Energy Statistics 2007



Quick Overview	3
Energy Balance 2007	4
Production of Primary Energy	5
Renewable Energy	7
Electricity and District Heating	10
Gross Energy Consumption and Final Energy Consumption	16
CO ₂ Emissions	21
Projection of Energy Consumption	24
Energy and the Economy	26
Key Figures and Basis of Energy Statistics	28
Energy Statistics 2007	
Published October 2008 by the Danish Energy Agency,	
Amaliegade 44, 1256 Copenhagen C, Denmark.	

Tel.: + 45 33 92 67 00, fax: 33 11 47 43,

email: <u>ens@ens.dk</u>, web address: <u>http://www.ens.dk</u> Design: Danuta Kestenbaum and Bettina Nøraa Larsen, Danish Energy Agency Front Cover: Helle Halberg, Danish Energy Agency

ISBN 978-87-7844-748-7 www

Questions concerning methods and calculations can be addressed to the Danish Energy Agency, Energy Statistics and Indicators, tel.: +45 33 92 67 00 or obtained from <u>statistik@ens.dk</u>.

This publication can be ordered from the Danish Energy Agency's online bookstore at http://ens.netboghandel.dk or from DBK Logistik Service at tel.: +45 32 69 77 88. The Danish Energy Agency is an institution under the Ministry of Climate and Energy. Citation is permitted with clear reference to the source.

www.ens.dk

You are welcome to visit the Energy Agency statistics and data web pages, "Facts & Figures". The site provides access to energy statistics in far greater detail than in this publication. The total energy statistics with tables and timelines about energy consumption, emissions and the basis for calculations for the period 1972-2007 can all be found under "Facts & Figures", which you are free to download.

There is also a description of the methods employed and adjustments that have been made.

"Facts & Figures" also contains a database which enables you to design your own tables and graphs.

The statistics are the basis for all of the figures in the printed version and a PowerPoint presentation (.ppt) of the figures, and these can also be found on the website.

Large Increase in Consumption of Renewable Energy in 2007

Observed Energy Consumption

Observed energy consumption in 2007 was calculated at 863 PJ, which is 2.5 per cent lower than the year before. This fall in energy consumption is primarily due to a decline in net electricity exports, which led to a drop in fuel consumption by Danish power plants. Furthermore, the weather was warmer in 2007 than in 2006, which affected the consumption of energy for heating. There were significant reductions in the consumption of natural gas and coal, whereas consumption of renewable energy increased steeply.

In 2007, consumption of renewable energy production was 145 PJ; 9.6 per cent higher than the year before. This increase can be attributed especially to consumption of firewood and wind power. Consumption of biodegradable waste, which is an important element in renewable energy, remained unchanged.

Observed CO₂ emissions fell by 8.2 per cent in 2007.

Adjusted Energy Consumption

In addition to *observed energy consumption*, the Danish Energy Agency also calculates figures for *adjusted gross energy consumption*, which include adjustments for fuel consumption linked to foreign trade in electricity as well as climate variations in relation to a normal weather year. The purpose of these adjusted calculations is to illustrate trends underlying the development.

In 2007, *adjusted gross energy consumption* went up by 1.4 per cent to 874 PJ. Compared to an increase in economic activity measured as an increase in GDP of 1.7 per cent, this means there was continued improvement in energy efficiency in 2007.

Compared to 1980, *adjusted gross energy consumption* has changed only slightly (an increase of 7.4 per cent). In the same period, GDP in fixed prices has gone up by 78 per cent. This means that each unit of GDP in 2007 required 40 per cent less energy than in 1980.

Renewable energy's share of adjusted gross energy consumption was 17.0 per cent in 2007, whereas it was 15.7 per cent the year before.

In 2007, electricity generation based on renewables comprised 29.3 per cent of domestic electricity supply, whereas this figure was 26.4 per cent the year before. The greatest contribution in 2007 came from wind power, with 19.7 per cent.

Adjusted CO_2 emissions were 52.7 million tonnes in 2007, which is 0.5 per cent higher than in 2006. This is a 13.3 per cent drop since 1990.

Energy Consumption by Sector

Energy consumption by *the transport sector* went up by 4.1 per cent in 2007. The greatest increase was in road transport, where energy consumption increased by 4.5 per cent. Within road transport, consumption of diesel grew, while consumption of petrol went down.

Energy consumption by *the agriculture and industry sector* fell by 1. 6 per cent in 2007 compared to the year before, and within *the trade and service sector* consumption fell by 1.5 per cent.

Energy consumption by *households* was 0.9 per cent higher in 2007 than in 2006.

Energy Generation and Degree of Self-sufficiency

Danish *production* of crude oil, natural gas and renewable energy etc. was 1137 PJ in 2007. This is 8.5 per cent less than the year before. Production peaked in 2005 with 1315 PJ.

In 2007, Denmark was the only EU country with energy self-sufficiency. Denmark's *degree of self-sufficiency* in energy was 130 per cent in 2007. In other words, energy generation was 30 per cent higher than energy consumption. In 2006 the degree of self-sufficiency was 144 per cent.

Large Net Currency Revenues

In 2007, Denmark again had a large surplus from foreign trade in energy. The surplus was calculated at DKK 25.8 billion, as opposed to DKK 30.6 billion in 2006.

Exports of *energy technology and equipment* grew to DKK 51.8 billion in 2007, as opposed to DKK 45.9 billion in 2006. Exports of energy products and equipment, including especially wind turbines, make up an ever increasing percentage share of Denmark's overall exports of goods. This percentage was 9.2 per cent in 2007, as opposed to 8.4 per cent the year before.



Consumption of Renewables

Energy Balance 2007

	Total	Crude oil/Feed- stocks	Oil Pro- ducts	Natural Gas	Coal and Coke	Waste, Non- rene- wable	Renew- able Energy	Electrici- ty	District Heating	Town Gas
Direct Energy Content [TJ]										
Total Energy Consumption	863 470	330 645	15 647	171 023	195 268	8 670	145 489	-3 420	148	-
- Primary Energy Production	1137 232	652 261	-	346 146	-	8 670	130 156	-	-	-
- Recycling	303	-	303	-	-	-	-	-	-	-
- Imports	595 312	88 308	250 204	-	200 099	-	19 018	37 535	148	-
- Exports	-824 915	-409 164	-196 910	-169 540	-4 661	-	-3 685	-40 955	-	-
- Border Trade	-8 160	-	-8 160	-	-	-	-	-	-	-
- International Marine Bunkers	-46 292	-	-46 292	-	-	-	-	-	-	-
- Stock Changes	4 345	-2 247	13 725	-6 555	- 578	-	-	-	-	-
- Statistical Difference	5 644	1 488	2 776	972	409	-	- 0	-	- 0	-
Energy Sector	-48 528	-330 645	313 699	-28 243	-	-	-	-2 978	- 360	-
- Extraction and Gasification	-28 243	-	-	-28 243	-	-	-	- 0	-	-
- Refinery Production	328 617	-	328 617	-	-	-	-	-	-	-
- Used in Refinery Production	-347 051	-330 645	-14 918	-	-	-	-	-1 127	- 360	-
- Used in Distribution	-1 851	-	-	-	-	-	-	-1 851	-	-
Transformation	-115 372	-	-14 622	-73 020	-184 164	-8 112	-90 480	134 241	120 338	447
- Large-scale Power Units	-92 678	-	-10 639	-27 408	-183 450	-	-15.237	89 601	54 456	-
- Wind Turbines & Hydro Power	-	-	-	-	-	-	-25.924	25 924	-	-
- Small-scale Power Units	-6 756	-	- 92	-31 431	- 527	-2 514	-15.988	17 022	26 774	-
- District Heating Plants	-1 036	-	-1 215	-5 736	- 117	- 110	-11.547	-	17 688	-
- Autoproducers	-7 033	-	-2 666	-7 986	- 70	-5 489	-21.784	8 418	22 545	-
- Gas Works	- 21	-	- 9	- 459	-	-	-	-	-	447
- Own Use in Production	-7 848	-	-	-	-	-	-	-6 723	-1 124	-
Distribution Loss etc.	-30 723	-	-	- 119	-	-	-	-6 490	-24 097	- 18
Final Energy Consumption	-668 846	-	-314 724	-69 641	-11 105	- 558	-55 009	-121 353	-96 028	- 429
- Non-energy Use	-13 235	-	-13 235	-	-	-	-	-	-	-
- Transport	-224 520	-	-222 986	-	-	-	- 252	-1 282	-	-
- Agriculture and Industry	-158 634	-	-53 346	-33 191	-11 096	- 286	-9 101	-43 572	-8 022	- 19
- Trade and Service Sector	-83 421	-	-3 127	-10 188	-	- 272	-2 737	-39 242	-27 822	- 33
- Households	-189 036	-	-22 029	-26 262	- 8	-	-42 918	-37 256	-60 184	- 378

Note. The energy balance provides an overview of supply, transformation, and consumption of energy. A more detailed statement of entries (black figures) and exits (red figures) of individual energy products is available in the table entitled Energy Supply and Consumption 2007.



Degree of Self-sufficiency

The degree of self-sufficiency is calculated as primary energy generation in relation to climateadjusted gross energy consumption. Self-sufficiency in oil is calculated as crude oil production in relation to the percentage of gross energy consumption represented by oil.

For the first time in recent history Denmark became self-sufficient in energy in 1997. In 2007, the degree of self-sufficiency was 130 per cent, as opposed to 52 per cent in 1990 and only 5 per cent in 1980. The degree of self-sufficiency peaked in 2004 at 156 per cent.

Denmark has been more than self-sufficient in oil since 1993, which results in annual net exports. In 2007, the production of oil was nearly double that of consumption. The degree of self-sufficiency also peaked for oil in 2004 and has been falling over the past three years.

