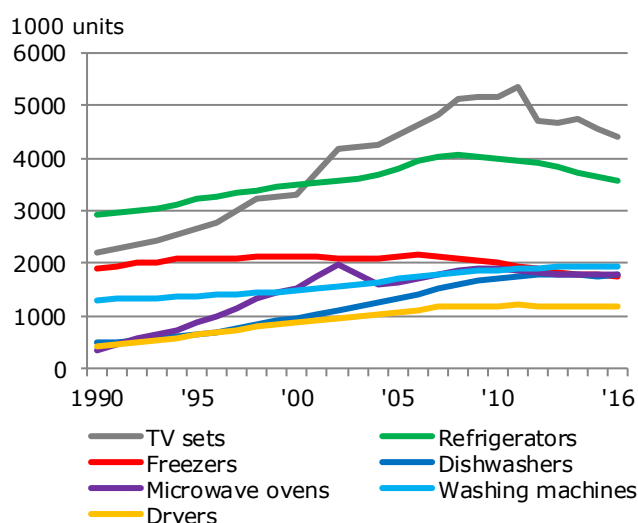


In the period 1990-2016, total household electricity consumption increased by 4.1%, whereas electricity consumption for appliances and lighting etc. increased by 17.5%. This big difference is due to a significant fall in electricity consumption for heating.

Taking into account the large increase in the number of electrical appliances per household, see below, and a general increase of 47.0% in total private consumption, i.e. considerably larger growth than in electricity consumption for appliances and lighting etc., this may seem as a surprise.

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

Household stock of electrical appliances

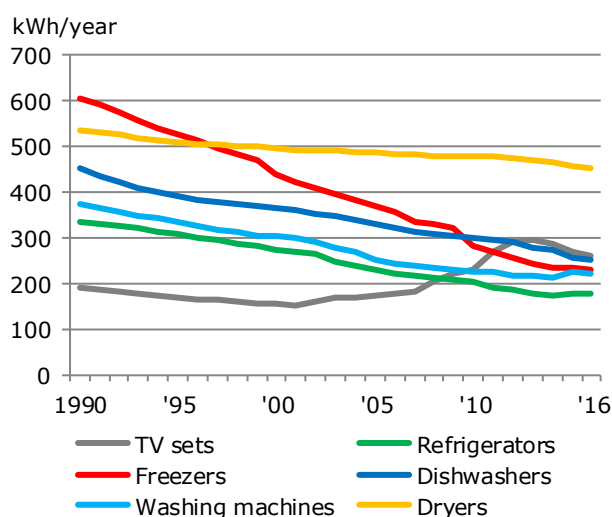


In the period from 1990 to 2010 there has been a sharp increase in the stock of almost all electricity-consuming household appliances. The stock of most appliances have however stagnated or decreased during roughly the past 10 years.

For instance, since 1990 the number of microwaves has increased by 392%, while the number of tumble dryers and dishwashers has increased by 173% and 262%, respectively. Television sets, washing machines and refrigerators have also increased considerably in numbers. The number of separate freezers has decreased by 7.2% since 1990.

Source: ElmodelBOLIG

Specific electricity consumption of household appliances



Ceteris paribus, 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 177 kWh in 2016, i.e. by 47.4%. Electricity consumption for a separate freezer fell by 62.0%, while the fall for a washing machine was 40.7% in the same period. Other electrical appliances, apart from television sets, have also experienced considerable reductions in average specific annual consumption.

Source: ElmodelBOLIG

EMISSIONS OF CO₂ AND OTHER GREENHOUSE GASES

CO₂ accounts and statements for other greenhouse gases

CO₂ accounts are used along with statements for the other greenhouse gas emissions in order to e.g. monitor developments with regard to international greenhouse gas emission reduction targets. Denmark's international climate commitment means that, in accordance with the EU Effort Sharing Decision (ESD), by 2020 Denmark must have reduced emissions of greenhouse gases from the sectors not covered by the EU Emissions Trading System (ETS) by 20% in relation to the base year, 2005. In 2010 the base year was determined in relation to emissions outside the ETS in 2005 for CO₂, CH₄ and N₂O and the fluorinated greenhouse gases (the F-gases). Furthermore, annual permitted non-ETS emissions have been set under the ESD for the period 2013-2020, and in 2015 this was 35.0 million tonnes CO₂ equivalents.

In 2015, observed total emissions of greenhouse gases were 48.3 million tonnes CO₂ equivalents, which is 31.3% lower than in 1990. Including adjustments in the Energy Statistics for fluctuations in temperature and net exports of electricity, the level in 2015 was 52.4 million tonnes CO₂ equivalents, corresponding to a drop of 33.1% relative to the adjusted emissions in

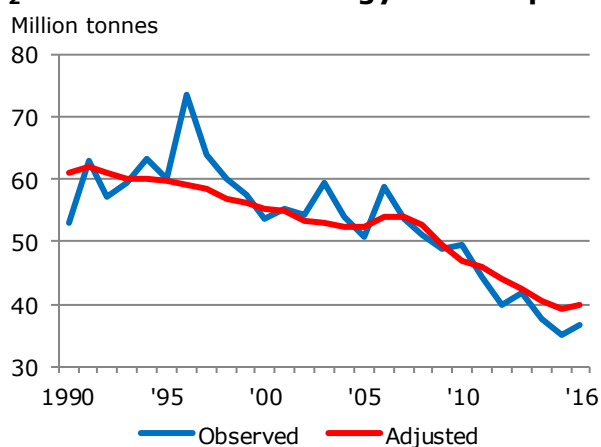
1990. In 2015, total observed emissions of greenhouse gases outside the ETS (ESD) were 32.4 million tonnes CO₂ equivalents, which is 18.4% lower than the 2005 base-year emissions and 2.6 million tonnes CO₂ equivalents lower than the emissions permitted under the ESD for 2015.

The greenhouse gas inventory for 2016 will be ready in 2018. The overall greenhouse gas accounts include both CO₂ emissions from energy use (excluding emissions from international aviation and the effect of border trade in motor gasoline and diesel oil - unlike the separate CO₂ accounts in the Energy Statistics) and CO₂ emissions from other sources (flaring of gas in the North Sea and certain industrial processes). Emissions of six other greenhouse gases are also included in the commitment: methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF₆) and nitrogen trifluoride (NF₃), which are converted to CO₂ equivalents.

Reductions achieved in connection with certain carbon removals by forests and soils, as well as from potential projects in other countries (JI and CDM projects) must also be stated in the climate accounts under the Kyoto Protocol.

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

CO₂ emissions from energy consumption

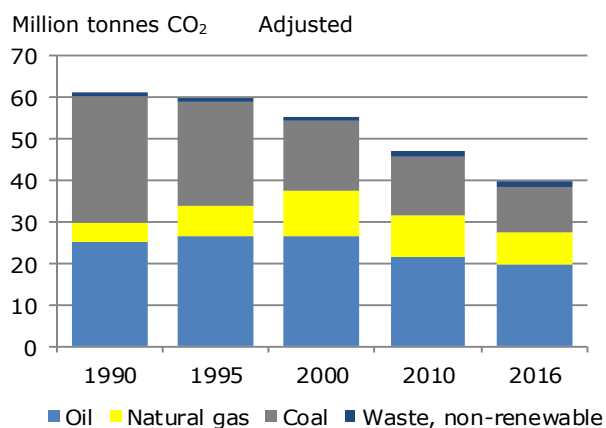


The Danish Energy Agency calculates observed CO₂ emissions as well as adjusted CO₂ emissions, which take annual temperature variations and foreign trade in electricity into account, see the statement of energy consumption on pages 18 and 19. The purpose of the adjusted calculations is to illustrate the trends underlying the development.

In 2016, observed CO₂ emissions from energy consumption were 36.7 million tonnes, which is 4.4% higher than in 2015. Observed CO₂ emissions dropped by 30.9% compared with 1990.

Adjusted CO₂ emissions from energy consumption grew to 39.9 million tonnes in 2016; an increase of 1.8% compared with the previous year. Compared with 1990, the drop is 34.6%.

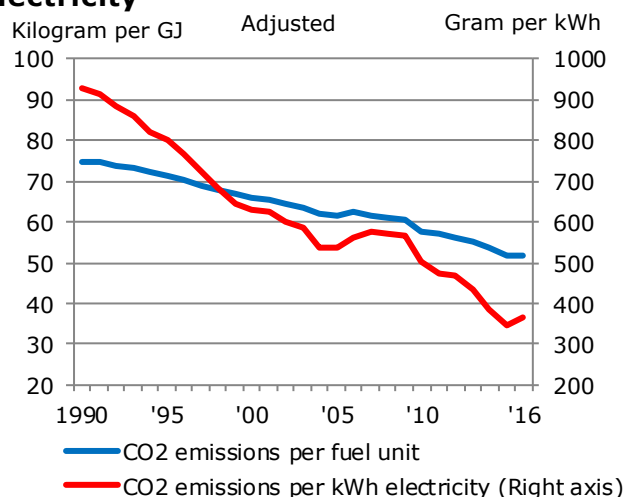
CO₂ emissions by fuel



Since 1990, there has been a significant shift in energy consumption analysed by fuel. Consumption of natural gas and renewable energy has increased at the expense of consumption of oil and coal.

This shift in fuels has led to a reduction in CO₂ emissions, as consumption of oil and coal entails greater CO₂ emissions than consumption of natural gas and renewable energy. While gross energy consumption has fallen by 5.9% since 1990, adjusted CO₂ emissions have fallen by 34.6%.

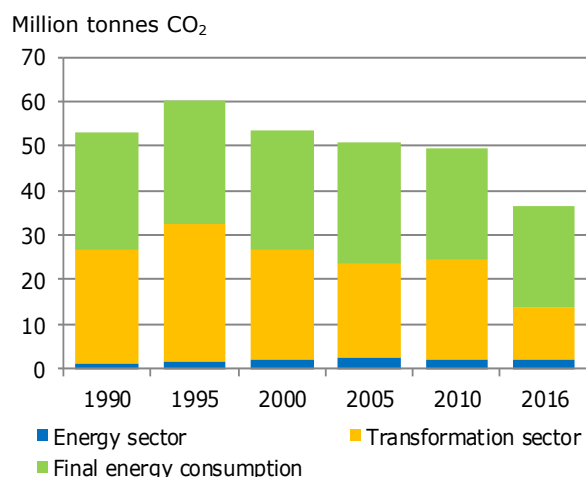
CO₂ emissions per fuel unit and per kWh electricity



From 1990-2016 gross energy consumption has fallen by 5.9%, whereas the breakdown by fuel has changed significantly. As a result of the shift from oil and coal to natural gas and renewable energy, still less CO₂ is emitted for each unit of fuel consumed. In 2016, each GJ of adjusted gross energy consumption was linked to 51.8 kg CO₂, compared with 74.5 kg in 1990. This corresponds to a reduction of 30.5%.

