Energy Statistics

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Quick overview	3
Energy balance 2009	4
Production of primary energy	5
Renewable energy	7
Electricity and district heating	10
Consumption review 2009	16
Gross energy consumption & final energy consumption	18
Transport	23
Agriculture and industry	25
Trade and service	29
Households	32
Emissions of CO_2 and other greenhouse gases	36
Projection of energy consumption	42
Energy and the economy	44
International comparisons	46
International relationship	50
Concepts and Definitions	51
Key figures and basis of energy statistics	54

Energistatistik 2009

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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 1972-2009 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

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 drops in energy consumption and in greenhouse gas emissions in 2009

Observed energy consumption down by 4.0% *Observed energy consumption* fell by 4.0%, from 843 PJ in 2008 to 809 PJ in 2009. The developments should be seen in the context of a significant slow down in economic activity, as evident in a drop of 4.7% in Danish gross domestic product (GDP). On the other hand, the weather was colder in 2009 than in 2008 and net imports of electricity were lower than in 2008.

Adjusted energy consumption down by 5.7% 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 fluctuations in climate with respect to a normal weather year. The purpose of the adjusted calculations is to illustrate the trends underlying the development. *Adjusted gross energy consumption* fell from 863 PJ in 2008 to 814 PJ in 2009, a drop of 5.7%.

Compared with the slowdown in economic activity, measured as a drop of 4.7% in GDP, this is an improvement in energy efficiency in 2009. Energy intensity was 1.0% lower in 2009 than in 2008. Compared with 1990, adjusted gross energy consumption fell by 0.7%. During the same period GDP in constant prices grew by 36.6%. In 2009, each unit of GDP therefore accounted for 27% less energy than in 1990.

Increase in the share of renewable energy

Stated according to the EU's method of calculation, the share of renewable energy grew from 18.8% to 19.7%. In 2009, electricity from renewables accounted for 27.4% of Danish domestic electricity supply. Of this figure, wind power accounted for 18.3%.

Drop in emissions of CO_2 from energy consumption and total emissions of greenhouse gases

Observed CO_2 emissions from energy consumption fell by 3.6% in 2009. Adjusted for fuel consumption linked to foreign trade in electricity and fluctuations in climate, CO_2 emissions fell by 6.2%.

Since 1990 Danish adjusted CO_2 emissions from energy consumption have gone down by 19.2%.

PJ 1000 900 800 700 600 1980 '85 '90 '95 '00 '05 '09 - Observed Consumption Adjusted Consumption *)

Gross Energy Consumption Observed and Adjusted

A preliminary statement of Denmark's total observed emissions of greenhouse gases shows a drop of 2.7% from 2008 to 2009, and an overall drop of 10.4% from the base year.

Energy consumption by area of consumption

Energy consumption for *transport* fell by 5.5% in 2009 relative to 2008. Energy consumption for passenger transport and for freight transport fell by 3.5% and 10.2% respectively.

Total energy consumption by *agriculture and industry* fell by 10.8% in 2009 relative to 2008. Energy consumption by manufacturing industries fell by 13.5%.

In the *trade and service sector* as well as in *house-holds*, energy consumption was 3.5% lower in 2009 than in 2008.

Energy production and degree of self-sufficiency fell

Danish production of crude oil, natural gas and renewable energy etc. fell to 1008 PJ in 2009; a drop of 10.1%. Production of crude oil and natural gas fell by 8.1% and 16.5% respectively.

Denmark is the only country in the EU that was selfsufficient in energy in 2009. Denmark's degree of selfsufficiency in energy was 124% in 2009, whereas it was 130% in 2008. This means that energy production was 24% higher than energy consumption in 2009.

Large but falling foreign exchange revenues

In 2009 Denmark had a foreign trade surplus from its trade in energy products of DKK 13.0 billion. In 2008 this figure was DKK 22.6 billion.