Production of Primary Energy

								(Change
Direct Energy [TJ]	1980	1990	1995	2000	2004	2005	2006	2007	'90-'07
Observed Production Total Production	40 252	424 605	655 578	1 164 873	1 306 265	1 314 640	1 242 299	1 137 232	168%
Crude Oil	12 724	255 959	391 563	764 526	828 271	796 224	724 062	652 261	155%
Natural Gas	17	115 967	196 852	310 307	355 530	392 868	390 347	346 146	198%
Wastes, Non-renewable	3 044	4 434	5 374	6 790	8 328	8 444	8 661	8 670	96%
Renewable Energy	24 467	48 245	61 788	83 250	114 137	117 105	119 228	130 156	170%

Production and Consumption of Renewable Energy

									Change
Direct Energy [TJ]	1980	1990	1995	2000	2004	2005	2006	2007	′ 90-'07
Production of Renewable Energy	24 467	48 245	61 788	83 250	114 137	117 105	119 228	130 156	170%
Solar Energy	50	100	213	335	393	419	436	469	370%
Wind Power	38	2 197	4 238	15 268	23 699	23 810	21 989	25 823	1 075%
Hydro Power	123	101	109	109	95	81	84	101	0%
Geothermal Energy	-	96	94	116	164	132	534	575	499%
Biomass	23 766	42 537	52 445	60 925	79 813	82 104	84 053	90 469	113%
- Straw	4 840	12 481	13 050	12 220	17 939	18 485	18 538	18 331	47%
- Wood Chips	-	1 724	2 340	2 744	6 942	6 082	6 603	7 289	323%
- Firewood	7 621	8 757	11 479	12 432	15 666	17 667	19 017	25 022	186%
- Wood Pellets	-	1 575	2 099	2 984	3 275	3 262	2 343	2 606	65%
- Wood Waste	3 710	6 191	5 694	6 895	6 397	6 500	6 479	6 253	1%
- Wastes, renewable	7 595	11 065	17 533	23 601	28 945	29 348	30 104	30 133	172%
- Fish Oil	-	744	251	49	649	761	970	835	12%
Biogas	184	752	1 758	2 912	3 738	3 830	3 919	3 914	420%
Bio Diesel	-	-	-	-	2 444	2 670	3 685	3 685	•
Heat Pumps	306	2 462	2 931	3 585	3 790	4 058	4 528	5 120	108%
Import of Renewable Energy	-	-	233	2 466	11 647	16 286	17 190	19 018	•
Firewood	-	-	-	-	1 362	1 963	2 113	2 176	•
Wood Chips	-	-	-	305	771	1 521	1 651	1 822	•
Wood Pellets	-	-	233	2 161	9 513	12 802	13 275	14 768	•
Bioethanol	-	-	-	-	-	-	151	252	•
Export of Renewable Energy	-	-	-	-	2 444	2 670	3 685	3 685	•
Biodiesel	-	-	-	-	2 444	2 670	3 685	3 685	•
Consumption of Renewable Energy	24 467	48 245	62 022	85 716	123 340	130 721	132 733	145 489	202%



Production of Primary Energy

Oil and Gas Reserves



Natural Gas Consumption and Flaring on Platforms in the North Sea



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

Primary energy production has grown rapidly since 1980 when the production of renewable energy was dominant. The production of crude oil increased steadily up to 2004, when production dropped, and the production of natural gas took off from 1984.

In 2007, production of crude oil, natural gas and renewable energy etc. (including non-renewable waste) was 1137 PJ, as opposed to 425 PJ in 1990 and 40 PJ in 1980. Production fell by 8.5 per cent relative to 2006.

As in the previous year, production of crude oil and natural gas fell in 2007. Production of crude oil and natural gas fell by 9.9 per cent and 11.3 per cent, respectively. Production of renewable energy etc. increased by 8.6 per cent.

Crude oil and natural gas reserves are calculated as the volumes that it is financially feasible to recover using known technologies. The reserves are reassessed on a continuous basis in step with new discoveries and changes to calculation assumptions. Crude oil reserves today are therefore assessed to be significantly higher than in 1990, despite significant production since then.

The overall reserves of crude oil and natural gas at the end of the year in 2007 were calculated to be 214 million m³ and 105 billion Nm³, respectively, corresponding to 12 years of crude oil production and 12 years of natural gas production at 2007 activity levels.

Source: Oil and Gas Production in Denmark 2007

Extraction of crude oil and natural gas requires natural gas for production and for transport and offloading ashore. In 2007, consumption was 27.8 PJ, corresponding to 16.3 per cent of total Danish natural gas consumption. In 2006, consumption on the platforms was 28.0 PJ.

Furthermore, flaring (burning) takes place 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. Flaring is also covered by the EU emission trading scheme. 6.1 PJ were flared in 2007, as opposed to 7.1 PJ in 2006.

Production of Renewable Energy by Type



Consumption of Waste



Consumption of Renewable Energy



Renewable energy includes solar energy, wind energy, hydropower, geothermal energy, biomass (including bio-degradable waste), biodiesel, bioethanol, biogas, and heat pumps.

Production of renewable energy is calculated at 130.2 PJ in 2007, which is 10.9 PJ more than the previous year. This corresponds to an increase of 9.2 per cent. Between 1990 and 2007, production of renewable energy increased by 170 per cent.

Wind power increased by 3.8 PJ to 25.8 PJ in 2007, following a fall in 2006 due to poor weather conditions.

Production of biomass was 90.5 PJ in 2007. Of this figure, straw accounted for 18.3 PJ, wood accounted for 41.2 PJ, renewable waste for 30.1 PJ, and fish oil for 0.8 PJ. Compared to 2006, biomass production has increased by 7.6 per cent.

Consumption of waste for the production of electricity and district heating has increased significantly over time. From 1990 to 2000, the overall consumption of waste grew from 15.5 PJ to 38.8 PJ, corresponding to an increase 150 per cent.

In statistics for energy and CO₂ emissions, waste is analysed by two components: biodegradable waste and non-biodegradable waste. According to international conventions, biodegradable waste must be included as renewable energy.

The energy statistics assume that 77.7 per cent of the waste consumed in 2007 are biodegradable waste. This means that waste contributes significantly to the overall consumption of renewable energy.

Doubts have been raised as to the accuracy of this figure for waste that can be included as biodegradable waste. The issue is currently being clarified and this could mean this figure will be revised.

Production of renewable energy has increased dramatically since 1980. Furthermore, in recent years there has been an increase in net imports of renewable energy. In 2007, net imports of renewable energy were 15.3 PJ, as 19.0 PJ (primarily biomass) were imported and 3.7 PJ (bio diesel) were exported.

In 2007, total consumption of renewable energy was 145.5 PJ, as opposed to 132.7 PJ in 2006 and 48.2 PJ in 1990.

The increased use of renewable energy makes a significant contribution to reducing Danish CO_2 emissions.



Use of Renewable Energy in 2007

Renewable Energy – Share of Gross Energy Consumption



Share of Renewable Energy: EU Method



Total consumption of renewable energy in 2007 (production plus net imports) was 145.5 PJ, of which 90.6 PJ were used in the production of electricity and district heating. Renewable waste and wind power were the predominant sources in the production of electricity and district heating, accounting for 28.2 PJ and 25.8 PJ, respectively. Consumption of wood, straw and biogas accounted for 18.6 PJ, 13.5 PJ and 2.8 PJ, respectively.

55.0 PJ renewable energy were included in the final energy consumption, i.e. as process consumption and consumption for heating in the agriculture and industry sector and in the trade and service sector, as well as space heating in households. In final energy consumption, biomass, particularly firewood, is most prominent.

Observed energy consumption shows the registered amount of energy consumed in a calendar year. In 2007, renewable energy accounted for 16.8 per cent of total observed energy consumption, as opposed to 15.0 per cent the year before. In 1990 this figure was 6.4 per cent.

The adjusted gross energy consumption is derived by adjusting observed energy consumption for the fuel linked to foreign trade in electricity and by adjusting for climate variations with respect to a normal weather year. In 2007, renewable energy's share of adjusted gross energy consumption was 17.0 per cent, as opposed to 15.7 per cent the previous year. In 1990 this figure was 6.2 per cent.

Except for in years with large net exports of electricity, the renewable energy share shows an identical trend when calculated according to the two different methods.

The EU has not yet issued a final proposal for a method to calculate the renewable energy share. The following calculation method is therefore subject to reservations. For example, the extent to which contributions from heat pumps are to be included is uncertain.

The EU calculation method is based on final energy consumption as the expression of energy consumption by end-users, exclusive of crossborder trade and consumption for non-energy purposes. To final energy consumption are added distribution losses and own use in the production of electricity and district heating. In the EU statement, renewable energy is defined as end consumption of renewable energy and consumption of renewable energy for the production of electricity and district heating.

According to the EU statement (with the full contribution from heat pumps included), the renewable energy share was 19.1 per cent in 2007, as opposed to 17.4 per cent the year before, i.e. 1.5-2 percentage points greater than in the national statements.

	1980	1990	2000	2006	2007
Total Number of Wind Turbines	68	2 664	6 256	5 266	5 212
- 499 kW	68	2 654	3 683	2 066	2 010
500 - 999 kW		8	2 294	2 579	2 582
1 000 - 1 999 kW		2	251	363	363
2 000 - kW		2 664	28	258	257
Total Capacity of Wind Turbines [MW]	3	326	2 390	3 135	3 124
-499 kW	3	317	537	385	376
500 - 999 kW		6	1 518	1 748	1 751
1 000 - 1 999 kW		3	279	444	444
2 000 - kW			56	558	554

Number of Wind Turbines and Capacity by Size





Wind Power Capacity and Share of Domestic Electricity Supply



Total wind power capacity fell slightly (11MW / 0.4 per cent) from 2006 to 2007. This is because a number of old and small plants were scrapped, while only a few new plants were set into operation. Also contributing to the fall is the fact that a large turbine of more than 4 MW was taken out of operation during 2007 at the trial plant Høvsøre.