One kWh of electricity sold in Denmark in 2016 led to 364 grams of CO₂ emissions. In 1990, CO₂ emissions were 928 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 wind power.

Observed CO₂ emissions by sector

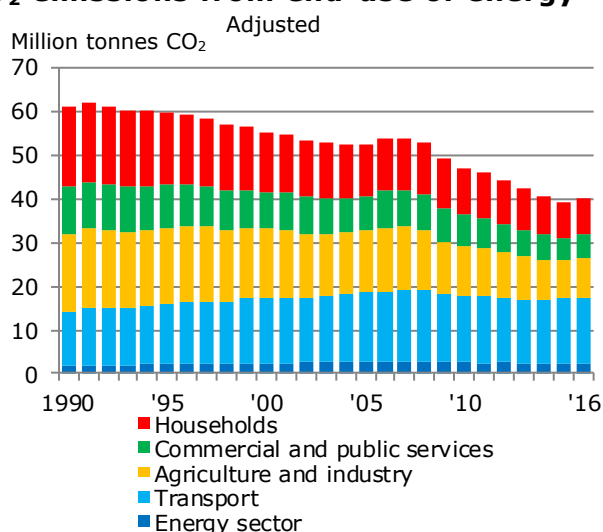


The energy system is divided into three sectors: The *energy sector* (extraction and refining), the *transformation sector* (production of electricity, district heating, and gas works gas), and *final consumption* (transport and consumption by households and industries).

In 1990, total observed CO₂ emissions were 53.1 million tonnes. Of these, 25.1 million tonnes came from the transformation sector and 26.5 million tonnes came from final energy consumption, while the energy sector emitted 1.4 million tonnes.

In 2016, total observed CO₂ emissions were 36.7 million tonnes, of which 11.7 million tonnes were from the transformation sector, 22.8 million tonnes were from final energy consumption, and 2.1 million tonnes were from the energy sector. The transformation sector saw a fall of 13.4 million tonnes of CO₂ from 1990 to 2016, although electricity and district heating production grew significantly in this period.

CO₂ emissions from end-use of energy



Breaking down CO₂ emissions from energy consumption to production of electricity, district heating, and gas works gas by end consumer provides a picture of how total emissions of CO₂ can be allocated to the energy sector, transport, industry and households.

In 2016, the transport and the agriculture and industry sectors were responsible for the largest shares of total CO₂ emissions, with 37.7% and 22.5%, respectively. Households and the commercial and public services sector accounted for 20.5% and 13.6%, respectively, while the energy sector accounted for 5.7% of CO₂ emissions.

Compared with 1990, CO₂ emissions from transport increased by 19.3%. Industries and households have seen significant decreases. In the agriculture and industry sector, and the commercial and public service sectors, CO₂ emissions fell by 49.6% and 50.0% respectively, while for households they fell by 54.7%.

EMISSIONS OF CO₂ AND OTHER GREENHOUSE GASES

Observed CO₂ emissions from energy consumption

1000 tonnes

Change

Observed emissions	1980	1990	2000	2005	2010	2014	2015	2016	'90-'16
Total CO₂ emissions	64 293	53 069	53 590	50 868	49 383	37 677	35 144	36 695	-30.9%
By fuel	64 293	53 069	53 590	50 868	49 383	37 677	35 144	36 695	-30.9%
Oil	40 164	24 201	26 225	24 212	22 070	19 287	19 407	19 690	-18.6%
Natural gas	1	4 323	10 629	10 676	10 572	6 829	7 040	7 177	66.0%
Coal	23 734	23 972	15 612	14 582	15 331	10 128	7 229	8 330	-65.2%
Waste, non-renewable	394	573	1 124	1 398	1 410	1 433	1 469	1 497	161%
By sector	64 293	53 069	53 590	50 868	49 383	37 677	35 144	36 695	-30.9%
Energy sector	890	1 401	2 323	2 440	2 323	2 277	2 346	2 131	52.1%
Transformation sector	30 110	25 135	24 214	21 132	21 948	13 319	10 453	11 731	-53.3%
Electricity production	23 852	20 561	20 163	17 233	17 666	10 347	7 316	8 581	-58.3%
District heating production	5 668	4 473	4 010	3 866	4 247	2 936	3 102	3 112	-30.4%
Gas works gas production	589	101	42	33	35	36	35	38	-62.1%
Final energy consumption	33 294	26 533	27 053	27 297	25 112	22 081	22 345	22 833	-13.9%
Transport	10 440	12 420	14 638	15 709	15 191	14 437	14 580	14 896	19.9%
Agriculture and industry	10 441	7 785	7 579	7 024	5 827	4 960	4 946	5 056	-35.0%
Commercial and public services	2 972	1 406	869	922	803	579	630	654	-53.5%
Households	9 440	4 922	3 967	3 641	3 292	2 104	2 189	2 226	-54.8%

Observed CO₂ emissions have been calculated on the basis of observed energy consumption as shown in the energy balance on page 4. By using emission factors specific to fuel, energy consumption is

converted to CO₂ emissions. The emission factors applied are shown on page 59. Renewable energy, including renewable waste, is not linked to CO₂ emissions in the calculations.

CO₂ emissions from energy consumption, adjusted*)

1000 tonnes

Change

Adjusted emissions	1980	1990	2000	2005	2010	2014	2015	2016	'90-'16
Total CO₂ emissions	62 580	61 046	55 340	52 415	47 019	40 589	39 206	39 926	-34.6%
By fuel	62 580	61 046	55 340	52 415	47 019	40 589	39 206	39 926	-34.6%
Oil	39 498	25 058	26 744	24 487	21 770	19 467	19 536	19 765	-21.1%
Natural gas	1	4 646	10 961	10 955	10 054	7 466	7 750	7 670	65.1%
Coal	22 690	30 758	16 500	15 570	13 798	12 212	10 446	10 991	-64.3%
Waste, non-renewable	392	583	1 136	1 403	1 398	1 445	1 473	1 499	157%
By sector	62 580	61 046	55 340	52 415	47 019	40 589	39 206	39 926	-34.6%
Energy sector	890	1 401	2 323	2 440	2 323	2 277	2 346	2 131	52.1%
Transformation sector	28 784	32 256	25 456	22 496	20 114	15 876	14 373	14 909	-53.8%
Electricity production	22 691	27 070	20 965	18 416	16 570	12 242	10 963	11 651	-57.0%
District heating production	5 514	5 078	4 446	4 047	3 511	3 596	3 374	3 219	-36.6%
Gas works gas production	578	108	45	33	32	38	36	39	-64.4%
Final energy consumption	32 907	27 388	27 562	27 479	24 583	22 435	22 486	22 886	-16.4%
Transport	10 440	12 420	14 638	15 709	15 191	14 437	14 580	14 896	19.9%
Agriculture and industry	10 376	7 963	7 692	7 065	5 708	5 041	4 977	5 068	-36.4%
Commercial and public services	2 902	1 543	934	949	727	635	653	663	-57.1%
Households	9 189	5 462	4 298	3 756	2 956	2 322	2 277	2 260	-58.6%

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

Adjusted CO₂ 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.

EMISSIONS OF CO₂ AND OTHER GREENHOUSE GASES

Total emissions of greenhouse gases

1000 tonnes CO ₂ equivalents	Base year ¹⁾	1990	1995	2000	2005	2010	2013	2014	2015	Change '90-'15
Observed emissions in total²⁾	-	70 356	78 282	70 786	66 371	63 217	54 993	50 801	48 331	-31.3%
Of which ETS excl. aviation (ETS) ³⁾	-	-	-	-	26 476	25 266	21 602	18 389	15 796	-40.3%
- CO ₂ from domestic aviation (ETS) ³⁾	135	-	-	-	174	176	143	136	128	-10.7%
- Non-ETS (ESD) ³⁾	38 127	-	-	-	39 721	37 775	33 248	32 276	32 408	-18.4%
Emissions ceiling for non-ETS (ESD)	-	-	-	-	-	-	36 829	35 925	35 021	•
Over fulfillment for non-ETS (ESD)	-	-	-	-	-	-	3 581	3 649	2 614	•
Observed net emissions in total⁴⁾	-	75 259	82 472	74 994	71 611	62 420	56 070	50 945	52 484	-30.3%
Emissions from energy consumption	-	51 886	59 890	52 451	49 908	48 543	40 616	36 336	34 085	-34.3%
Energy and transformation sector	-	26 251	32 559	26 047	23 152	24 080	19 018	15 487	12 835	-51.1%
Final energy consumption	-	25 634	27 331	26 404	26 756	24 464	21 597	20 849	21 249	-17.1%
- Transport (incl. military)	-	10 904	12 416	12 486	13 621	13 334	12 192	12 363	12 535	15.0%
- Industry	-	5 460	5 921	6 019	5 543	4 422	3 919	3 956	3 887	-28.8%
- Commercial and public services and households, agriculture etc.	-	9 270	8 995	7 899	7 592	6 708	5 486	4 529	4 827	-47.9%
Industrial process, flaring etc.	-	2 860	3 577	4 720	3 665	2 602	2 525	2 469	2 383	-16.7%
Transient emissions and flaring	-	516	699	1 089	876	567	393	398	391	-24.2%
Industrial process	-	2 343	2 878	3 631	2 789	2 034	2 132	2 071	1 992	-15.0%
Emissions from agriculture	-	12 631	12 079	11 228	10 788	10 326	10 278	10 400	10 299	-18.5%
Animals digestion	-	4 039	3 967	3 631	3 483	3 631	3 697	3 711	3 667	-9.2%
Animal manure	-	2 522	2 796	3 034	3 165	2 793	2 608	2 622	2 586	2.5%
Agricultural land	-	5 448	4 775	4 290	3 913	3 743	3 723	3 822	3 864	-29.1%
Others (liming of soils etc.)	-	621	540	273	226	159	250	244	181	-70.8%
Other emissions	-	1 763	1 598	1 513	1 276	1 190	1 123	1 175	1 153	-34.6%
Waste deposit	-	1 536	1 331	1 073	909	772	702	691	655	-57.3%
Sewage treatment	-	157	167	166	169	163	168	170	172	9.5%
Other waste (biomass gasification etc.)	-	70	100	274	197	255	253	313	325	364%
Forestry and land use⁵⁾	-	4 902	4 190	4 208	5 240	- 797	1 077	144	4 153	•
Forestry ⁵⁾	-	- 553	- 557	- 563	560	-3 739	-2 424	-3 970	229	•
Land use ⁵⁾	-	5 455	4 747	4 771	4 680	2 942	3 501	4 114	3 924	•
Indirect CO₂-emissions	-	1 217	1 138	874	735	556	451	421	412	-66.1%

Note 1: This table only includes Denmark's emissions and removal of greenhouse gases. In the total climate accounts in relation to the Kyoto Protocol, credits that are part of the CO₂ removal under "Forestry and land use", credits from reductions achieved through projects in other countries and purchases of emission allowance, must also be included. The base year stated is the non-ETS emissions set in 2010 for 2005.