Exports of energy technology and equipment fell to DKK 58.0 billion in 2009, a drop of 11.8%. Despite this drop, exports of energy products and equipment, not least wind turbines, are accounting for an ever increasing proportion of Denmark's total goods exports. This proportion was 11.6% in 2009 and 11.1% in 2008.

Energy Balance 2009

	Total	Crude oil/Feed- stocks	Oil Prod- ucts	Natural Gas	Coal and Coke	Waste, Non- renewa- ble	Renew- able Energy	Electri- city	District Heating	Town Gas
Direct Energy Content [TJ]										
Total Energy Consumption	808 989	324 779	-9 133	165 325	168 738	15 910	142 018	1 200	153	-
- Primary Energy Production	1 007 618	554 826	-	315 250	-	15 910	121 632	-	-	-
- Recycling	92	-	92	-	-	-	-	-	-	-
- Imports	602 347	151 202	221 046	-	166 089	-	23 508	40 348	153	-
- Exports	-772 090	-380 146	-198 228	-149 865	-1 580	-	-3 122	-39 148	-	-
- Border Trade	-7 518	-	-7 518	-	-	-	-	-	-	-
- International Marine Bunk- ers	-21 625	-	-21 625	-	-	-	-	-	-	-
 Stock Changes 	-11 995	-1 346	-12 094	-1 949	3 394	-	-	-	-	-
- Statistical Difference	12 159	242	9 193	1 888	835	-	0	-	- 0	-
Energy Sector	-44 882	-324 779	310 485	-26 640	-	-	-	-3 524	- 425	-
- Extraction and Gasification	-26 640	-	-	-26 640	-	-	-	-	-	-
- Refinery Production	324 466	-	324 466	-	-	-	-	-	-	-
- Used in Refinery Production	-340 684	-324 779	-13 980	-	-	-	-	-1 500	- 425	-
- Used in Distribution	-2 024	-	-	-	-	-	-	-2 024	-	-
Transformation	-102 070	-	-15 122	-73 695	-163 283	-15 301	-88 593	123 990	129 433	502
- Large-scale Power Units	-78 725	-	-10 867	-28 687	-162 570	- 10	-17.443	82 664	58 189	-
- Wind Turbines & Hydro Power	-	-	-	-	-	-	-24.262	24 262	-	-
- Small-scale Power Units	-7 216	-	- 132	-29 589	- 472	-4 438	-13.722	16 226	24 910	-
- District Heating Plants	-1 254	-	-1 759	-8 355	- 104	- 200	-15.168	- 7	24 338	-
- Auto producers	-6 663	-	-2 356	-6 488	- 138	-10 654	-17.998	7 744	23 226	-
- Gas Works	- 82	-	- 7	- 577	-	-	-	-	-	502
- Own Use in Production	-8 130	-	-	-	-	-	-	-6 899	-1 231	-
Distribution Loss etc.	-34 028	-	-	- 118	-	-	-	-7 972	-25 917	- 20
Final Energy Consumption	-628 009	-	-286 230	-64 871	-5 454	- 600	-53 434	-113 694	-103 244	- 482
- Non-energy Use	-10 564	-	-10 564	-	-	-	-	-	-	-
- Transport	-209 346	-	-207 581	-	-	-	- 343	-1 422	-	-
- Agriculture and Industry	-135 276	-	-45 031	-29 256	-5 433	- 395	-9 821	-37 388	-7 910	- 43
- Trade and Service Sector	-82 990	-	-3 132	-9 180	-	- 205	-1 763	-38 536	-30 138	- 35
- Households	-189 832	-	-19 922	-26 435	- 22	-	-41 506	-36 347	-65 195	- 404

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 2008.



Degree of self-sufficiency

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

For the first time, in 1997, Denmark produced more energy than it consumed. In 2009, the degree of self-sufficiency was 124%, as opposed to 52% in 1990 and only 5% in 1980. The degree of selfsufficiency peaked in 2004 at 156%.

Denmark has been more than self-sufficient in oil since 1993, resulting in annual net exports. In 2009, the degree of self-sufficiency in oil was 175%. The degree of self-sufficiency in oil also peaked in 2004 and it has been falling over the past five years.