For some years now, the trend has been toward fewer but large wind power plants. Since 2000, the total number of turbines has therefore decreased by more than 1,000, which includes a fall of more than 1,600 in the number of small turbines under 500 kW and a rise of more than 600 in the number of turbines above 500 kW.

For the same reason, the small turbines below 500 kW today account for only 12 per cent of the total capacity, whereas this figure was 22 per cent in 2000.

In 2007, wind power accounted for 19.7 per cent of domestic electricity supply, compared to 16.9 per cent in 2006 and only 1.9 per cent in 1990. In 2006, the share was affected by poor weather conditions.

Trends in wind power capacity and production do not always correspond, as annual wind power production is highly dependent on wind conditions, which can be quite variable in Denmark.

Wind power capacity in 2007 was 3 124 MW, as opposed to 3 135 MW the year before. In 1990 wind power capacity was 343 MW.

Electricity Production by Type of Producer

									Change
Direct Energy Content [TJ]	1980	1990	1995	2000	2004	2005	2006	2007	'90 - '07
Total Gross Electricity Production	97 508	93 518	131 987	129 776	145 583	130 469	164 199	140 964	5.7%
Large-scale Power Units	44 155	7 494	15 119	8 871	175	49	127	106	-98.6%
Large-scale CHP Units	52 056	80 639	96 216	73 809	88 501	74 932	112 864	89 494	11.0%
- Electricity Production	36 026	50 157	61 383	41 584	55 002	38 402	75 399	54 055	7.8%
Small-scale CHP Units	18	988	11 869	21 547	23 265	21 254	19 797	17 022	1 623%
Autoproducers	1 118	2 099	4 436	10 172	9 848	10 343	9 338	8 418	301%
- Electricity Production ¹⁾	-	-	17	14	14	15	14	15	•
- CHP 1)	1 118	2 099	4 419	10 158	9 834	10 328	9 324	8 402	300%
Wind Turbines ¹⁾	38	2 197	4 238	15 268	23 699	23 810	21 989	25 823	1 075%
Hydro Power Units 1)	123	101	109	109	95	81	84	101	•
Own Use in Production	-5 731	-6 118	-7 372	-5 776	-7 322	-6 599	-8 733	-6 723	9.9%
Large-scale Power Units	- 2 787	- 590	- 774	- 312	- 42	- 2	- 17	- 25	-95.8%
Large-scale CHP Units	- 2 944	- 5 509	- 6 576	- 4 993	- 6 672	- 6 033	- 8 192	- 6 147	11.6%
Small-scale CHP Units	-	- 19	- 23	- 472	- 608	- 564	- 524	- 552	2 806%
Total Net Electricity Production	91 777	87 400	124 615	123 999	138 262	123 870	155 466	134 241	53.6%
Net Electricity Exports	4 453	- 25 373	2 858	- 2 394	10 340	- 4 932	24 971	3 420	-113%
Domestic Supply	87 323	112 773	121 757	126 393	127 922	128 801	130 495	130 821	16.0%
Consumption in Transformation	-	-	- 11	- 1	- 2	-	-	-	•
Distribution Loss etc. 2)	- 7 497	- 8 886	- 8 476	- 7 650	- 6 595	- 5 573	- 5 316	- 6 490	-27.0%
Domestic Electricity Con- sumption	79 827	103 887	113 270	118 742	121 325	123 228	125 179	124 331	19.7%
Consumption in the Energy Sector	- 1 256	- 1 784	- 2 095	- 1 911	- 2 622	- 2 760	- 2 978	- 2 978	67.0%
Final Electricity Consumption	78 571	102 103	111 174	116 831	118 703	120 469	122 201	121 353	19.0%

¹⁾ Gross and net production are by definition identical.

²⁾ Determined as the difference between supply and consumption.



Electricity Production by Type of Producer

Electricity is generated at large-scale power plants, at small-scale CHP plants, and by autoproducers (i.e. producers outside the supply sector as such). Furthermore, an increasing proportion of electricity is produced at wind power plants. Large-scale power plants generate electricity, partly in separate production and partly in combined heat and power production. Separate electricity generation from large-scale power plants varies greatly from year to year due to fluctuations in foreign trade in electricity. In 2007, Denmark saw small net exports of electricity, while in 2006 net exports of electricity were significantly greater.

Total electricity production in 2007 was 141.0 PJ, large-scale power plants producing 89.6 PJ of this. 54.1 PJ of the latter figure originated from separate production. Electricity generation from small-scale plants and autoproducers was 17.0 PJ and 8.4 PJ, respectively. Wind power plants contributed 25.8 PJ, which is an increase of 17.4 per cent compared to 2006, which was characterised by poor weather conditions.

									Change
Direct Energy Content [TJ]	1994	1996	1998	2000	2004	2005	2006	2007	'94 - '07
Total Gross Electricity Production	144 708	192 879	147 998	129 776	145 583	130 468	164 199	140 964	-2.6%
Oil	9 547	20 808	17 906	15 964	5 881	4 933	5 811	4 616	-51.7%
- Orimulsion	-	14 495	12 890	13 467	7	-	-	-	•
Natural Gas	8 206	20 442	29 260	31 589	35 807	31 606	33 903	24 886	203%
Coal	119 844	142 795	85 151	60 022	67 232	55 665	88 439	71 631	-40.2%
Surplus Heat	-	123	136	139	40	-	-	-	•
Waste, non-renewable	463	610	702	994	1 163	1 459	1 472	1 416	206%
Renewable Energy	6 647	8 101	14 844	21 068	35 459	36 805	34 574	38 415	478%
Solar Energy	0	1	1	4	7	8	8	9	3 017%
Wind Power	4 093	4 417	10 152	15 268	23 699	23 810	21 989	25 823	531%
Hydro Power	117	69	98	109	95	81	84	101	-14.1%
Biomass	2 116	3 207	3 911	4 936	10 646	11 889	11 517	11 504	444%
- Straw	293	748	960	654	3 057	3 088	3 359	3 185	9 88%
- Wood	429	340	512	828	3 546	3 730	3 041	3 398	691%
- Waste, renewable	1 393	2 120	2 439	3 454	4 043	5 071	5 117	4 921	253%
Biogas	321	407	682	751	1 013	1 017	976	978	205%

Electricity Production by Fuel

Electricity from Renewables: Share of Domestic Electricity Supply¹⁾

									Change
[%]	1994	1996	1998	2000	2004	2005	2006	2007	'90 - '07
Renewable Energy	5,2	5,9	11,2	15,9	26,2	27,2	24,8	27,9	435%
Solar Energy	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	•
Wind Power	3,2	3,2	7,7	11,6	17,5	17,6	15,8	18,8	484%
Hydro Power	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	-21%
Biomass	1,7	2,3	3,0	3,7	7,9	8,8	8,3	8,4	403%
- Straw	0,2	0,5	0,7	0,5	2,3	2,3	2,4	2,3	907%
- Wood	0,3	0,2	0,4	0,6	2,6	2,8	2,2	2,5	632%
- Waste, renewable	1,1	1,5	1,8	2,6	3,0	3,7	3,7	3,6	227%
Biogas	0,3	0,3	0,5	0,6	0,7	0,8	0,7	0,7	182%

1) Calculated in accordance with the EU Directive on electricity production from renewable energy sources, i.e. the renewable energy share has been calculated in relation to the overall gross electricity production including net imports of electricity. Calculated according to Energy Statistics guidelines, the share of electricity from renewable energy wind power was 29.3 per cent and 19.7 per cent, respectively in 2007, as opposed to 26.4 per cent and 16.8 per cent in 2006.



Electricity Production by Fuel

Electricity production was 141 PJ in 2007, which is 14.2 per cent less than the previous year. The main reason for this drop was a significant fall in Danish net exports from 2006 to 2007 due to increased hydro electric power production and the associated falling prices on the Nordic wholesale market for electricity.

71.6 PJ of the total electricity generated in 2007 were generated by using coal, and 24.9 PJ using natural gas, which corresponds to a fall of 19 per cent and 26.6 per cent, respectively, compared to the previous year. 38.4 PJ electricity were produced from renewable energy, which is an increase of 11.1 per cent relative to 2006. In the figure, production from renewable energy and production from non-renewable waste (which accounts for 1.4 PJ) are shown together.

With 25.8 PJ, wind power plants provided the biggest contribution to renewable energy.

4.6 PJ electricity generation in 2007 was generated using oil.

Fuel Consumption in Electricity Production

Direct Energy Content [TJ]	1980	1990	1995	2000	2004	2005	2006	2007	'90 - '07
Total Fuel Consumption	261 835	227 001	304 741	276 974	300 191	265 318	346 072	292 612	28.9%
Oil	47 533	9 215	33 049	40 356	14 087	11 867	13 848	11 084	20.3%
- Orimulsion	-	-	19 672	33 503	18	-	-	-	•
Natural Gas	-	6 181	30 413	68 868	74 689	65 912	69 382	52 142	744%
Coal	214 012	207 173	226 853	134 205	154 353	127 119	204 491	166 865	-19.0%
Waste, non-renewable	-	167	1 535	2 628	3 228	3 798	4 017	3 809	2 188%
Renewable Energy	290	4 265	12 891	30 917	53 834	56 623	54 333	58 712	1 276%
Solar Energy	-	-	0	4	7	8	8	9	•
Wind Power	38	2 197	4 238	15 268	23 699	23 810	21 989	25 823	1 075%
Hydro Power	123	101	109	109	95	81	84	101	•
Biomass	90	1 523	7 421	13 674	27 710	30 321	30 013	30 659	1 912%
- Straw	-	363	1 505	2 021	7 717	7 715	8 101	7 996	2 103%
- Wood	90	745	909	2 518	8 773	9 405	7 950	9 424	1 165%
- Waste, renewable	-	415	5 007	9 135	11 220	13 201	13 963	13 240	3 087%
Biogas	39	444	1 122	1 861	2 323	2 403	2 239	2 120	378%

Fuels Other than Coal in Electricity Production





Net Export of Electricity by Country

Until the early 1990s, coal was the dominant fuel used in the generation of electricity. In 1990, other types of fuel than coal only accounted for 8.7 per cent of total fuel consumption.