1) The changes have been stated in relation to 1990, except for ETS, ESD and domestic aviation, where the reductions have been stated in relation to 2005 (for ESD and domestic aviation in relation to the baseline year for ESD set in 2010).

2) Total emissions without the contribution from "Forestry and land use", as only a part of this is to be included in the climate accounts in the Kyoto Protocol.

3) CO₂ emissions from domestic aviation are shown separately here and as part of ETS, even though these emissions were in practice included under ESD in the period 2005-2011. ESD emissions have been calculated by deducting ETS emissions from the total observed emissions without the contribution from forest "Forestry and land use".

4) Total emissions with the contribution from "Forestry and land use", in which CO₂ removals has been included as negative emissions.

5) The figures are not directly comparable with contributions from forestry and soil, which are included in Denmark's reduction commitment in the Kyoto Protocol.

Observed and adjusted emissions of greenhouse gases

1000 tonnes CO ₂ equivalents	1990	2000	2005	2010	2014	2015	2016*	Change '90 - '16
Observed emissions, total¹⁾	70 356	70 786	66 371	63 217	50 801	48 331	49 882	-29.1%
Adjusted emissions, total¹⁾	78 332	72 536	67 919	60 854	53 713	52 393	53 113	-32.2%

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 CO₂ emissions connected to Denmark's own energy consumption.

1) See 2) above.

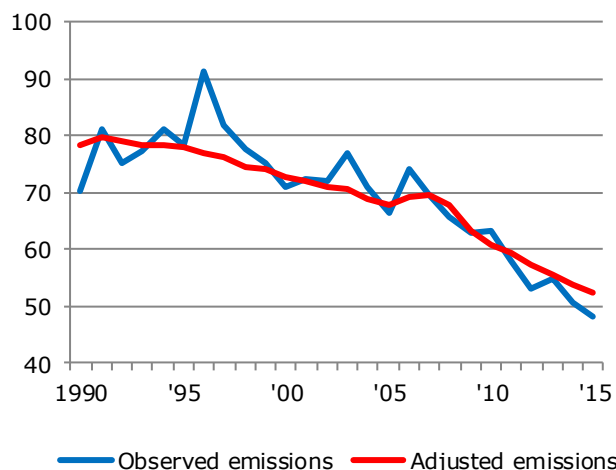
* The preliminary emissions statement for 2016 is solely based on CO₂ emissions from energy consumption and flaring as calculated in the Energy Statistics 2016. Total greenhouse gas emissions are calculated by assuming that all emissions other than CO₂ from energy consumption and flaring are constant at the values for 2015, calculated by DCE - Danish Centre for Environment and Energy.

Source: DCE - Danish Centre for Environment and Energy

EMISSIONS OF CO₂ AND OTHER GREENHOUSE GASES

Emissions of greenhouse gases

Million tonnes CO₂ equivalents



The figure shows emissions of greenhouse gases, excluding the effects of CO₂ removal by forests and land use.

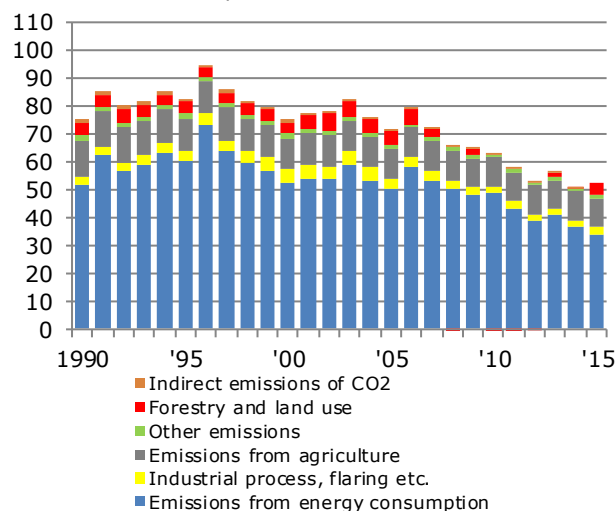
Observed emissions of greenhouse gases were 48.3 million tonnes of CO₂ equivalents in 2015, which is 4.9% less than in 2014.

Adjusted for climatic variations and fuel consumption linked to foreign trade in electricity, emissions of greenhouse gases were 52.4 million tonnes of CO₂ equivalents in 2015, which is 2.5% less than in 2014.

Source: DCE - Danish Centre for Environment and Energy
www.dce.au.dk

Observed net emissions of greenhouse gases by origin

Million tonnes CO₂ equivalents

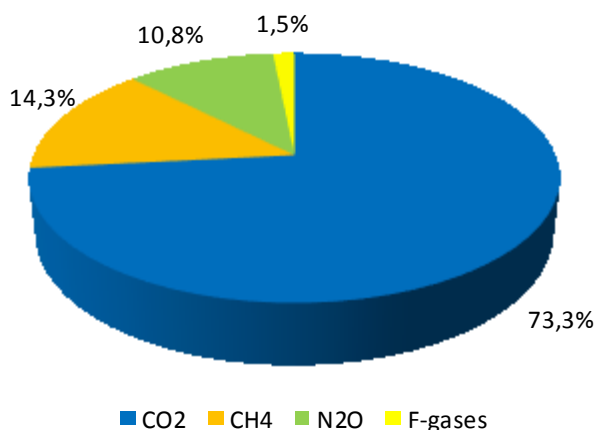


Emissions from energy consumption make the largest contribution to total net emissions of greenhouse gases. Such emissions derive from the energy and transformation sector as well as from final energy consumption. The second-largest contribution derives from agriculture (excl. energy consumption).

In 2015 observed emissions excluding CO₂ removals from forestry and land use were: Emissions from energy consumption 64.9%, emissions from agriculture 19.6%, industrial processes, flaring etc. 4.5% and other emissions 2.2% and indirect CO₂ emissions of 0.8%. CO₂ removals from forestry and land use corresponded to a deduction of 7.9% from observed emissions.

Source: DCE - Danish Centre for Environment and Energy
www.dce.au.dk

Observed emissions by type of greenhouse gases in 2015



The greenhouse gases included in the statement of total emissions contribute with different percentages. With 73.3%, CO₂ accounted for the largest part of total greenhouse gas emissions in 2015. With 14.3%, methane (CH₄) was the second-largest contributor to total emissions, followed by nitrous oxide (N₂O) with 10.8% and F-gases with 1.5%.

The primary source of CO₂ emissions is fuel consumption for energy purposes. The primary source of both methane and nitrous oxide emissions is agriculture, but waste also significantly contributes to methane emissions.

Note: Exclusive of LULUCF and indirect CO₂-emissions.
 Source: DCE - Danish Centre for Environment and Energy.

www.dce.au.dk

ETS and non-ETS CO₂ emissions from energy consumption 2014-2016

1000 tonnes	Observed CO ₂ emissions from energy consumption								
	Total			EU ETS			Non-EU ETS		
	2014	2015	2016	2014	2015	2016	2014	2015	2016
Total	37 677	35 144	36 695	17 261	14 630	15 851	20 416	20 513	20 844
Energy sector	2 277	2 346	2 131	2 277	2 346	2 131	0	0	0
Transformation sector	13 319	10 453	11 731	12 801	10 105	11 427	517	348	304
Final energy consumption	22 081	22 345	22 833	2 182	2 180	2 293	19 899	20 165	20 540
Transport*	14 437	14 580	14 896	99	91	95	14 339	14 488	14 802
Agriculture and industry	4 960	4 946	5 056	2 083	2 089	2 198	2 877	2 857	2 858
- agriculture, forestry and horticulture	1 178	1 187	1 173	11	18	21	1 167	1 169	1 153
- manufacturing	3 049	2 996	3 108	2 072	2 071	2 177	2 217	925	930
- other industry	733	764	775	-	-	-	733	764	775
Commercial and public services	579	630	654	-	-	-	579	630	654
Households	2 104	2 189	2 226	-	-	-	2 104	2 189	2 226

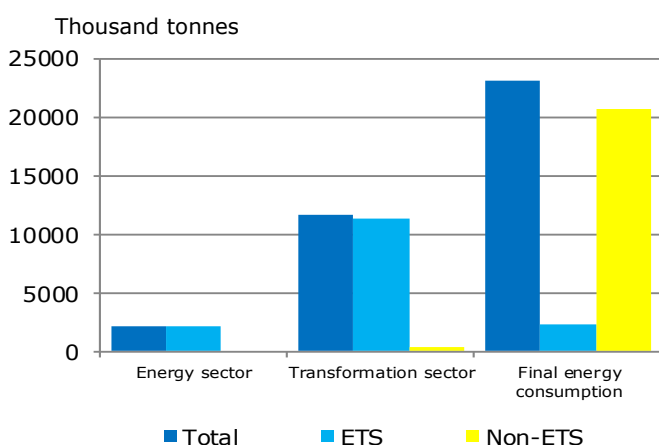
Note 1: The first three columns of figures include CO₂ emissions from oil, natural gas and non-renewable waste.

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 ETS (EU Emission Trading System). CO₂ emissions from own consumption by waste incineration plants (industry code 383921) have been included under the transformation sector.

* Of the stated Danish CO₂ emissions in the transport sector the stated EU ETS CO₂ emissions are from domestic flights. However, the statement is inclusive of CO₂ emissions from non-scheduled flights which are not covered by the EU ETS.