Production of primary energy

								(Change
Direct energy content [TJ]	1980	1990	1995	2000	2005	2007	2008	2009	'90-'09
Total production	40 252	424 605	655 578	1 164 873	1 314 815 ·	1 139 114	1 120 513	1 007 618	137%
Crude oil	12 724	255 959	391 563	764 526	796 224	652 261	603 525	554 826	117%
Natural gas	17	115 967	196 852	310 307	392 868	346 146	377 641	315 250	172%
Waste, non-renewable	3 426	4 991	9 002	12 521	15 570	16 378	16 810	15 910	219%
Renewable energy	24 085	47 688	58 160	77 519	110 153	124 329	122 537	121 632	155%

Production and consumption of renewable energy

									Change
Direct energy content [TJ]	1980	1990	1995	2000	2005	2007	2008	2009	'90-'09
energy	24 085	47 688	58 160	77 519	110 153	124 329	122 537	121 632	155%
Solar energy	50	100	213	335	419	479	515	586	487%
Wind power	38	2 197	4 238	15 268	23 810	25 816	24 940	24 194	1 001%
Hydropower	123	101	109	109	81	102	93	68	-33%
Geothermal energy	-	96	94	116	344	575	499	483	403%
Biomass	23 384	41 980	48 817	55 194	74 978	85 687	83 106	82 515	97%
- Straw	4 840	12 481	13 050	12 220	18 485	18 759	15 840	17 339	<mark>39</mark> %
- Wood chips	-	1 724	2 340	2 744	6 082	7 215	8 234	9 827	470%
- Firewood	7 621	8 757	11 479	12 432	17 667	25 022	24 038	23 054	163%
- Wood pellets	-	1 575	2 099	2 984	3 262	2 474	2 410	2 325	48%
- Wood waste	3 710	6 191	5 694	6 895	6 500	7 639	6 799	5 641	-9%
- Waste, renewable	7 213	10 508	13 904	17 870	22 222	23 375	23 991	22 706	116%
- Bio oil	-	744	251	49	761	1 202	1 794	1 622	118%
Biogas	184	752	1 758	2 912	3 830	3 914	3 928	4 171	455%
Bio diesel	-	-	-	-	2 632	2 637	3 713	3 268	•
Heat pumps	306	2 462	2 931	3 585	4 058	5 120	5 743	6 348	158%
Imports of renewable energy	-	-	233	2 466	16 286	18 253	21 960	23 508	•
Firewood	-	-	-	-	1 963	2 176	2 090	2 005	•
Wood chips	-	-	-	305	1 521	1 804	3 529	4 212	•
Wood pellets	-	-	233	2 161	12 802	14 021	16 131	17 052	•
Bioethanol	-	-	-	-	-	252	210	204	•
Bio diesel	-	-	-	-	-	-	-	35	•
Exports of renewable energy	-	-	-	-	2 632	2 632	3 661	3 122	•
Bio diesel	-	-	-	_	2 632	2 632	3 661	3 122	•
Consumption of renewable	24 085	47 688	58 393	79 985	123 807	139 950	140 837	142 018	198%

Primary energy production



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 biodegradable waste) and non-biodegradable waste.

Primary energy production has grown rapidly since 1980, when the production of renewable energy was dominant. Production of crude oil increased steadily up to 2004, after which production fell. Production of natural gas took off in earnest from 1984.

In 2009, production of crude oil, natural gas and renewable energy etc. (including non-biodegradable waste) was 1008 PJ, as opposed to 425 PJ in 1990 and 40 PJ in 1980. Production fell by 10.1% relative to 2008.

Production of crude oil and natural gas fell by 8.1% and 16.5% respectively in 2009. Production of renewable energy etc. fell by 1.3% in 2009.

Reserves of crude oil and natural gas have been calculated as those quantities which, within a viable economic framework, can be extracted by means of known technology. Reserves are continuously reassessed in step with new discoveries and changes in calculation assumptions. Today, crude oil reserves are therefore assessed to be significantly higher than in 1990, despite significant production since then.