Change

Until the mid 1980s, oil more or less constituted the remainder of fuel consumption, but from then on the shares of natural gas and renewable energy etc. in electricity generation have been increasing.

In 2007, oil, natural gas, and renewable energy etc. together accounted for 43.0 per cent of fuel consumption in electricity production. In 2006, the figure was 40.9 per cent. The modest increase is due to an increase in the share of renewable energy and a decrease in the share of natural gas. Renewable energy increased from 16.9 per cent to 21.4 per cent and the natural gas share fell from 20.0 per cent to 17.8 per cent.

Denmark's foreign trade in electricity varies more than in any other European country. Foreign trade is strongly affected by price trends on the Nordic Electricity Exchange, Nordpool, which is significantly influenced by varying precipitation conditions in Norway and Sweden where hydropower dominates electricity generation.

In 2007, Denmark's overall net exports of electricity were 3.4 PJ. This was the result of net exports to Germany of 22.8 PJ and net imports from both Norway and Sweden of 10.1 PJ and 9.3 PJ, respectively.

Change

[MW]	1994	1996	1998	2000	2004	2005	2006	2007	'94 - '07
Total	10 774	11 045	12 187	12 600	13 305	13 017	12 973	12 969	20.4%
Large-scale Units	9 126	8 575	8 783	8 160	8 025	7 692	7 658	7 656	-16.1%
- Electricity	2 186	2 188	1 429	1 429	835	313	573	561	-74.3%
- CHP	6 940	6 387	7 354	6 731	7 190	7 379	7 085	7 095	2.2%
Small-scale Units	773	1 255	1 412	1 462	1 522	1 554	1 553	1 564	102%
Autoproducers	339	382	534	574	620	628	615	613	80.7%
Solar Energy	0	0	1	2	2	3	3	3	•
Wind Turbines	527	822	1 446	2 392	3 125	3 129	3 135	3 124	493%
Hydro Power Units	9	10	11	10	11	11	9	9	2.2%

Electricity Capacity

Electricity Capacity



CHP Proportion of Electricity and District Heating Production



Total electricity production capacity has increased significantly since 1983. Wind power capacity also increased and in 2007 accounted for 24.1 per cent of the total electricity capacity of 12,969 MW. However, in recent years, overall electricity capacity and wind power capacity have remained almost unchanged.

The electricity capacity of large-scale power plants has varied throughout the period, e.g. due to the phasing out of old coal-fired power blocks and the introduction of new, more efficient blocks.

Wind power capacity was 3,124 MW in 2007, of which offshore wind turbines contributed 424 MW.

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

In 2007, 52.9 per cent of thermal electricity (i.e. the total generation excluding wind energy and hydropower) were generated in combination with heat, as opposed to 46.8 per cent the previous year. This increase is in particular due to smaller exports of electricity in 2006, which led to a fall in electricity generation at separate electricity generating plants. In 1990, the share was 36.8 per cent, while the 1980 figure was 17.6 per cent.

In 2007, 80.5 per cent of district heating were produced together with electricity. The corresponding figures in 1990 and 1980 were 58.8 per cent and 39.1 per cent, respectively.

District Heating Production by Producer

									change
Direct Energy Content [TJ]	1980	1990	1995	2000	2004	2005	2006	2007	'90 - '07
Total Gross Production	79 016	92 411	119 090	119 725	129 950	128 356	127 626	121 462	31.4%
Large-scale CHP Units	30 757	51 511	64 388	56 271	58 558	58 246	58 977	54 456	5.7%
Small-scale CHP Units	30	2 145	19 665	33 027	34 976	32 727	30 353	26 774	1 148%
District Heating Plants	43 655	27 755	20 393	12 539	15 131	16 597	17 341	17 688	-36.3%
Autoproducers ¹⁾									
- CHP Units	130	694	3 857	8 375	12 212	14 884	15 423	16 176	2 231%
- Heat Units	4 4 4 4	10 306	10 787	9 513	9 074	5 901	5 531	6 368	-38.2%
Own Use in Production	-	-	-1 438	-1 533	- 938	-1 308	-1 354	-1 124	•
Large-scale CHP Units	-	-	-1 156	- 866	- 393	- 384	- 353	- 270	•
Small-scale CHP Units	-	-	- 152	- 637	- 440	- 656	- 691	- 575	•
District Heating Plants	-	-	- 130	- 30	- 105	- 267	- 311	- 280	•
Total Net Production	79 016	92 411	117 652	118 192	129 013	127 048	126 272	120 338	30.2%
Net Imports	-	122	141	144	155	153	153	148	21.3%
Domestic Supply	79 016	92 533	117 793	118 336	129 168	127 201	126 425	120 486	30.2%
Consumption in Refineries	-	- 428	- 380	- 275	- 248	- 355	- 360	- 360	-15.7%
Distribution Loss	-19 754	-18 507	-23 559	-23 667	-25 834	-25 440	-25 285	-24 097	30.2%
Final Consumption of District Heating	59 262	73 599	93 854	94 393	103 086	101 406	100 779	96 028	30.5%

¹⁾ Gross and net production are by definition identical



District Heating Production by Type of Producer

District heating production is generated at largescale CHP plants, small-scale CHP plants, district heating plants and by autoproducers.

Change

Most district heating production comes from largescale CHP plants. Since the late 1980s and during the 1990s, the share produced at small-scale plants increased as purely heat generating district heating plants were converted into small-scale combined heat and power generation. The same period saw an increase in district heating by autoproducers.

District heating production was 123.2 PJ in 2007, which is 3.5 per cent less than in 2006. The reason for the slight drop has not yet been analysed in detail. Compared to 1990, district heating production has increased by 40.0 per cent.

									Change
Direct Energy Content [TJ]	1994	1996	1998	2000	2004	2005	2006	2007	'94 - '07
Total Gross Production	113 092	131 800	127 247	119 725	129 950	128 356	127 626	121 462	7.4%
Oil	6 335	8 892	7 530	4 433	6 157	6 103	6 266	4 676	-26.2%
- Orimulsion	-	1 033	1 080	1 291	1	-	-	-	•
Natural Gas	25 370	34 222	36 985	41 620	40 665	39 377	38 911	34 790	37.1%
Coal	55 748	58 399	50 685	38 873	36 451	34 187	34 446	32 762	-41.2%
Surplus Heat	2 676	2 917	3 104	3 622	3 450	3 110	3 072	3 321	24.1%
Waste, non-renewable	3 374	3 603	3 902	4 295	5 291	5 319	5 341	5 544	64.3%
Renewable Energy	19 588	23 767	25 042	26 881	37 935	40 259	39 589	40 370	106%
Solar Energy	6	6	16	24	50	49	46	47	715%
Geothermal Energy	42	32	54	58	82	66	267	287	578%
Biomass	19 014	23 086	24 174	25 818	36 720	38 903	38 207	38 960	105%
- Straw	4 318	5 502	5 326	5 696	7 028	7 681	7 303	7 379	70.9%
- Wood	4 327	5 008	5 274	5 153	10 739	12 086	11 503	11 565	167%
- Fish Oil	223	52	13	39	563	650	838	747	235%
- Waste, renewable	10 146	12 523	13 561	14 930	18 390	18 487	18 564	19 269	89,9%
Biogas	348	510	765	903	995	1 169	987	987	184%
Heat Pumps	178	133	33	78	88	72	81	89	-50.0%

District Heating Production by Fuel

Fuel Consumption in District Heating Production

									Change
Direct Energy Content [TJ]	1980	1990	1995	2000	2004	2005	2006	2007	'90 - '07
Total Fuel Consumption	75 443	69 878	77 823	73 286	79 994	78 712	78 267	77 384	10.7%
Oil	51 304	4 766	5 076	3 726	4 083	4 322	4 050	3 529	-26.0%
- Orimulsion	-	-	241	646	1	-	-	-	•
Natural Gas	-	12 131	18 883	22 203	21 918	22 044	21 885	20 420	68.3%
Coal	13 527	30 898	28 701	19 459	18 238	17 121	17 288	17 298	-44.0%
Surplus Heat	-	-	-	-	-	-	1	2	•
Waste, non-renewable	2 856	3 998	3 533	3 811	4 494	4 040	3 985	4 302	7.6%
Renewable Energy	7 756	18 085	21 630	24 088	31 262	31 185	31 058	31 832	76.0%
Solar Energy	-	6	6	24	50	53	47	50	739%
Geothermal Energy	-	96	94	116	164	132	534	575	499%
Biomass	7 741	17 902	21 138	23 290	30 328	30 222	29 789	30 498	70.4%
- Straw	290	3 640	4 753	5 013	5 386	5 934	5 596	5 499	51.1%
- Wood	324	3 541	4 606	4 983	8 675	9 484	9 371	9 210	160%
- Fish Oil	-	744	251	49	649	761	970	835	12.3%
- Waste, renewable	7 127	9 977	11 528	13 244	15 619	14 043	13 852	14 954	49.9%
Biogas	15	81	334	582	641	701	608	621	667%
Heat Pumps	-	-	57	75	80	76	80	87	•

Composition of Fuels in District Heating Production



There has been a significant change in the fuel used in the production of district heating in the period 1980 to 2007. In 2007, the distribution was: 46.6 per cent renewable energy, etc. (bio-mass being 39.4 per cent), 26.4 per cent natural gas, 22.4 per cent coal and 4.6 per cent oil.