Observed CO₂ emissions from energy consumption in 2016, EU ETS and non-EU ETS sectors



The EU Emission Trading System (EU ETS) comprises almost half the CO₂ emissions from energy consumption. However, the share varies considerably from sector to sector.

In the energy sector, which includes refineries and oil and gas production plants in the North Sea, all emissions are covered by the EU ETS. In the transformation sector, which includes power plants and district heating plants, if non-renewable waste is excluded, the picture is almost the same.

In relation to emissions linked to final energy consumption, i.e. emissions from burning oil, natural gas and coal by enterprises, households and means of transport, less than 10% is covered by the EU ETS. In this context, almost all emissions can be attributed to manufacturing industries.

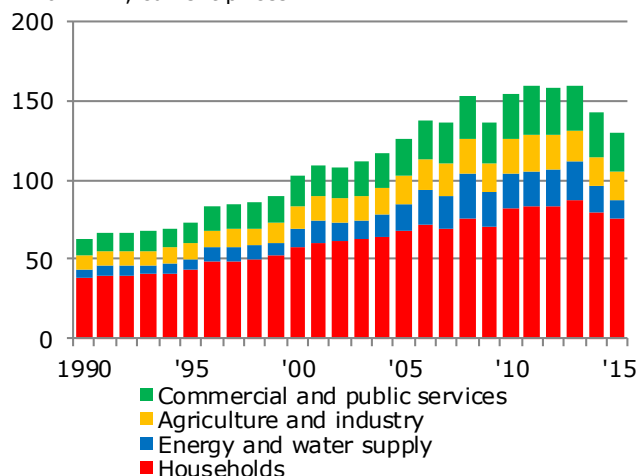
Total observed emissions of greenhouse gases, EU ETS and non-EU ETS sectors

1000 tonnes CO ₂ equivalents	Total	EU ETS, from energy consumption	EU ETS, from industries and flaring	Non-EU ETS
2015	48 331	14 630	1 257	32 444
2016	49 882	15 851	1 463	32 568

Note: The preliminary emissions statement for 2016 is solely based on CO₂ emissions from energy consumption and flaring as calculated in the Energy Statistics 2016. Total greenhouse gas emissions are calculated by assuming that all emissions other than CO₂ from energy consumption and flaring are constant at the values for 2015, calculated by DCE - Danish Centre for Environment and Energy.

Energy expenses by industry and households

Billion DKK, current prices



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 CO₂ taxes) and VAT applies.

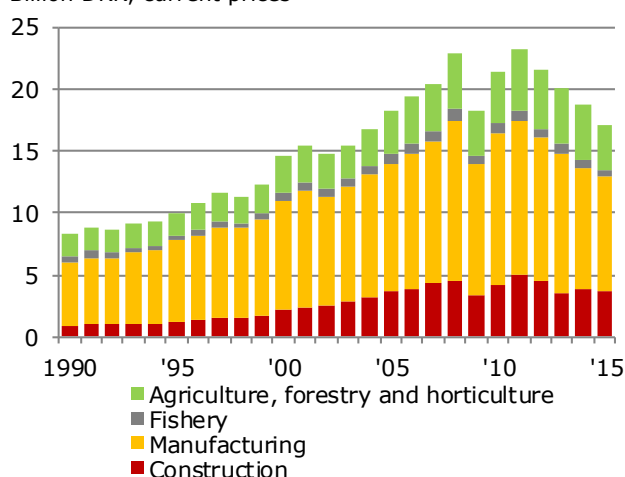
Total energy expenses by industry and households amounted to DKK 130.2 billion in 2015, which is 8.7% less than the year before. For households energy expenses were DKK 75.6 billion; for agriculture and industry (excluding oil refineries) expenses were DKK 17.1 billion; while for commercial and public services expenses were DKK 25.2 billion.

Energy expenses in current prices increased during the period from 1990-2015. 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 2015 is a drop in consumer prices.

Source: Statistics Denmark

Energy expenses in agriculture and industry

Billion DKK, current prices



Energy expenses for agriculture and industry can be further analysed between four sub-sectors.

Energy expenses for manufacturing industries (DKK 9.3 billion) accounted for the major part of agriculture and industry's energy expenses in 2015 (54.3%).

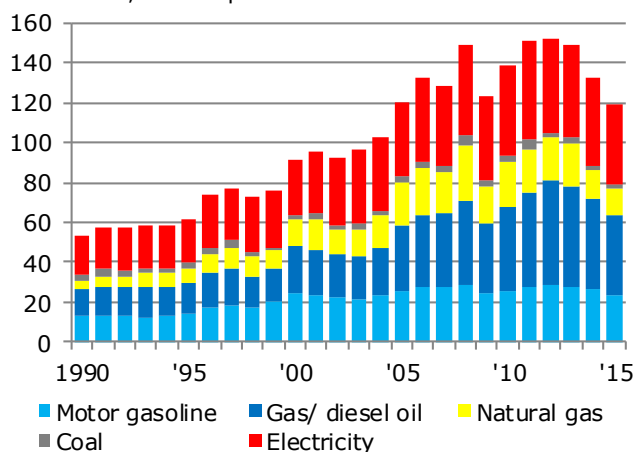
With DKK 3.7 billion (21.3%), construction contributed the second-largest share. The third-largest share was contributed by agriculture, forestry and horticulture with DKK 3.6 billion (21.2%). Finally, with DKK 0.5 billion (3.2%), fishing accounted for the smallest share of energy expenses.

In the period 1990-2015, 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.

Source: Statistics Denmark

Energy expenses by fuel

Billion DKK, current prices



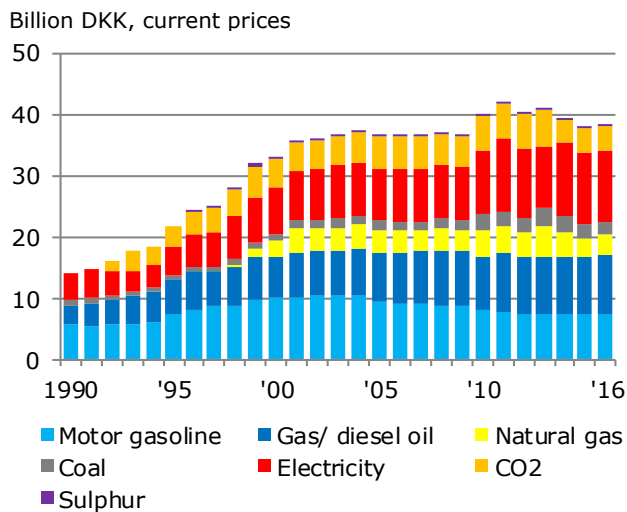
Energy expenses include i.a. motor gasoline, gas/diesel oil, natural gas, coal and electricity. These five fuels account for almost 54% of total energy expenses of DKK 221 billion, when including expenses for foreign bunkering of Danish vessels and oil refineries.

Of these fuels, the greatest share of energy expenses in 2015 was attributable to electricity (DKK 40.7 billion). Gas/diesel oil accounted for the second-largest share (DKK 39.9 billion). Seen over the period 1990-2015, electricity usually accounts for the largest share.

This is followed by motor gasoline (DKK 23.9 billion), natural gas (DKK 13.5 billion), and coal (DKK 1.3 billion).

Source: Statistics Denmark

Revenue from energy, CO₂ and sulphur taxes



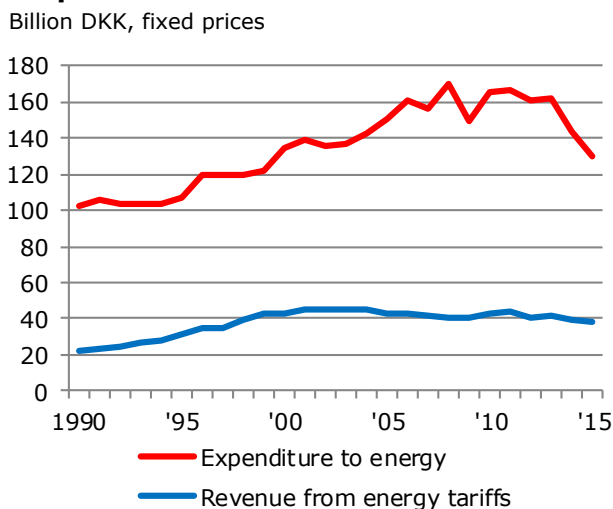
In 2016, revenues from energy taxes calculated in current prices were DKK 38.2 billion, which is an increase of 1.3% compared with 2015. In addition to energy taxes, revenues include CO₂ and sulphur taxes. The largest contributions to revenues in 2016 is from electricity (DKK 11.7 billion), gas/diesel oil (DKK 9.7 billion), motor gasoline (DKK 7.5 billion) and CO₂ taxes (DKK 4.0 billion).

The 2016 revenues in current prices increased by 174% compared with 1990, when there were no CO₂ and sulphur taxes. Gas/diesel oil, electricity and motor gasoline have seen growths of 210%, 170% and 33.0%, respectively, since 1990.

In 2015 and 2016, energy, CO₂ and sulphur taxes amounted to 3.9% and 4.0%, respectively, of total tax and VAT revenues in Denmark.

Source: Statistics Denmark

Energy expenditures and tax revenues, fixed prices



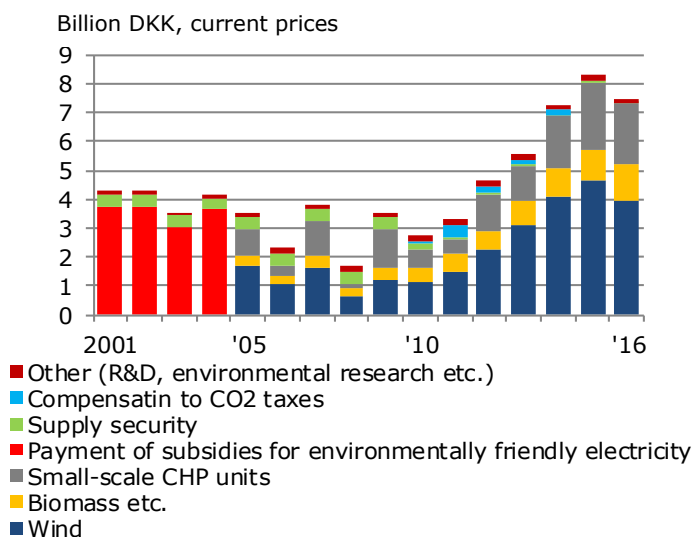
In order to assess changes in energy expenses and tax revenues in relation to general price fluctuations, the figures have been converted to 2015 prices.