The Danish Energy Agency changed the classification system for oil and gas reserves in 2010. Figures for 2009, however, have been stated as in previous years.

The total reserves of crude oil and natural gas at the end of 2009 were calculated to be 194 million m3 and 105 billion Nm³ respectively, corresponding to 13 years of crude oil production and 13 years of natural gas production with activity at 2009 levels.

Source: Danish Oil and Gas Production 2009.

Extraction of crude oil and natural gas requires natural gas consumption for production as well as for transport and offloading ashore. In 2009 consumption was 26.2 PJ, corresponding to 15.9% of total Danish natural gas consumption. In 2008 consumption on platforms was 27.7 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 calculation of greenhouse gases and is covered by CO2 allow-ances. 2009 saw a considerable reduction in flaring of natural gas, from 5.1 PJ in 2008 to 3.4 PJ in 2009.

Production of renewable energy by energy product



Consumption of waste



PJ 150 100 50

Consumption of renewable energy

Share covered by indigenous production

'90

Share covered by net imports

'95

'00

0

'85

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

In 2009 production of renewable energy was calculated at 121.6 PJ, which is 0.7% less than the year before. Between 1990 and 2009, renewable energy production increased by 155%.

Wind power fell to 24.2 PJ in 2009, a decrease of 3.0%, due to poor wind conditions in 2009.

Production of biomass was 82.5 PJ in 2009. Of this, straw accounted for 17.3 PJ, wood accounted for 40.8 PJ, biodegradable waste accounted for 22.7 PJ, and bio oil accounted for 1.6 PJ. Compared with 2008, biomass production fell by 0.7%.

Consumption of waste for the production of electricity and district heating has increased significantly over time. From 1990 to 2009, the overall consumption of waste rose from 15.5 PJ to 38.6 PJ, corresponding to an increase of 149%.

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

These energy statistics assume that 58.8% of the waste consumed is biodegradable waste. This means that waste accounts for a considerable proportion of consumption of renewable energy.

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 2009, net imports of renewable energy were 20.4 PJ, as 23.5 PJ (primarily biomass) were imported and 3.1 PJ (biodiesel) were exported.

In 2009 total consumption of renewable energy was 142.0 PJ, as opposed to 140.8 PJ in 2008 and 47.7 PJ in 1990. Compared with 2008, observed consumption of renewable energy increased by 0.8%.

Increased use of renewable energy contributes significantly to reducing Danish CO_2 emissions.

'09

'05



Use of renewable energy in 2009

Renewable energy - share of total energy consumption



Share of renewable energy according to the EU method of calculation



Total consumption of renewable energy in 2009 (production plus net imports) was 142.0 PJ, of which 88.7 PJ were used in the production of electricity and district heating. Biodegradable waste and wind power were predominant in the production of electricity and district heating, accounting for 24.2 PJ and 21.8 PJ, respectively. Consumption of wood, straw and biogas accounted for 24.4 PJ, 12.5 PJ and 3.3 PJ, respectively.

A total of 53.4 PJ renewable energy were included in final energy consumption, i.e. for process consumption and consumption for heating in the agriculture and industry sector, in the trade and service sector, as well as for space heating in households. In final energy consumption, biomass, particularly firewood, is most prominent.

Observed energy consumption is the registered energy consumption within a calendar year. In 2009 renewable energy covered 17.6% of total observed energy consumption, as opposed to 16.7% the year before. In 1990 this figure was 6.3%.

Adjusted gross energy consumption is found by adjusting observed energy consumption for the fuel linked to foreign trade in electricity, and by adjusting for fluctuations in climate with respect to a normal weather year. In 2009 renewable energy's share of adjusted gross energy consumption was 17.5%, as opposed to 16.6% the previous year. In 1990 this figure was 6.1%.

Except for in years with large net exports of electricity, the renewable energy share calculated by both methods has followed the same trend.