Consumption of natural gas and renewable energy etc. has increased year by year. In 1990, the shares of natural gas and renewable energy etc. were 17.4 per cent and 31.6 per cent, respectively (including biomass 25.6 per cent).

The percentage of oil fell sharply from 1980 to 1990, and has subsequently remained more or less constant. Consumption of coal decreased significantly from 1990 to 2007. In 1990, this constituted 44.2 per cent of the total consumption of fuel for district heating.

Gross Energy Consumption

									Change
Fuel Equivalent [PJ]	1980	1990	1995	2000	2004	2005	2006	2007	'90-'07
Adjusted Total Gross Energy Consumption	814	819	840	837	838	848	862	874	6.7%
Fuels	814	819	840	837	838	848	862	874	6.7%
Oil	546	355	374	374	347	350	345	349	-1.8%
Natural Gas	0	82	134	192	195	192	191	175	114%
Coal and Coke	241	327	265	176	163	166	182	192	-41.2%
Waste, non-renewable	3	5	5	7	8	9	9	9	83.9%
Renewable Energy	24	50	62	88	124	132	135	149	195%
Energy Products	814	819	840	837	838	848	862	874	6.7%
Oil	446	338	335	327	328	331	329	334	-1.1%
Natural Gas	0	59	83	98	99	100	102	101	70.5%
Coal and Coke	22	17	16	12	11	11	11	11	-34.4%
Waste, non-renewable	0	0	0	0	1	1	1	1	93.5%
Renewable Energy	16	28	28	33	39	44	50	59	108%
Electricity	249	297	298	286	276	279	285	285	-3.9%
District Heating	73	78	79	79	82	81	83	83	6.9%
Town Gas	7	2	1	1	1	1	1	0	-73.8%
Uses	814	819	840	837	838	848	862	874	6.7%
Energy Sector	17	28	38	44	49	52	48	48	71.4%
Non-energy Use	16	13	13	13	13	12	12	13	1.8%
Transport	146	172	186	201	211	215	217	226	31.8%
Agriculture and Industry	228	227	233	227	214	214	219	217	-4.6%
Trade and Service	130	132	127	125	126	127	131	133	0.8%
Households	276	248	242	227	225	229	234	237	-4.3%
Observed Total Energy Consumption [PJ]	830	753	841	815	846	833	886	863	14.7%
Oil	555	343	372	368	345	346	345	346	0.8%
Natural Gas	0	76	133	186	195	188	191	171	125%
Coal and Coke	252	255	272	166	184	155	233	195	-23.4%
Waste, non-renewable	3	4	5	7	8	8	9	9	9 5.5%
Renewable Energy	24	48	62	86	123	131	133	145	202%
Foreign Trade with Electricity	- 4	25	- 3	2	- 10	5	- 25	- 3	•
Foreign Trade with District Heating	-	0	0	0	0	0	0	0	21.3%

Observed Energy Consumption and Adjusted Gross Energy Consumption



 $^{\ast)}$ Adjusted for net exports of electricity and climate variations

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. Additionally, the adjusted gross energy consumption is adjusted for climate variations with respect to a normal weather year. The purpose of this consumption figure is to provide a clear picture of trends in domestic energy consumption.

The adjusted gross energy consumption was 874 PJ in 2007, which is 1.4 per cent higher than in 2006. Consumption has gone up by 6.7 per cent since 1990.

Observed energy consumption in 2007 was 863 PJ, which is 2.5 per cent less than in 2006. The primary reason for this is a significant fall in the consumption of fuel for electricity production due to decreases in net exports of electricity. Compared to 1990, observed energy consumption is 14.7 per cent higher. This should be seen in the context of significant net imports of electricity in 1990 as opposed to net exports of electricity in 2007.



Gross Energy Consumption by Fuel

Gross Energy Consumption by Energy Product after Transformation



Gross Energy Consumption by Use



The adjusted gross energy consumption in 2007 is 6.7 per cent higher than in 1990, but consumption of individual fuels has followed rather varied trends.

Consumption of oil fell steeply until 1993, when it rose again until 1997 to stabilise at around 383 PJ and since 2004 at around 350 PJ. Oil consumption has fallen by 1.8 per cent since 1990. The consumption of coal, which takes place primarily at CHP plants, has decreased by 41.2 per cent since 1990. The consumption of coal, however, has gone up in recent years. Consumption of natural gas and renewable energy etc. (i.e. renewable energy and non-renewable waste) grew by 114 per cent and 185 per cent, respectively, in the period.

In 2007, the consumption of renewable energy etc. increased by 9.6 per cent compared to 2006. Consumption of oil and coal grew by 1.0 per cent and 5.5 per cent, respectively, whereas consumption of natural gas went down by 8.1% per cent.

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

Fuel consumption in electricity production was 285 PJ in 2007, which is unchanged from 2006. Compared to 1990, fuel consumption fell by 3.9 per cent due to more efficient electricity production and a growing proportion of wind energy.

Fuel consumption for district heating was 83 PJ in 2007, which is also unchanged from 2006. Compared to 1990, fuel consumption has increased by 6.9 per cent. Also in this regard, production has become more efficient as district heating production has increased by 31.4 per cent since 1990.

For gross energy consumption broken down by use, note that electricity, district heating and town gas are included with their associated fuel consumptions.

Gross energy consumption for transport was 4.0 per cent higher in 2007 than the year before. Consumption by the agriculture and industry sector fell by 1.3 per cent. In households and the trade and service sector, gross energy consumption rose by 1.2 per cent and 1.5 per cent, respectively, while gross energy consumption in the energy sector (platforms in the North Sea and oil refineries) was unchanged.

Compared with 1990, gross energy consumption for transport increased by 31.8 per cent. In the trade and service sector, gross energy consumption grew by 0.8 per cent, while it fell by 4.6 per cent and 4.3 per cent, respectively, for the agriculture and industry sector and for households. From 1990 to 2007, developments were very much affected by the fact that is has been possible to generate electricity and district heating with ever smaller fuel consumption.

Direct Energy Content [T]	1090	1990	1005	2000	2004	2005	2006	2007	
	1960	1990	1995	2000	2004	2005	2006	2007	90- 07
Climate Adjusted Total Final Energy Consumption	609 623	604 200	635 164	649 106	658 741	663 870	677 789	685 248	13.4%
By Energy Products									
- Oil	430 776	321 946	312 653	310 367	310 040	309 999	312 569	316 984	-1.5%
- Natural Gas	-	50 060	70 192	72 674	72 052	72 415	73 476	72 739	45.3%
- Coal	21 623	17 243	16 186	12 389	11 111	10 826	11 363	11 310	-34.4%
- Waste, non-renewable	183	299	310	379	616	615	681	578	9 3.5%
- Renewable Energy	16 059	28 143	27 908	32 883	39 274	44 165	49 882	58 524	108%
- Electricity	78 336	103 176	111 346	117 572	118 955	120 732	122 673	121 857	18.1%
- District Heating	57 715	81 679	95 297	102 152	106 095	104 570	106 646	102 805	25. 9 %
- Town Gas	4 930	1 654	1 271	691	599	547	500	451	-72.7%
By Uses									
Non-energy Use	16 253	13 004	13 403	12 619	12 901	12 064	12 349	13 235	1.8%
Transport	145 158	170 216	184 461	199 333	208 980	213 668	215 722	224 520	31.9%
Road Transport	102 766	129 943	139 710	153 770	160 515	162 090	166 746	174 238	34.1%
Rail Transport	5 016	4 765	4 957	4 339	4 255	4 488	4 417	4 363	-8.4%
Sea Transport, domestic	5 588	6 344	7 625	4 877	5 134	5 738	4 981	4 508	-28.9%
Air Transport	23 642	27 515	28 720	34 822	35 797	37 627	37 839	39 002	41.7%
Military Transport	8 145	1 649	3 449	1 525	3 280	3 726	1 739	2 410	46.1%
Agriculture and Industry	167 712	159 453	167 794	167 606	160 247	158 656	163 205	160 539	0.7%
Agriculture and Forestry	18 484	22 584	22 083	24 110	22 555	22 197	23 261	21 905	-3.0%
Horticulture	11 338	10 540	9 821	8 588	7 273	7 412	7 821	7 466	-29.2%
Fishing	7 312	10 785	8 324	9 451	7 392	7 488	7 469	6 887	-36.1%
Manufacturing	124 586	109 250	120 235	117 806	115 061	113 406	116 424	115 739	5.9%
Construction	5 992	6 295	7 331	7 651	7 967	8 152	8 230	8 542	35.7%
Trade and Service	78 319	77 056	77 718	80 638	84 941	85 029	87 871	86 596	12.4%
Wholesale	19 045	13 795	13 307	13 895	13 195	12 895	13 154	13 040	-5.5%
Retail Trade	9 702	8 883	8 728	9 324	10 032	9 981	10 301	10 173	14.5%
Private Service	25 955	28 812	31 239	32 904	36 085	36 213	38 029	37 577	30.4%
Public Service	23 617	25 566	24 444	24 515	25 629	25 940	26 388	25 806	0.9%
Households	202 180	184 470	191 788	188 911	191 671	194 453	198 641	200 359	8.6%
Single Family Houses	153 863	136 804	141 652	139 165	140 851	143 986	147 853	150 969	10.4%
Multi-family Houses	48 317	47 666	50 136	49 746	50 820	50 467	50 789	49 390	3.6%
Observed [TJ] Total Final Energy Consumption	616 980	580 617	631 471	630 843	651 864	656 463	663 998	668 846	15.2%



Final Energy Consumption by Use

Final Energy Consumption by Energy Product



Gross Energy Consumption and Final Energy Consumption per DKK Million GDP Adjusted

TJ per DKK Million GDP (2000 Prices) 1,2 0,8 0,4 0,4 0,0 1980 '85 '90 '95 '00 '05 '07 Gross Energy Consumption Final Energy Consumption 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 trade and service sector and energy consumption by households.