Measured as 2015 prices, energy expenses in 2015 were 9.1% lower than in the previous year. Compared with 1990, energy expenses have risen by 27.2%.

Revenues from energy taxes measured in 2015 prices rose by 66.8% from 1990 to 2015.

Source: Statistics Denmark

Expenses for Public Service Obligations (PSO) in the electricity area

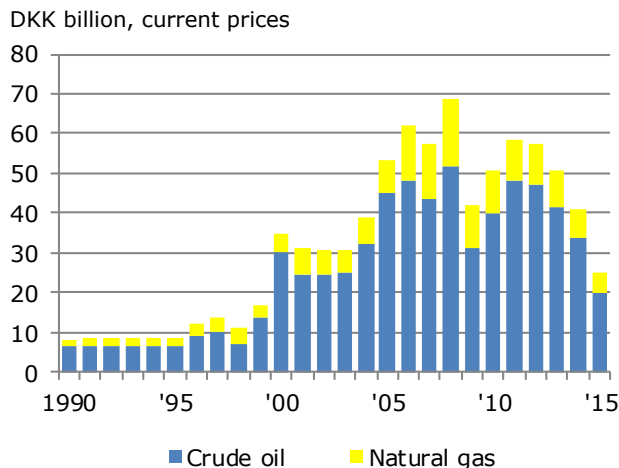


Total expenses for Public Service Obligations (PSO) were DKK 7.5 billion in 2016, compared with DKK 8.3 billion the year before. The increase in PSO expenses from 2015 to 2016 is attributable in particular to high prices on the electricity market and a decreased wind power production.

For 2016, total funding support for environmentally friendly electricity production was DKK 7.3 billion, divided between DKK 3.9 billion for wind power, DKK 2.1 billion for small-scale CHP and DKK 1.3 billion for biomass.

In 2010, compensation for CO₂ taxes was introduced, but this compensation was cancelled at the end of 2014.

Value of crude oil and natural gas production



The value of the crude oil and natural gas produced from the North Sea in 2015 was DKK 24.8 billion, compared with DKK 40.7 billion the previous year. The value of crude oil fell from DKK 33.6 billion to DKK 20.1 billion, and the value of natural gas fell from DKK 7.2 billion to DKK 4.8 billion.

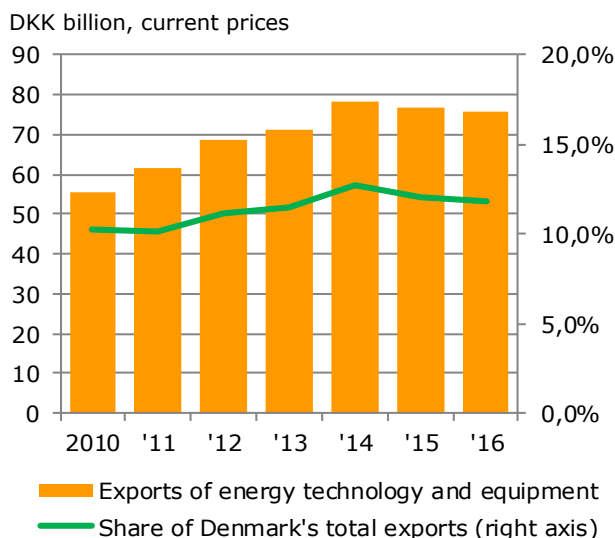
The value of the North Sea production depends on the scale of production as well as on world market prices. In 2015, the production of crude oil and natural gas fell by more than the production value. Production of crude oil fell by 5.4% while the production of natural gas was unchanged in 2015.

Compared with 1990, the value of the North Sea production has increased more than threefold.

Due to failing delivery of data it has not been possible to publish the production value for 2016.

Source: Danish Energy Agency.

Exports of energy technology and equipment



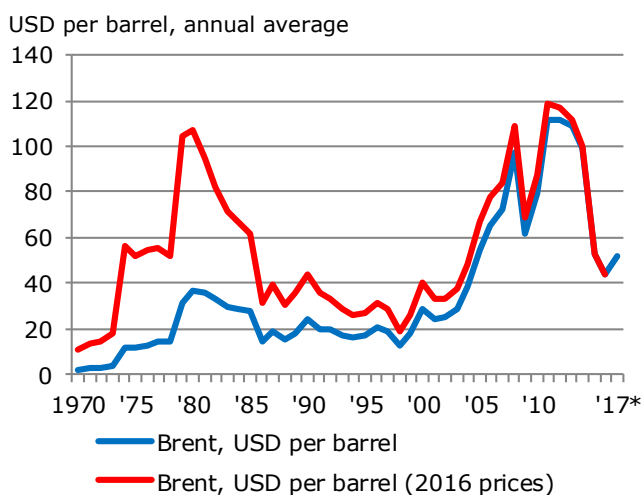
Exports of energy technology and equipment such as wind turbines, district heating pipes, thermostat valves, pumps etc. increased rapidly up to the year 2014.

The exports fell from 2015 to 2016 and were 1.3% lower in 2016 than the year before. In 2016, Denmark exported energy technologies and equipment at a value of DKK 75.6 billion, corresponding to 11.8% of total Danish goods exports.

For more information see the publication on Danish energy technology exports 2016, "Energiteknologiekporten 2016", 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 2016

Spot market prices for crude oil



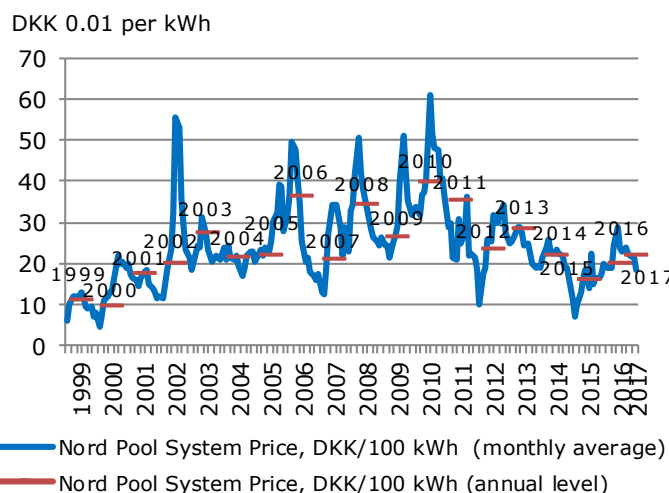
The average crude oil price was USD 52 per barrel in 2015. This is a relatively high price compared with the level in the mid-1980s and 20 years onwards, but it is a relatively low price compared with the level just before and during the economic crisis in 2008 and the period from 2011 to mid-2014.

The current price level established itself in 2014 when, in the second half year up to the start of 2015, the price halved from around USD 100 to about USD 50 per barrel. The reason for the current relatively low price compared with 2011-2014 is the relatively large amount of oil available on global markets compared with demand. This is due to many factors, including low global economic activity, falling demand from China and increased production in the US.

Source: BP and the World Bank (prices for 2017)

*Prices for 2017 cover only the first six months.

Spot market prices for electricity



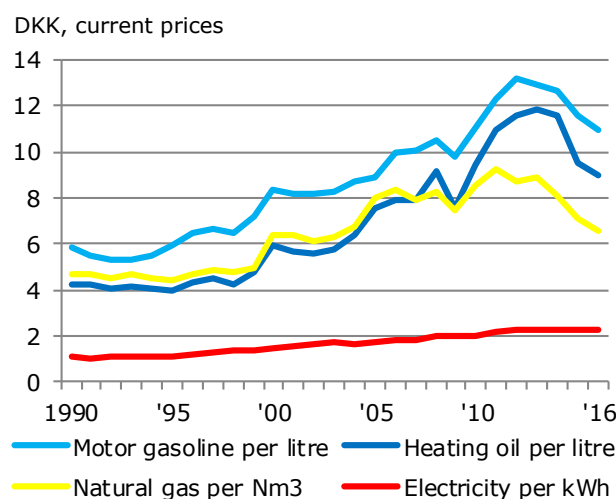
The system price of electricity on Nord Pool is set hour by hour on the basis of supply and demand. The price is affected by a number of factors, including precipitation and temperature. For example, the winter 2010/2011 was affected by concerns over water shortages and increasing electricity consumption in Norway because of low temperatures, and 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 areas.

The average system price of electricity per kWh was DKK 0.20 in 2016 compared with DKK 0.16 in 2015.

In the first half of 2017, the average system price was DKK 0.22 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 CO₂ taxes and VAT.

The price of heating oil was DKK 8.93 per litre in 2016, as opposed to DKK 9.49 per litre the year before, corresponding to a fall of 5.9%. In the period 1990-2016 the price increased by 111%.

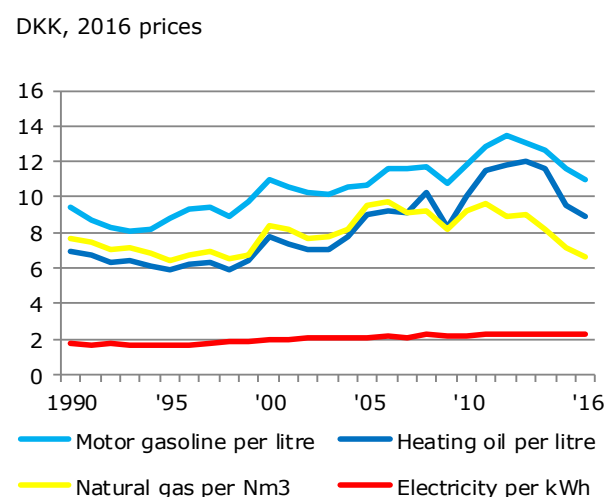
The price of natural gas for households was DKK 6.59 per Nm³ in 2016, compared with DKK 7.10 per Nm³ the year before, corresponding to a drop of 7.2%.

The price of a litre of motor gasoline was DKK 10.97 in 2016, compared with DKK 11.60 in 2015, corresponding to a drop of 5.4%. The drop in the price is attributable to a lower price of crude oil in 2016 than in the year before. The tax on motor gasoline has varied considerably over time and this has affected the price.

The price of electricity was DKK 2.30 per kWh in 2016, compare with DKK 2.28 in 2015, corresponding to a rise of 0.8%.