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 as the expression of energy consumption by end-users, exclusive of cross-border trade and consumption for non-energy purposes. Distribution losses and own consumption from electricity and district heating production are included in final energy consumption. In the EU method of calculation, renewable energy is defined as endconsumption of renewable energy and electricity and district heating production based on renewable energy. The EU has yet to lay down some of the details for the calculation method.

According to the EU method of calculation, the renewable energy share was 19.7% in 2009, as opposed to 18.8% the year before, i.e. around 2 percentage points higher than in the national calculations.

	1980	1990		2000			2008			2009	
	nshore ırbines	On- shore tur- bines	Onshore turbines	Off- shore tur- bines	Total	On- shore tur- bines	Off- shore tur- bines	Total	On- shore tur- bines	Off- shore tur- bines	Total
Total number of wind turbines	68	2 663	6 215	41	6 256	4 890	214	5 104	4 793	314	5 107
499 kW	68	2 653	3 672	11	3 683	1 855	11	1 866	1 710	11	1 721
500 - 999 kW		8	2 284	10	2 294	2 579	10	2589	2 586	10	2 596
1 000 - 1 999 kW		2	251		251	362		362	366		366
2 000 - kW			8	20	28	94	193	287	131	293	424
Total Capacity of wind turbines [MW]	3	326	2 340	50	2 390	2739	423	3 163	2 821	661	3 482
-499 kW	3	317	533	5	537	338	5	343	309	5	314
500 - 999 kW		6	1 513	5	1 518	1 752	5	1 757	1 758	5	1 763
1 000 - 1 999 kW		3	279	0	279	443	0	443	451	0	451
2 000 - kW			16	40	56	207	413	621	303	651	954

Number and Total Capacity of Wind Turbines by Size [MW]





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



The total number of wind turbines was almost unchanged from 2008 to 2009. A total of 100 new offshore wind turbines were put into operation, while there were 97 fewer shore-based turbines. Total wind power capacity increased by 319 MW.

For some years now, the trend has been toward fewer but larger wind turbines. Consequently, in 2009 there were 1,149 turbines less than in 2000, which corresponds to a fall of more than 1,600 in the number of turbines up to 999kW, and an increase of more than 500 in the number of larger turbines.

For the same reason, the smaller turbines with a capacity below 500kW today account for only 9% of the total capacity, whereas this figure was 22% in 2000.

In 2009, wind power production accounted for 19.3% of domestic electricity supply, compared with 18.8% in 2008 and only 1.9% in 1990.

Wind power capacity was 3,482 MW in 2009, as opposed to 3,163 MW the year before. Shore-based and offshore wind turbine capacity was 2,821 MW and 661 MW, respectively, in 2009. In 1990 total wind power capacity was 326 MW.

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. Furthermore, when capacity goes up, this is not reflected fully in the production until in the following year, as production from new capacity is limited to the part of the year in which the installations are in operation. This was especially evident in 2009, when by far the majority of the new capacity was put into operation during the final months of the year.