Final energy consumption in 2007 was 685 PJ, which is 1.1 per cent higher than in 2006. Final consumption was 13.4 per cent higher compared with 1990.

Energy consumption in the transport sector increased steadily throughout most of the period. From 1990 to 2007, consumption increased by 31.9 per cent. Energy consumption in the agriculture and industry sector and in the trade and service sector increased by 0.7 per cent and 12.4 per cent, respectively, from 1990 to 2007, while consumption by households increased by 8.6 per cent.

Final energy consumption rose by 1.1 per cent from 2006 to 2007. Consumption of oil went up by 1.4 per cent, while consumption of natural gas and coal (for other uses than electricity and district heating production) fell by 1.0 per cent and 0.5 per cent, respectively. Consumption of electricity and district heating fell by 0.7 per cent and 3.6 per cent, respectively.

Since 1990, final consumption of natural gas has increased by 45.3 per cent, while the consumption of electricity and district heating grew by 18.1 per cent and 25.9 per cent, respectively. Consumption of oil and coal fell by 1.5 per cent and 34.4 per cent, respectively, in the same period.

Final consumption of renewable energy was 17.3 per cent higher in 2007 than the year before. Compared to 1990, consumption of renewable energy has gone up 108 per cent.

Since 1980, economic activity in Denmark, measured in terms of gross domestic product (GDP) in 2000 prices (chained values), has increased much faster than energy consumption.

In 2007, gross energy consumption was 0.601 TJ per DKK million GDP (calculated in 2000 prices, chained values), as opposed to 0.998 TJ in 1980; i.e. fuel intensity was reduced by 39.8 per cent during this period. From 1990, this reduction was 26.6 per cent. Intensity fell by 0.3 per cent in 2007 compared to the previous year.

A comparison of developments in GDP with developments in final energy consumption shows that energy intensity fell by 21.9 per cent from 1990 to 2007. This reduction is less than the figure above, because the increased efficiency of the transformation sector is not included. Intensity fell by 0.5 per cent in 2007 relative to year before.

,	•								Change
Direct Energy Content [TJ]	1980	1990	1995	2000	2004	2005	2006	2007	'90-'07
Climate Adjusted Total Final Electricity Consumption	78 336	103 176	111 346	117 572	118 955	120 732	122 673	121 857	18.1%
Rail Transport	479	736	854	1 253	1 333	1 351	1 353	1 282	74.2%
Agriculture and Industry	27 682	36 597	40 444	43 265	43 016	44 093	44 483	43 641	19.2%
Agriculture and Forestry	5 086	5 457	5 522	5 968	5 730	5 904	6 034	5 899	8.1%
Horticulture	467	686	960	1 079	1 113	971	1 055	952	38.9%
Manufacturing	21 362	29 400	32 854	35 004	34 954	35 944	36 035	35 328	20.2%
Construction	767	1 054	1 107	1 214	1 218	1 274	1 359	1 463	38.7%
Trade and Service	21 788	30 147	32 847	35 715	37 226	37 479	38 434	39 332	30.5%
Wholesale	3 599	5 451	5 305	5 936	5 989	5 973	6 075	6 249	14.6%
Retail Trade	3 784	5 202	5 134	5 742	6 174	6 260	6 391	6 400	23.0%
Private Service	8 347	11 715	13 391	14 903	15 735	15 866	16 562	17 191	46.7%
Public Service	6 058	7 778	9 016	9 134	9 327	9 380	9 406	9 493	22.0%
Households	28 388	35 696	37 202	37 339	37 381	37 810	38 404	37 602	5.3%
Single Family Houses	21 431	27 011	28 221	28 210	28 071	28 279	28 749	27 989	3.6%
Multi-family Houses	6 957	8 686	8 980	9 129	9 310	9 530	9 655	9 613	10.7%
Observed Total Final Electricity Consumption	78 571	102 103	111 174	116 831	118 703	120 469	122 201	121 353	18.9%

Final Electricity Consumption

Final Electricity Consumption by Sector



Share of Electricity in Total Energy Consumption



Electricity consumption in manufacturing increased by 20.2% per cent from 1990 to 2007. From 1997 to 2003 electricity consumption was stagnant and then increased again up to 2006. In 2007, however, electricity consumption fell by 2.0 per cent.

The trade and service sector has seen increasing electricity consumption. From 1990 to 2007, electricity consumption grew by 30.5 per cent. In 2007, electricity consumption was 2.3 per cent higher than the year before.

Following a sharp increase in the electricity consumption of households from 1980 to 1990, electricity consumption increased slightly up to 2006. In 2007, electricity consumption was 2.1 per cent lower than the year before. Electricity consumption increased by 5.3 per cent from 1990 to 2007.

From 1980 to 1990, the proportion of total energy consumption represented by electricity consumption grew significantly in all areas of consumption except transport. Since then, the proportion first grew moderately until the late 1990s and then stagnated. In 1980, the proportion was 12.8 per cent, in 1990 it was 17.1 per cent, in 2000 it was 18.1 per cent and in 2007 it was 17.8 per cent.

The share of electricity consumption represented by the trade and service sector increased until 2001 but since then it has remained almost unchanged. In 2007, electricity consumption amounted to 45.4 per cent of total energy consumption. In manufacturing and households, the share of electricity was 30.5 per cent and 18.8 per cent, respectively, in 2007. In households, the share was lower in 2007 than in 1990.

CO₂ Emissions, Observed

1000 tonnes

CO ₂ Emissions, Observed	1980	1990	1995	2000	2004	2005	2006	2007	' 9 0-'07
CO ₂ Emissions, Total	64 024	52 724	59 567	52 456	52 757	49 430	57 294	52 569	-0.3%
CO ₂ Emissions by Fuels	64 024	52 724	59 567	52 456	52 757	49 430	57 294	52 569	-0.3%
Oil	40 048	24 178	26 197	26 058	24 153	24 018	24 301	24 300	0.5%
Natural Gas	1	4 323	7 546	10 624	11 144	10 676	10 847	9 704	125%
Coal	23 975	24 222	25 824	15 774	17 461	14 737	22 146	18 565	-23.4%
CO ₂ Emissions by Uses	64 024	52 724	59 567	52 456	52 757	49 430	57 294	52 569	-0.3%
Energy Sector	880	1 391	1 884	2 312	2 427	2 429	2 483	2 470	77.6%
Transformation	29 893	24 831	30 143	23 297	23 321	19 970	27 634	22 738	-8 .4%
Electricity Production	24 038	20 741	25 867	19 855	19 989	16 724	24 410	19 639	-5.3%
District Heating Production	5 286	3 989	4 198	3 399	3 295	3 213	3 195	3 072	-23.0%
Town Gas Production	570	101	78	42	37	33	29	27	-73.5%
Final Consumption	33 251	26 501	27 540	26 847	27 010	27 030	27 177	27 361	3.2%
Transport	10 559	12 419	13 450	14 498	15 208	15 550	15 695	16 341	31.6%
Agriculture and Industry	10 423	7 787	8 127	7 573	7 181	6 978	7 229	7 083	-9.0%
Trade and Service	2 945	1 372	1 030	816	877	868	870	764	-44.3%
Households	9 324	4 924	4 932	3 960	3 744	3 633	3 382	3 172	-35.6%

Observed CO_2 emissions are calculated on the basis of observed energy consumption, cf. the energy balance on page 4. By means of fuel-specific emission factors,

energy consumption is converted into CO₂ emissions. The factors used can be seen on page 51. Renewable energy etc. is not attributed any CO₂ emissions.

Change

CO₂ Emissions, Adjusted^{*)}

1000 tonnes

1000 tonnes									Change
CO ₂ Emissions, Observed	1980	1990	1995	2000	2004	2005	2006	2007	'90-'07
CO ₂ Emissions, Total	62 303	60 780	59 131	54 236	50 921	50 995	52 430	52 692	-13.3%
CO ₂ Emissions by Fuels	62 303	60 780	59 131	54 236	50 921	50 995	52 430	52 692	-13.3%
Oil	39 387	25 034	26 375	26 577	24 272	24 291	24 281	24 463	-2.3%
Natural Gas	1	4 646	7 603	10 955	11 133	10 955	10 818	9 938	114%
Coal	22 915	31 100	25 153	16 703	15 517	15 748	17 331	18 290	-41.2%
CO ₂ Emissions by Uses	62 303	60 780	59 131	54 236	50 921	50 995	52 430	52 692	-13.3%
Energy Sector	880	1 391	1 884	2 312	2 427	2 429	2 483	2 470	77.6%
Transformation	28 556	32 037	29 590	24 573	21 312	21 354	22 448	22 497	-29.8%
Electricity Production	22 868	27 315	25 218	20 662	17 797	17 915	18 866	18 968	-30.6%
District Heating Production	5 128	4 613	4 294	3 866	3 477	3 406	3 552	3 501	-24.1%
Town Gas Production	559	108	78	45	38	33	30	28	-74.1%
Final Consumption	32 867	27 353	27 657	27 351	27 182	27 211	27 499	27 725	1.4%
Transport	10 559	12 419	13 450	14 498	15 208	15 550	15 695	16 341	31.6%
Agriculture and Industry	10 358	7 966	8 153	7 685	7 219	7 019	7 306	7 173	-10.0%
Trade and Service	2 875	1 505	1 045	877	901	894	917	814	-45.9%
Households	9 075	5 463	5 009	4 291	3 854	3 748	3 581	3 397	-37.8%

⁹ Adjusted for fuel consumption for net exports of electricity and for temperature fluctuations.

Adjusted CO₂ emissions are calculated on the basis of the adjusted gross energy consumption as shown in the chart on page 18. In this statement, energy consumption for space heating is adjusted for temperature fluctuations.

Energy consumption in production of electricity is adjusted for fluctuations in net exports of electricity. In cold years or years with net electricity exports the adjustment is therefore negative, while in warm years or years with net imports of electricity the adjustment is positive.