Source: Eurostat (electricity and natural gas) and EOF (oil products)

Energy prices for households



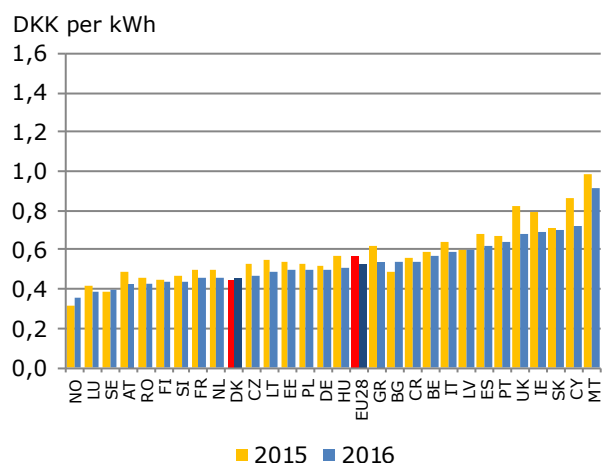
Household energy prices have been calculated at 2016 prices by adjusting current prices for changes in the general price level as stated in the consumer price index. Measured in 2016 prices, the price per litre of motor gasoline dropped 5.7% in 2016 compared with 2015.

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 2016 it was DKK 8.93 per litre, which is 6.2% lower than in 2015. The price of natural gas was DKK 6.59 per Nm³ in 2016, which is 7.5% lower than the year before. The price of electricity in 2016 prices was 0.5% higher in 2016 than the year before.

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

ENERGY PRICES

Electricity prices for industrial customers



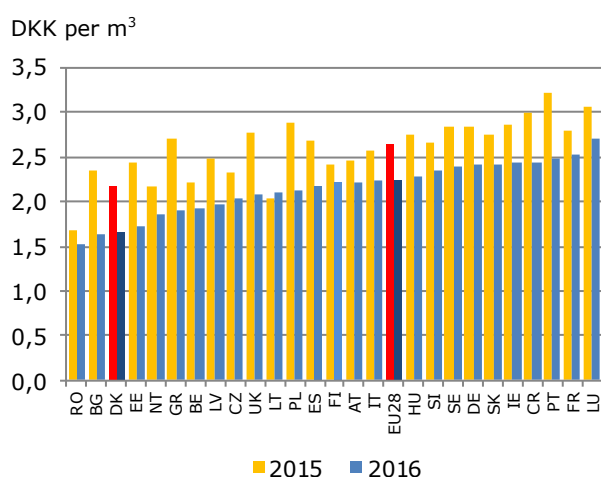
Electricity prices are shown in current prices (DKK per kWh) exclusive of taxes for industry customers with an annual consumption between 2 - 20 GWh.

In 2016, the price of electricity per kWh varied in the EU Member States (EU28) from DKK 0.38 in Luxembourg to DKK 0.91 in Malta. Norway had an electricity price of DKK 0.35 per kWh.

In 2016 the Danish electricity price was DKK 0.46 per kWh. This was 15.1% lower than the average price in EU28, which was DKK 0.53 per kWh. The Danish electricity price increased by 2.4% in 2016 compared with the year before. In EU28, the average electricity price fell by 7.5% between 2015 and 2016.

Source: Eurostat

Natural gas prices for industrial customers



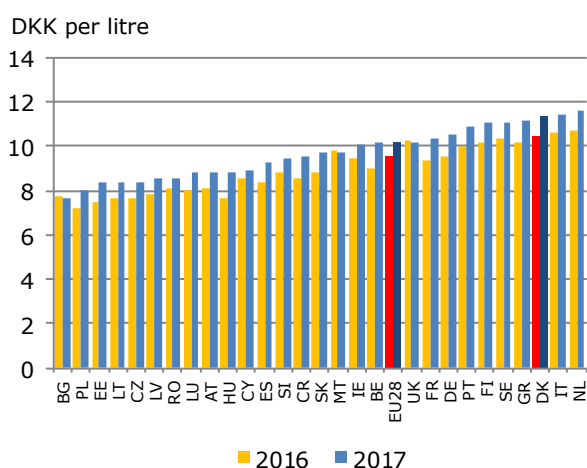
Natural gas prices are shown in current prices (DKK per m³) exclusive of taxes for industry customers with an annual consumption of 10 TJ to 100 TJ.

In 2016, the price of natural gas per m³ varied in the EU28 Member States from DKK 1.53 in Romania to DKK 2.70 in Luxembourg. The Danish price in 2016 was DKK 1.66, while the average EU28 price was DKK 2.23.

In 2016, the Danish price of natural gas was 23.5% lower than in 2015, while the average EU28 price was 15.7% lower.

Source: Eurostat

Motor gasoline prices



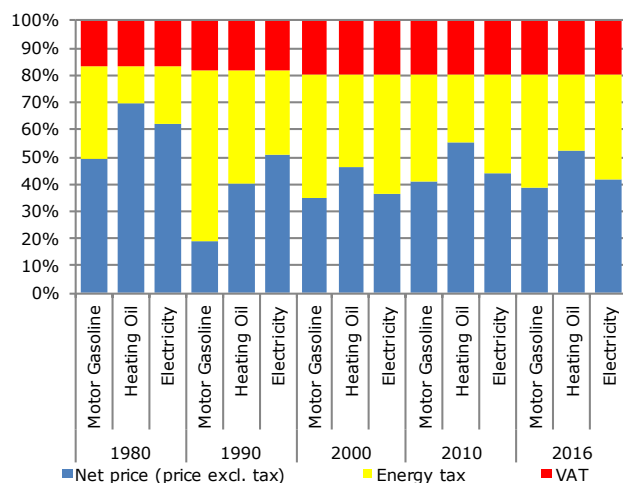
The price of motor gasoline in week 1 in 2016 and 2017, respectively, are shown in current prices (DKK per litre). Prices are for motor gasoline 95 unleaded, including taxes. The average for the EU28 Member States is a weighted average.

In 2017, the lowest price, DKK 7.67 per litre, was in Bulgaria, while the highest price, DKK 11.61, was in Netherlands. In Denmark, the price per litre was DKK 11.32, while the average price in EU28 was DKK 10.20 per litre.

The price of motor gasoline increased from 2016 to 2017 in all EU28 Member States except from in Bulgaria, Malta and the United Kingdom. The largest rise was in Hungary, where the price fell by 15.5% within a year. In Denmark, the price of motor gasoline grew by 8.6% during the same period.

Source: Oil Bulletin, European Commission

Composition of energy prices for households



Expenses on taxes increased considerably from 1980 to 1990. Since then, the share of the consumer price which comprises taxes has been falling for motor gasoline and heating oil. For electricity, the tax share continued to increase up to 2000, after which it went down again.

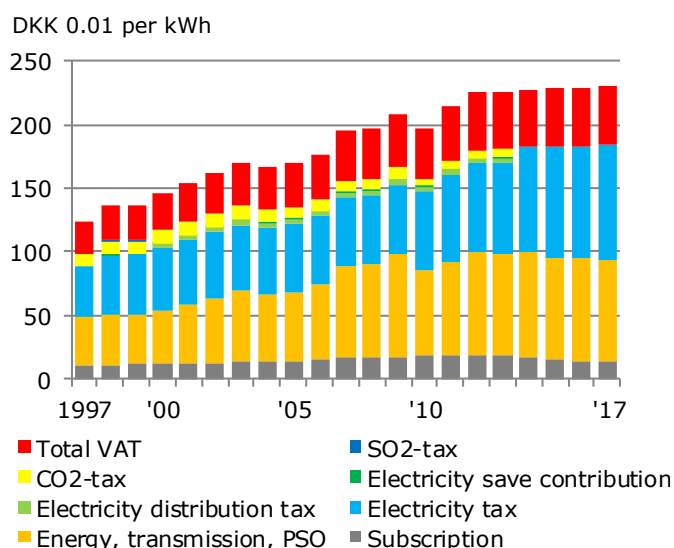
The price of motor gasoline in 2016 of DKK 10.97 per litre was made up as follows: Price exclusive of taxes and VAT 38.4%, taxes 41.6% and VAT 20.0%.

The price of heating oil in 2016 of DKK 8.93 per litre was made up as follows: Price exclusive of taxes and VAT 52.0%, taxes 28.0% and VAT 20.0%.

The price of electricity in 2016 of DKK 2.30 per kWh was made up as follows: Price inclusive of PSO and exclusive of taxes and VAT 41.5%, taxes 38.5% and VAT 20.0%.

Source: Eurostat (electricity) and EOF (oil products)

Electricity prices for households 1997-2017 (as of 1 January), consumption of 4000 kWh



At the beginning of 2017, the average price of electricity for household customers with an annual consumption of 4,000 kWh was DKK 2.31 per kWh, which constitutes a slight increase of 0.5% from the year before. The price of electricity has increased by 49.5% since 2001.

Total tax revenues for the state per kWh in 2017 were DKK 1.37 compared with DKK 0.96 in 2001. Until 2014 these taxes included: Electricity tax, electricity distribution tax, electricity savings contribution, CO₂ tax (electricity savings tax) and VAT. From 2014 these taxes were changed to include only electricity tax and VAT.

The payment for the actual energy per kWh (inclusive of PSO and electricity transmission) was DKK 0.79 in 2017, as opposed to DKK 0.46 in 2001, while subscription costs per kWh were DKK 0.14 as opposed to DKK 0.13 in 2001.

Source: Danish Energy Association and Danish Energy Regulatory Authority

CO₂ prices (EUR/tonne)



The price of allowances in the EU ETS has varied greatly since the beginning in 2008.

Prices for allowances in the period 2008-12 dropped significantly as of the summer of 2008 in parallel with expectations for lower energy consumption and emissions in the coming years due to the economic slowdown. The allowance price was relatively stable from April 2009 to June 2011. After this time it fell additionally in step with an increasing surplus of allowances due to the continuing economic slowdown and a steeply falling price of international climate credits. From mid-2013 the trend in the allowance price is slightly rising, but since the beginning of 2016 the allowance price has varied between 4 and 8 EUR per tonne.

Source: Point Carbon and European Energy Exchange

Energy consumption in EU28 and other countries 2015 - by share of renewable energy

	Energy consumption ¹⁾ , PJ	Share in percentage						Net import of electricity
		Oil	Natural gas	Coal	Nuclear power	Renewable energy and waste ²⁾	Waste, non-renewable	
Sweden	1 904	22	2	5	32	42 (54)	1	-4
Latvia	183	34	25	1	0	35 (38)	1	4
Finland	1 388	26	7	12	18	32 (39)	1	4
Austria	1 392	36	21	10	0	29 (33)	2	3
Denmark	702	39	17	10	0	28 (31)	3	3
Croatia	357	39	24	7	0	23 (29)	0	7
Portugal	963	45	18	14	0	22 (28)	1	1
Lithuania	289	38	30	3	0	21 (26)	0	9
Romania	1 357	28	28	18	9	18 (25)	0	-2
Italy	6 538	37	35	8	0	17 (18)	1	3
Slovenia	275	35	10	16	22	16 (22)	1	0
Estonia	262	18	6	62	0	14 (29)	1	-1
Spain	5 084	43	20	11	12	14 (16)	0	0
EU28	68 139	34	22	16	14	13 (17)	1	0
Germany	13 155	34	21	25	8	12 (15)	1	-1
Hungary	1 055	27	30	9	16	12 (15)	1	5
Greece	1 024	51	11	23	0	11 (15)	0	3
Bulgaria	775	23	14	36	22	11 (18)	0	-5
Czech Republic	1 777	21	15	39	16	10 (15)	1	-3
Slovakia	688	20	24	20	24	10 (13)	1	1
Poland	3 996	25	14	51	0	9 (12)	1	0
France	10 576	31	14	3	45	9 (15)	1	-2
UK	7 986	37	32	12	10	8 (8)	1	1
Ireland	594	50	26	15	0	8 (9)	0	0
Belgium	2 270	45	26	6	12	7 (8)	1	3
Cyprus	95	93	0	0	0	6 (9)	1	0
Luxembourg	175	63	19	1	0	5 (5)	1	12
Netherlands	3 247	40	38	14	1	5 (6)	1	1
Malta	32	85	0	0	0	3 (5)	0	12
Norway	1 257	38	18	3	0	45 (69)	1	-4
USA	91 619	43	30	17	10	7	0	0
Japan	17 994	39	23	27	1	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 pages 8 and 9. Source: Eurostat and IEA (figures for USA and Japan).

Consumption of renewable energy in EU28 and other countries in 2015

		Share in percentage					
		Hydro	Wind	Solar	Geo-thermal	Biomass, incl. waste	Biofuels
	Consumption of renewable energy and waste, PJ						
Sweden	804	33.7	7.3	0.1	0.0	53.2	5.7
Latvia	64	10.4	0.8	0.0	0.0	87.2	1.6
Finland	439	13.7	1.9	0.0	0.0	79.2	5.2
Austria	404	33.0	4.3	2.8	0.4	52.5	7.1
Denmark	199	0.0	25.5	1.8	0.1	67.3	5.3
Croatia	82	28.0	3.5	0.8	0.5	65.9	1.2
Portugal	208	15.0	20.1	3.0	3.8	51.2	6.9
Lithuania	59	2.1	4.9	0.4	0.1	87.6	4.8
Romania	250	23.9	10.2	2.9	0.5	59.1	3.4
Italy	1 100	14.9	4.9	8.2	20.8	43.2	8.0
Slovenia	44	31.0	0.0	3.3	4.1	58.7	2.9
Estonia	38	0.3	6.8	0.0	0.0	92.6	0.4
Spain	696	14.6	25.5	19.2	0.1	34.7	5.9
EU28	8 836	13.9	12.3	6.2	3.1	57.2	7.3
Germany	1 606	4.3	17.8	10.4	0.6	59.7	7.3
Hungary	126	0.7	2.0	0.7	3.5	87.4	5.8
Greece	116	18.9	14.3	19.2	0.4	41.4	5.8
Bulgaria	83	24.4	6.3	7.1	1.7	53.2	7.4
Czech Republic	179	3.6	1.2	5.0	0.0	83.4	6.9
Slovakia	66	21.1	0.0	3.1	0.5	66.2	9.1
Poland	376	1.8	10.4	0.6	0.2	78.4	8.7
France	913	21.5	8.4	3.3	1.0	52.3	13.4
UK	617	3.7	23.5	4.8	0.0	61.7	6.3
Ireland	45	6.5	52.8	1.2	0.0	31.3	8.2
Belgium	152	0.8	13.2	7.9	0.1	70.2	7.9
Cyprus	6	0.0	13.0	53.7	1.1	25.6	6.6
Luxembourg	9	4.2	4.3	5.3	0.0	45.9	40.4
Netherlands	152	0.2	17.8	3.4	1.6	68.3	8.6
Malta	1	0.0	0.0	61.8	0.0	14.0	24.2
Norway	562	88.4	1.6	0.0	0.0	9.0	1.1
USA	6 157	14.7	11.3	3.9	6.1	40.9	23.1
Japan	958	32.0	1.9	14.9	10.5	40.6	0.0

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

Key figures 2015 – 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 consumption	Final energy consumption	2000	2015
Denmark	94	118	145	124	103	88	65
Estonia	89	0	0	199	88	466	355
Romania	82	44	98	68	46	442	227
Sweden	74	0	0	195	136	163	111
Poland	71	4	27	105	69	360	227
Czech Republic	68	1	3	169	96	361	249
Bulgaria	65	1	3	108	55	759	449
UK	62	63	58	123	85	147	94
Netherlands	61	5	134	192	120	141	118
France	54	1	0	159	91	145	121
Latvia	53	0	0	92	80	315	207
Finland	53	0	0	254	185	205	178
Slovenia	52	0	0	134	95	231	178
Croatia	52	19	71	84	65	239	193
EU28	47	12	30	134	89	155	120
Hungary	44	9	18	107	74	314	234
Slovakia	38	0	2	127	78	437	215
Germany	38	2	10	162	109	145	112
Austria	36	7	15	162	134	114	107
Greece	35	1	0	94	64	149	133
Spain	28	0	0	109	73	143	114
Italy	23	10	10	108	80	112	100
Portugal	23	0	0	93	65	151	134
Lithuania	23	3	0	99	70	386	205
Belgium	19	0	0	202	133	190	141
Ireland	13	0	3	128	101	117	59
Cyprus	5	0	0	112	82	169	129
Luxembourg	4	0	0	311	297	119	89
Malta	2	0	0	74	56	149	91
Norway	692	710	1 895	243	152	95	85
USA	92	73	98	285	198		
Japan	7	0	2	142	96		

Source: Eurostat and IEA (figures for Norway, USA and Japan)

Reserves, production, stocks and consumption of oil by regions

	1980	1990	2000	2005	2010	2014	2015	2016	Change '90 - '16
Oil reserves¹⁾, 1000 million barrels									
The world	683	1028	1301	1374	1642	1707	1691	1707	66.1%
North America	123	125	232	224	222	238	227	227	81.4%
South and Central America	27	72	98	104	324	332	329	328	358%
Europe and Eurasia	84	76	141	139	158	155	155	162	113%
Middle East	362	660	697	756	766	804	803	813	23.3%
Africa	53	59	93	111	125	129	128	128	118%
Asia and the Pacific	34	36	40	41	48	49	49	48	33.3%
Oil production, million tonnes									
The world	3 092	3 175	3 618	3 938	3 977	4 226	4 359	4 382	38.0%
North America	671	655	642	638	639	869	908	883	34.8%
South and Central America	195	234	345	375	378	393	399	384	64.3%
Europe and Eurasia	747	788	729	849	860	835	847	861	9.2%
Middle East	935	852	1 150	1 226	1 219	1 339	1 412	1 497	75.7%
Africa	301	321	371	466	478	394	394	375	16.7%
Asia and the Pacific	245	326	381	383	403	397	400	383	17.6%
Oil stocks*), million tonnes									
The OECD	271	217	209	208	216	209	238	238	9.7%
North America	116	90	73	78	84	79	100	99	10.7%
Europe	131	106	109	107	108	105	113	113	7.1%
Pacific	23	22	27	22	23	25	25	26	18.6%
Oil consumption, million tonnes									
The world	2 986	3 160	3 590	3 936	4 085	4 255	4 341	4 418	39.8%
North America	928	922	1 061	1 129	1 040	1 027	1 040	1 047	13.5%
South and Central America	175	178	237	255	304	337	334	326	83.3%
Europe and Eurasia	1 200	1 129	933	966	912	859	866	885	-21.6%
Middle East	97	171	242	298	363	408	413	418	144%
Africa	70	96	118	138	164	178	182	185	93.2%
Asia and the Pacific	516	664	998	1 150	1 302	1 447	1 506	1 557	135%
Total energy consumption, Mtoe									
The world	6 642	8 142	9 390	10 939	12 170	12 989	13 105	13 276	63.1%
North America	2 106	2 324	2 755	2 839	2 778	2 821	2 792	2 789	20.0%
South and Central America	264	331	476	537	642	704	710	705	113%
Europe and Eurasia	2 834	3 199	2 814	2 965	2 953	2 838	2 847	2 867	-10.4%
Middle East	130	264	423	565	734	840	875	895	239%
Africa	145	222	274	327	389	428	434	440	98.0%
Asia and the Pacific	1 164	1 801	2 648	3 706	4 675	5 357	5 447	5 580	210%
Oil consumption - total share of energy consumption, %									
The world	45	39	38	36	34	33	33	33	
North America	44	40	39	40	37	36	37	38	
South and Central America	66	54	50	47	47	48	47	46	
Europe and Eurasia	42	35	33	33	31	30	30	31	
Middle East	75	65	57	53	49	49	47	47	
Africa	48	43	43	42	42	41	42	42	
Asia and the Pacific	44	37	38	31	28	27	28	28	

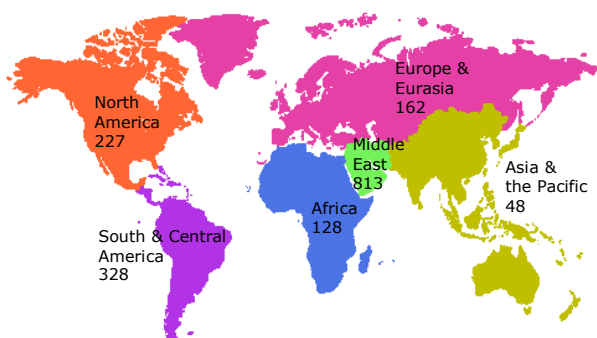
¹⁾ Crude oil, at the end of the year

*) At the end of the year

Sources: BP Statistical Review of World Energy
IEA, International Energy Agency, Paris

Proved oil reserves at end 2016

Billion barrels



At the end of 2016, the world's total proved oil reserves totalled 1707 billion barrels.