CO₂ Accounts

CO₂ accounts are used together 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 environmental commitment means that in accordance with the EU's burden sharing of the total EU reduction commitment under the ratification of the Kyoto Protocol, Denmark must reduce average emissions of greenhouse gases in the period 2008-2012 by 21 per cent in relation to the base year 1990/95. It is expected that a pending issue whether the EU will take into account Denmark's requirement for an adjustment of emissions in 1990 will be clarified in 2008.

In 2006, total emissions of greenhouse gases (without

adjustments) were 70.5 million tonnes CO_2 equivalents, which is 1.7 per cent more than base year emissions of 69.3 million tonnes CO_2 equivalents. Including the adjustments for fluctuations in temperature and net exports of electricity in these Energy Statistics, the level in 2006 was 65.6 million tonnes of CO_2 equivalents, corresponding to a drop of 15 per cent compared to the base year 1990/95.

CO₂ Emissions from Energy Consumption

Million tonnes CO₂



CO₂ Emissions by Fuel

Adjusted



The full effect of measures launched in order to achieve the Danish 2008-12 reductions commitment will only become evident with Denmark's greenhouse gas accounts for 2008, which will be ready in 2010. These greenhouse gas accounts include both CO₂ emissions from energy use (excluding emissions from international air travel and the effect of cross-border trade in petrol and diesel oil) and CO₂ emissions from other sources (flaring of gas in the North Sea, plastics in waste for incineration and certain industrial processes). Emissions of five other greenhouse gases are also included in the commitment: methane (CH₄), nitrous oxide (N₂O), hydro fluorocarbons (HFCs), per fluorocarbons (PFCs) and sulphur hexafluoride (SF₆), which are converted into CO2 equivalents. To meet the 2008-2012 commitment, reductions achieved in connection with certain CO2 removals by forests and soils, as well as from projects in other countries (the so-called JI and CDM projects) will also be included in calculations. Source: Ministry of Climate and Energy, the National Environmental Research Institute of Denmark (NERI) (The Inventory of Denmark's Total Emissions of Greenhouse Gases in 2007 will not be available until the beginning of 2009).

The Danish Energy Agency calculates both observed CO_2 emissions and adjusted CO_2 emissions, which take annual temperature variations and foreign trade in electricity into account, cf. the statement of energy consumption on page 18. The purpose of the adjusted calculations is to illustrate the trends underlying the development.

In 2007, observed CO_2 emissions were 52.6 million tonnes, which is 8.2 per cent less than in 2006. This can be attributed mainly to a substantial fall in fuel consumption for electricity production due to a fall in net exports of electricity.

Compared to 1990, observed CO_2 emissions went down by 0.3 per cent, in spite of the fact that in 1990 Denmark had large net imports of electricity, whereas in 2007 it had net exports of electricity.

Adjusted CO_2 emissions increased by 0.5 per cent in 2007 to 52.7 million tonnes. Relative to 1990, there has been a fall of 13.3 per cent.

Since 1990, there has been a significant shift in energy consumption analysed by fuels. Consumption of natural gas and renewable energy increased at the expense of coal. Recent years' developments have been characterised by greater consumption of renewable energy and coal at the expense of natural gas.

This shift in fuels has led to a reduction in CO_2 emissions despite the fact that gross energy consumption has gone up by 6.7 per cent since 1990. This is because consumption of oil and coal leads to greater CO_2 emissions than consumption of natural gas and renewable energy.

CO₂ Emissions per Fuel Unit and kWh of Electricity



CO₂ Emissions by Sector

Million Tonnes CO₂



CO₂ Emissions in Final Energy Consumption incl. Energy Sector



The figure for gross energy consumption has been fairly constant since 1990, whereas the break down by fuels has changed significantly. The shift from coal to natural gas and renewable energy has meant that, up to 2005, a reduced amount of CO_2 is linked to each unit of fuel consumed. However, the period from 2005 to 2007 saw a slight increase. In 2007, each GJ of adjusted gross energy consumption was linked to 60.3 kg CO_2 , against 74.2 kg in 1990. This corresponds to a reduction of 18.8 per cent.

One kWh of electricity sold in Denmark in 2007 led to 547 grams of CO_2 emissions. In 1990, CO_2 emissions were 937 grams per kWh of electricity sold. This corresponds to a reduction of 41.6 per cent. The reasons for this large reduction are fuel conversions in electricity production as well as the ever increasing significance of CHP production and wind power.

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

Of the total observed CO_2 emissions in 1990 of 52.7 million tonnes, 24.8 million tonnes came from the transformation sector and 26.5 million tonnes from final consumption, while the energy sector emitted 1.4 million tonnes.

In 2007, total observed CO_2 emissions were 52.6 million tonnes, of which 22.7 million tonnes were from the transformation sector. In the transformation sector, there has been a fall of 2.1 million tonnes relative to 1990, although electricity and district heating production grew significantly in this period. CO_2 emissions from final consumption were 27.4 million tonnes in 2007, while in the energy sector emissions were 2.5 million tonnes.

Breaking down CO_2 emissions from production of electricity, district heating, and town gas by end consume provides a picture of how total emissions of CO_2 can be allocated to the energy sector, transport, industry and households.

In 2007, the agriculture and industry sector, and transport were responsible for the largest percentages of total CO_2 emissions, with 31.4 per cent and 26.9 per cent, respectively. Households and the trade and service sector accounted for 21.6 per cent and 15.1 per cent, respectively, while the energy sector accounted for 5.0 per cent of CO_2 emissions.

Compared to 1990, CO_2 emissions from transport increased by 31.1% per cent. However, for industries and households there have been significant decreases. In the agriculture and industry sector and in the trade and service sector, CO_2 emissions fell by 20.7 per cent and 26.0 per cent, respectively, while they for households fell by 36.5 per cent.

Energy Consumption up to 2025

The Danish Energy Agency has prepared a new baseline projection up to 2025 of energy generation, energy consumption and energy-related greenhouse gas emissions, which includes the effects of the Energy Agreement of 21 February 2008. The projection is presented below and is based on the assumption of unchanged behavioural patterns and an oil price of USD 84 per barrel in 2010 (measured at 2008 prices and the dollar rate for the day), and on a long-term CO_2 allowance price of DKK 225 per tonne. The figures are based on Energy Statistics for 2006 and the projection from 2007 up to 2025. It should be stressed that this is a projection based on a number of assumptions and *not* a forecast.

Macro-economic and exchange rate assumptions are in agreement with the publication "*Mod nye mål - Danmark 2015*" (Toward new goals - Denmark 2015) by the Ministry of Finance, and the fossil fuels price assumptions are based on the latest projections of world market prices in World Energy Outlook 2007 (WEO2007) by the IEA from November 2007. Furthermore, because of their very nature, projections are very uncertain. More information on the energy strategy and projection is available at http://www.ens.dk/sw68196.asp.



Gross Energy Consumption by Energy Product

The projection of gross energy consumption up to 2025 adjusted for fuels for electricity exports shows a drop till around 2017. This trend should be seen against the backdrop of increased ambitions for energy savings and expansion of wind power capacity. After 2017, gross energy consumption remains fairly constant.

In the projection, consumption of fossil fuels is reduced by 17 per cent by 2025 compared with the statistical level for 2006.

Oil consumption as a percentage of overall consumption of fossil fuels increases steadily, from 48 per cent in 2006 to 55 per cent in 2025. The majority of oil consumption relates to transport.

Consumption of Renewable Energy: Share of Gross Energy Consumption



The Energy Agreement of 21 February 2008 contains an objective of increasing the percentage of renewable energy to 20 per cent of the gross energy consumption by 2011. In the projection, the renewable energy share in 2011 is 20.5 per cent.

The high settlement prices for new onshore wind turbines and biogas lead to an increased use of biomass in CHP production, a relatively larger capacity of onshore wind turbines and an expansion of biogas.

From 2010 and onward, the gradual phase-in of renewable energy for transport up to the EU target of 10 per cent by 2020 makes its mark.



Final Energy Consumption by Use

GDP and Final Energy Consumption



Final energy consumption decreases in the projection from 667 PJ in 2006 to 653 PJ in 2025, which corresponds to an average annual fall of 0.1 per cent.

Energy consumption for transport increases by 1 per cent annually and in 2025 accounts for 40 per cent of final energy consumption.

Energy consumption by households, exclusive of energy for transport, falls throughout the projected period. The annual average fall is 1.1 per cent.

It is assumed that GDP will grow by an average of 1.8 per cent annually from 2007 to 2025.

Final energy consumption is expected to fall by an average of 0.13 per cent annually.

Energy Intensities



Energy intensity is an indication of the consumption of energy in proportion to the economic activity. For industries, gross value added (GVA) is used as a measure of activity, and for households, total private consumption is shown in fixed prices.

Continued falling energy intensity is expected for both industries and households.

Energy Expenditure by Sector

Billion DKK, Current Prices



Revenues from Energy, CO₂ and Sulphur Taxes

Billion DKK, Current Prices



Expenses for Public Service Obligations (PSO) in the Electricity Area

5 4 3 2 1 0 2001 2002 2003 2004 2005 2006 2007 Other (R&D, Environmental Research etc.) Supply Security Subsidies for Environmentally Friendly Electricity Small-scale CHP Units Biomass etc.

Billion DKK, Current Prices

Wind Power

Energy expenses are calculated based on the purchase prices of the year including taxes and VAT. For the industries, as a general rule, a full refund of energy taxes (but not CO_2 taxes) and VAT applies.

Overall energy expenditures were DKK 158.8 billion in 2006, which is 8.7 per cent more than the year before. Households paid DKK 68.0 billion, the agriculture and industry sector paid DKK 43.0 billion, while the trade and service sector, including public sector services, paid DKK 38.8 billion.

Energy expenses increased from DKK 61 billion to DKK 89 billion in the period 1980-1985 after which there was a fall due to decreasing energy prices on the world market. Since then, expenses have been increasing. The increase from 2005 to 2006 was especially due to higher energy prices.

Source: Statistics Denmark

Revenues from energy taxes in 2007 were DKK 36.4 billion, which is almost unchanged compared to the year before. Revenues are calculated in 2007 prices and also comprise CO₂ and sulphur taxes besides observed energy taxes. The largest contribution to revenues in 2007 is from petrol (DKK 9.2 billion), electricity (DKK 8.7 billion), gas/diesel oil (DKK 8.5 billion) and CO₂ taxes (DKK 5.1 billion).

Compared to 1990, when CO_2 and sulphur were not included, revenues have grown by 161 per cent. Gas/diesel oil, electricity and petrol have seen growths of 173 per cent, 101 per cent and 62 per cent, respectively, since 1990.

In 2007, energy, CO_2 and sulphur taxes amounted to 4.4 per cent of total tax and VAT revenues in Denmark compared to 4.5 per cent in 2006.

Source: Statistics Denmark

Total expenses for PSO were DKK 3.8 billion in 2007, compared to DKK 2.2 billion in 2006.

For 2007, total support for environmentally friendly electricity generation was about DKK 3.2 billion broken down by wind power (DKK 1.6 billion), biomass etc. (DKK 0.4 billion) and small-scale CHP plants (DKK 1.2 billion). Compared to 2006, this is an increase of DKK 1.5 bn, which is due, primarily, to the fact that the price of electricity on average was lower in 2007 than in 2006.

Net Currency Revenues from Energy

Billion DKK, Current Prices 40 30 20 10 0 -10 -20 -30 1980 '85 '90 '95 '00 '05 '07 Total Oil Natural Gas Coal Electricity

Value of Crude Oil and Natural Gas Production

Billion DKK, Current



Exports of Energy Technology and Equipment

Billion DKK, Current Prices 60 20% 50 15% 40 30 10% 20 5% 10 Ο 0% 1996 '97 '98 '99 '00 '01 '02 '03 '04 '05 '06 '07 Export of Energy Technology and Equipment Proportion of Total Danish Exports of Commodities

For 2007, net currency revenues from energy products were DKK 25.8 bn. There was a surplus on trade in oil, natural gas and electricity but a deficit on trade in coal. In 2006, net currency revenues were DKK 30.6 billion.

Foreign trade in energy products is also expected to make a positive contribution to the national balance of trade in the coming years, as Denmark produces more energy than is consumed.

In the first half of the 1980s the conditions were completely different as net currency expenditures for energy products were DKK 20-25 billion per year. This basically corresponded to the total deficit on the balance of payments.

Source: Statistics Denmark

The value of the crude oil and natural gas produced from the North Sea in 2007 was DKK 56.0 billion, compared to DKK 60.7 billion the previous year. The value of crude oil fell from DKK 48.4 billion to DKK 44.6 billion, while the value of natural gas fell from DKK 12.3 billion to DKK 11.4 billion.

The value depends on the scale of production as well as on current prices on the world market. The value of crude oil fell in 2007 solely due to falling production, because oil prices went up.

The value of the North Sea production increased more than seven-fold from 1990 to 2007. Source: "Danish Oil and Gas Production 2007".

Exports of wind turbines, district heating pipes, thermostat valves, pumps etc. are rising rapidly. From 2000 to 2007, they more than doubled and in 2007 exports of energy technology and equipment accounted for DKK 51.8 billion, corresponding to 9.2 per cent of total Danish goods exports.

The Danish Energy Agency and the Danish Energy Industries Federation under the Confederation of Danish Industries have worked together to prepare statistics for Danish energy technology focussing on developments in exports and industry. More information is available at the Energy Agency website at http://www.ens.dk/eksport.

Source: Statistics Denmark.

Danish Energy Key Figures

									Change
Denmark	1980	1990	1995	2000	2004	2005	2006	2007	'90-'07
Energy Intensity, Gross Energy Consumption [TJ million per GDP]	0.998	0.818	0.748	0.647	0.623	0.616	0.602	0.601	-26.6%
Energy Intensity, Final Energy Consumption [TJ million per GDP]	0.748	0.603	0.565	0.502	0.477	0.470	0.474	0.471	-21.9%
Gross Energy Consumption per Capita [GJ]	159	160	161	157	155	157	159	160	0.6%
Final Energy Consumption per Capita [GJ]	119	118	122	122	122	123	125	126	6.9%
Rate of Self-sufficiency [pct]	5	52	78	139	156	155	144	130	151%
Dependency on Oil [pct]	67	43	45	45	41	41	40	40	-8.0%
Renewable Energy etc Share of Gross Energy Consumption [pct]	3.0	6.2	7.4	10.5	14.8	15.6	15.7	17.0	177%
	0.0	0.0	11 7	0.0	0.0	0.0	0.0	0.0	
Refinery Capacity [million tonnes/year]	9.0	9.0	11.7	9.2	9.0	9.0	9.0	9.0	•
Electricity Capacity [MW]	6 618	9 142	11 045	12 600	13 305	13 017	12 973	12 969	41.9%
Wind Turbine Capacity - Share of Total Electricity Capacity [pct]	-	3.8	5.7	19.0	23.5	24.0	24.2	24.1	542%
Net Electricity Export - Share of Domestic Supply [pct]	5.1	-22.5	2.3	-1.9	8.1	-3.8	19.1	2.6	-112%
CHP Production - Share of Electricity Consumption [pct]	18	37	40	56	55	64	47	53	43.8%
CHP Production - Share of District Heating Consumption [pct]	39	59	74	82	81	82	82	80	36 .4%
Renewable Energy etc., excl. Waste - Share of Total Electricity Consumption [pct]	0.0	2.0	5.9	15.9	26.2	27.2	24.8	27.9	1 296%
CO ₂ Emissions per Capita, Adjusted [tonnes]	12.2	11.8	11.3	10.2	9.4	9.4	9.7	9.7	-18.3%
CO ₂ Emissions per kWh Sold [gram per kWh]	1 034	937	800	623	527	522	541	547	-41.6%
CO ₂ Emissions per Consumed Unit of District Heating [kg per GJ]	87	63	46	41	34	34	35	36	-41.8%

Note: 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.

²⁾ Calculated in accordance with the EU Directive on electricity production from renewable energy sources, i.e. the renewable energy share has been calculated in relation to the overall gross electricity production including net imports of electricity.

Danish Energy Agency Climate Variation Adjustment Method

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 warm year compared to the normal weather year gives a small degree-day figure, which means the energy consumption is adjusted upwards. The opposite applies to a relatively cold year. The degree-day figures are provided by the Danish Meteorological Institute.

Ideally, the degree days for the various years should distribute fairly evenly around the normal year. Since 1988, the degree-day figure has however, been lower than "normal", except for in 1993 and 1996. 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 sliding average of the degree-day figures for the last 20 years.

The Calorific Value and CO₂ content in 2007 Tax Rates in 2007

	Calorific Values	CO₂ Emissions Factors
	GJ/tonnes	Kg./GJ
Crude Oil, North Sea	43.00	-
Refinery Feed Stocks	42.70	-
Refinery Gas	52.00	56.90
LPG	46.00	65.00
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	72.00
JP1	43.50	72.00
Gas/Diesel Oil	42.70	74.00
Fuel Oil	40.65	78.00
Orimulsion	27.65	80.00
Petroleum Coke	31.40	92.00
Waste Oil	41.90	78.00
White Spirit	43.50	-
Bitumen	39.80	-
Lubricants	41.90	-
Natural Gas GJ/1000 Nm	3 39.59	56.78
Town Gas	17.14	-
Coal in Electricity Plants	24.40	95.00
Other Hard Coal	26.50	95.00
Coke	29.30	108.00
Brown Coal Briquettes	18.30	94.60
Straw	14.50	-
Wood Chips GJ/m ³ (loose volume)	2.80	-
GJ/m ³ GJ/m ³	10.40	-
Firewood, Soft wood GJ/r	m ³ 7.60	-
Wood Pellets	17.50	-
Wood Waste	14.70	-
Wood Waste GJ/ m ³ (loos volume)	se 3.20	-
Biogas GJ/1000 m ³	23.00	-
Wastes	10.50	-
Biodiesel	37.60	-
Bio Ethanol	26.70	-
Fish Oil	37.20	-

Climate Adjustment

	D	egree Days
År	Years	Normal Year
2000	2902	3304
2001	3279	3289
2002	3011	3273
2003	3150	3271
2004	3113	3261
2005	3068	3224
2006	2908	3188
2007	2807	3136

Note: the climate-dependent share of space heating in the different areas of consumption is adjusted for climate variations on the basis of degree days from the Danish Meteorological Institute.

	Energy Taxes	CO ₂ taxes
	DKK/GJ	DKK/GJ
Transport		
Motor Gasoline	117.2	6.70
Light Diesel Oil	74.91	6.77
Low Sulphur Diesel Oil	69.90	6.77
Other Uses		
LPG	51.72	6.52
Other Kerosene	53.36	6.98
Heating Diesel Oil	51.77	6.77
Fuel Oil	51.46	7.09
Petroleum Coke	58.00	9.92
Natural Gas	51.58	4.98
Electricity Plant Coal	51.90	8.22
Coke	51.90	8.22
Brown Coal	51.90	8.75
Electricity	160.00	25.00
Electricity for Space Heating	⁾ 141.94	25.00

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

Volume Weights in 2007

	ton/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
Bio Ethanol	0.79

Conversion Factors

In order to make comparison easy, 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, bbl	=	158 liter
1 mtoe (mill. tonnes oil equivalent)	=	41.868 PJ

The purpose of adjusting for climate variations is to show figures for energy consumption which are independent of climate fluctuations in individual years. 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 leads to an upward adjustment of the observed energy consumption.