47.7% of crude oil reserves are in the Persian Gulf region, where the fields are relatively large and geologically easily accessible, which means production costs are low.

Comparing proved regional oil reserves with actual regional oil production (reserves-to-production ratio, R/P), shows that Europe and Eurasia have reserves for 24.9 years' unchanged production, while North America has reserves for 32.3 years. The R/P ratio for total world oil reserves is 50.6 years' unchanged production. However, new oil reserves are being discovered continually, and for 2016 oil reserves are almost unchanged compared with 2015.

Source: BP Statistical Review of World Energy

In 2016, total world oil consumption was 4.418 billion tonnes, which is 1.5% more than the year before. A total of 23.7% of this oil was consumed in North America, which accounted for 20.9% of the world's crude oil production. Europe & Eurasia accounted for 20.0% of oil consumption and 19.2% crude oil production. Neither North America nor Europe & Eurasia are self-sufficient in oil, as their consumption is greater than their production.

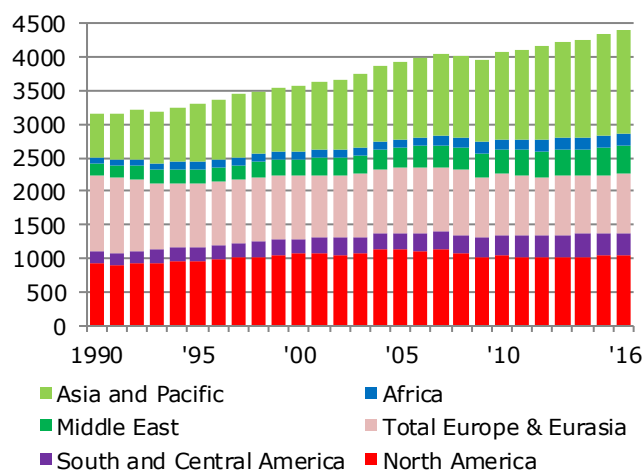
Asia and the Pacific's share of consumption was 35.2% in 2016, the Middle East's share was 9.5%, South and Central America's share was 7.4%, while Africa's share was 4.2%.

Total world oil consumption in 2016 was 33.3% of total world energy consumption compared with 33.1% in 2015. For Europe & Eurasia, this figure was 30.9% compared with 30.4% in 2015.

Source: BP Statistical Review of World Energy

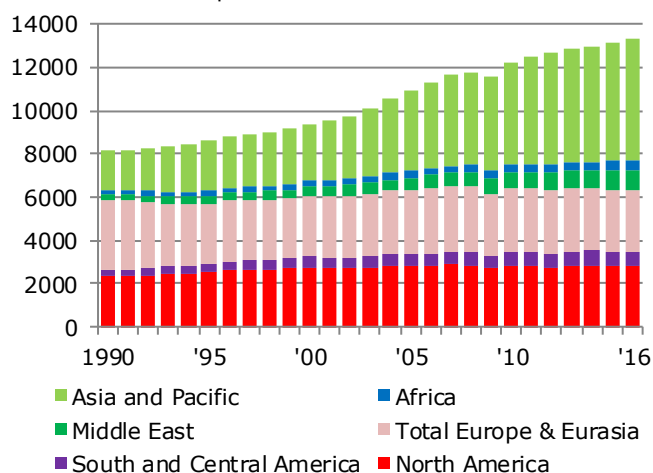
Oil consumption by region

Million tonnes



Energy consumption by region

Million tonnes oil equivalents



World energy consumption was 13,276 billion tonnes oil equivalents in 2016, which is 1.3% higher than in 2015. Except for in 2009, world consumption increased steadily over the period 1990-2016. The fall from 2008 to 2009 was due to economic recession, especially in North America and in Europe & Eurasia.

Energy consumption went up in all regions in 2016, except for in North America and South and Central America, where it dropped by 0.1% and 0.7% respectively. In Europe & Eurasia, consumption increased by 0.7% in 2016.

The largest percentage increase in energy consumption from 2015 to 2016 was in the Asia and Pacific region, where energy consumption went up 2.4%. The Asia and Pacific region accounts for 42.0% of total world energy consumption.

In 2016, energy consumption increased by 2.4% in the Middle East, which was responsible for 6.7% of total world energy consumption.

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 petroleum 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.
CO₂ 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. However, some of the fuel consumption for heating purposes is independent of outdoor climate, for example heating of water, heat loss from installations and grids etc. This varies according to types of industry and fuel. As a general rule, it is assumed that 65 % of fuel consumption in households as well as the service sector and 50 % in manufacturing are dependent on "degree days". For each sector, the individual fuels have specific values for heating purposes.
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 2010 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 Måsnedø have also been defined as large scale power plants.
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 <i>total energy supply</i> and <i>energy consumption, observed</i> is the <i>statistical difference</i> .
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.

KEY FIGURES AND ASSUMPTIONS BEHIND THE ENERGY STATISTICS

Danish key figures for energy and emissions

Change

Denmark	1980	1990	2000	2005	2010	2014	2015	2016	'90-'16
Energy intensity, gross energy consumption [TJ per million GDP]	0.776	0.636	0.500	0.474	0.450	0.400	0.395	0.395	-37.8%
Energy intensity, final energy consumption [TJ per million GDP]	0.582	0.469	0.388	0.372	0.350	0.324	0.322	0.323	-31.2%
Gross energy consumption per capita [GJ]	159	160	157	157	147	134	134	135	-15.4%
Final energy consumption per capita [GJ]	119	118	122	123	114	109	109	110	-6.3%
Degree of self-sufficiency [%]	5	52	139	154	120	90	89	83	59.8%
Oil consumption - share of gross energy consumption [%]	67	43	45	41	38	36	37	36	-16.2%
Renewable energy - share of gross energy consumption [%]	2,7	5,8	9,6	14,5	20,0	26,8	28,6	29,1	400%
Refinery capacity [million tonnes per year]	9.0	9.0	9.2	9.0	9.0	9.0	9.0	9.0	•
Electricity capacity [MW]	6 618	9 124	12 598	13 088	13 450	13 626	14 006	14 247	56.2%
Wind turbine capacity – share of total electricity capacity [%]	-	3.6	19.0	23.9	28.3	35.9	36.2	36.8	930%
Net electricity import - share of domestic supply [%]	-5.1	22.5	1.9	3.8	-3.2	8.5	17.5	14.8	•
CHP production - share of total thermal electricity production [%]	18	37	56	64	61	61	79	69	87.8%
CHP production - share of total district heating production [%]	39	59	82	82	77	68	66	67	13.1%
Renewable electricity - share of total domestic electricity supply [%]	0,1	2,6	15,9	27,4	34,8	53,4	56,0	53,9	1975%
CO ₂ emission per capita [tonnes]	12.2	11.9	10.4	9.7	8.5	7.2	6.9	7.0	-41.2%
CO ₂ emissions per GDP [tonnes per million GDP]	60	47	33	29	26	22	20	20	-56.8%
CO ₂ emissions per fuel unit [kilogram per GJ]	77	75	66	62	58	54	52	52	-30.5%
CO ₂ emissions per kWh electricity sold [gram per kWh]	1 026	928	632	537	505	385	345	364	-60.8%
CO ₂ emissions per consumed unit of district heating [kilogram per GJ]	96	62	43	39	33	33	31	29	-52.5%

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 2010 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 CO₂ content in 2016 Tax rates in 2016

	Calorific values	CO ₂ emissions factors
	GJ/ton	Kg/GJ
Crude oil/ North Sea	43.00	-
Refinery feedstocks	42.70	-
Refinery gas	52.00	58.27
LPG	46.00	63.10
LVN	44.50	65.00
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	74.00
Fuel oil	40.65	78.87
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	39.63	57.01
Gas works gas/1000 m ³	20.28	-
Coal in electricity plants	24.29	94.46
Other hard coal	24.29	94.46
Coke	29.30	107.00
Brown coal briquettes	18.30	97.50
Straw	14.50	-
Wood chips	9.30	-
Firewood, hard wood GJ/m ³	10.40	-
Firewood, soft wood GJ/m ³	7.60	-
Wood pellets	17.50	-
Wood waste	14.70	-
Wood waste, GJ/m ³ loose volume	3.20	-
Biogas, GJ/1000 m ³	23.00	-
Bio methane (GJ/1000 m ³)	39.63	-
Waste	10.60	37.00
Biodiesel	37.50	-
Bioethanol	26.70	-
Bio oil	37.20	-

Climate adjustments

	Degree days	
Year	Specific year	Normal year
2009	3061	3127
2010	3742	3171
2011	2970	3156
2012	3234	3166
2013	3207	3155
2014	2664	3131
2015	2921	3112
2016	2998	3070

Tax rates in 2016

	Energy taxes	CO ₂ taxes
Transport		
Motor gasoline (DKK 0.01 per l)	499.9	41.1
Light diesel oil (DKK 0.01 per l)	302.1	45.6
Low-sulphur diesel oil (DKK 0.01 per l)	417.0	39.1
Other uses		
LPG (DKK 0.01 per l)	182.9	27.6
Other kerosene (DKK 0.01 per l)	197.1	45.5
Heating diesel oil (DKK 0.01 per l)	197.1	45.5
Fuel oil (DKK 0.01 per kg)	223.3	54.3
Petroleum coke (DKK 0.01 per l)	197.1	45.5
Natural gas (DKK 0.01 per Nm ³)	217.5	38.7
Electricity plant coal (DKK per tonne)	1538	455.7
Coke (DKK per tonne)	1813	520.1
Brown coal (DKK per tonne)	1044	309.3
Electricity (DKK 0.01 per kWh)	88.5	
Electricity for space heating ¹⁾ (DKK 0.01 per kWh)	38.3	

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

Source: Ministry of Taxation

Volume weights in 2016

	tonne/m ³
Motor gasoline	0.75
Aviation gasoline	0.71
JP4	0.76
Other kerosene	0.80
JP1	0.80
Gas-/diesel-oil	0.84
Bioethanol	0.79
Biodiesel	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 litres
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

Energy Statistics 2016

- Publication as .pdf
- Figures in Powerpoint
- Time series and tables
- Danish energy flows

Data

- Oil and gas production in Denmark
- Monthly energy statistics
- Wind turbine data

Maps

- Key maps showing aspects of the Danish energy sector

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