Electricity production by type of producer

									e
Direct energy content [TJ]	1980	1990	1995	2000	2005	2007	2008	2009	'90 - '09
Total gross electricity production	97 508	93 518	131 987	129 776	130 469	141 536	131 886	130 894	41.0%
Large-scale power units	44 155	7 494	15 119	8 871	49	277	214	197	-97.4%
Large-scale CHP units	52 056	80 639	96 216	73 809	74 932	89 325	80 605	82 467	2.3%
- Electricity production	36 026	50 157	61 383	41 584	38 402	55 225	46 937	47 798	-4.7%
Small-scale CHP units	18	988	11 869	21 547	21 254	17 523	17 841	16 226	1 542%
Auto producers	1 118	2 099	4 436	10 172	10 343	8 492	8 193	7 744	269%
- Electricity production ¹⁾	-	-	17	14	15	15	14	15	•
- CHP 1)	1 118	2 099	4 419	10 158	10 328	8 477	8 179	7 729	268%
Wind turbines 1)	38	2 197	4 238	15 268	23 810	25 816	24 940	24 194	1 001%
Hydropower units 1)	123	101	109	109	81	102	93	68	-32.5%
Own use in production	-5 731	-6 118	-7 372	-5 776	-6 599	-7 058	-6 452	-6 899	12.8%
Large-scale power units	- 2 787	- 590	- 774	- 312	- 2	- 36	- 30	- 44	-92.6%
Large-scale CHP units	- 2 944	- 5 509	- 6 576	- 4 993	- 6 033	- 6 462	- 5 885	- 6 425	16.6%
Small-scale CHP units	-	- 19	- 23	- 472	- 564	- 559	- 538	- 430	2 164%
Total net electricity production	91 777	87 400	124 615	123 999	123 870	134 478	125 433	123 997	41.9%
Net electricity exports	4 453	- 25 373	2 858	- 2 394	- 4 932	3 420	- 5 234	- 1 200	-95.3%
Domestic electricity supply	87 323	112 773	121 757	126 393	128 801	131 058	130 667	125 197	11.0%
Consumption in transformation	-	-	- 11	- 1	-	-	-	-	•
Distribution losses etc. 2)	- 7 497	- 8 886	- 8 476	- 7 650	- 5 573	- 7 096	- 7 427	- 7 972	-10.3%
Domestic electricity consump- tion	79 827	103 887	113 270	118 742	123 228	123 962	123 240	117 217	12.8%
Consumption in the energy sector	- 1 256	- 1 784	- 2 095	- 1 911	- 2 760	- 3 443	- 3 511	- 3 524	97.5%
Final electricity consumption	78 571	102 103	111 174	116 831	120 469	120 519	119 729	113 695	11.4%

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 2009 electricity production was 130.9 PJ. which is a fall of 0.8% from 2008. The reason for this is that a drop in the domestic electricity supply was more or less set off by a drop in imports of electricity.

Change

Electricity is generated at large-scale power units. at small-scale CHP units. by wind turbines and by auto producers (i.e. producers where the main product is not energy. e.g. industrial enterprises. nurseries or waste treatment enterprises).

Large-scale power units generate electricity. partly as separate electricity production. and partly as combined electricity and heat production. Out of the total electricity production of 130.9 PJ. 82.7 PJ (63%) were generated from large-scale power units - 47.8 PJ as separate production. Separate electricity production can vary greatly from year to year due to fluctuations in foreign trade in electricity. Electricity production from small-scale CHP units and auto producers was 16.2 PJ and 7.7 PJ. respectively. Wind turbines generated 24.2 PJ of electricity.

Change

									onunge
Direct energy content [TJ]	1994	1996	1998	2000	2005	2007	2008	2009	'94 - '09
Total gross electricity pro- duction	144 708	192 879	147 998	129 776	130 469	141 535	131 885	130 894	<mark>-9</mark> .5%
Oil	9 547	20 808	17 906	15 964	4 933	4 625	4 084	4 219	-56%
- orimulsion	-	14 495	12 890	13 467	-				•
Natural gas	8 206	20 442	29 260	31 589	31 606	25 334	25 515	24 241	195%
Coal	119 844	142 795	85 151	60 022	55 665	71 607	62 836	63 678	-47%
Surplus heat	-	123	136	139	-				•
Waste. non-renewable	685	1 125	1 294	1 833	2 690	2 622	2 818	2 573	275%
Renewable energy	6 425	7 586	14 252	20 229	35 574	37 346	36 633	36 184	<mark>4 63</mark> %
Solar energy	0	1	1	4	8	9	9	10	3 535%
Wind power	4 093	4 417	10 152	15 268	23 810	25 816	24 940	24 194	491%
Hydropower	117	69	98	109	81	102	93	68	-42%
Biomass	1 894	2 692	3 319	4 097	10 657	10 323	10 513	10 739	467%
- Straw	293	748	960	654	3 088	3 185	2 145	2 341	700%
- Wood	429	340	512	828	3 730	3 395	4 346	4 727	1 001%
- Waste. renewable	1 172	1 605	1 847	2 616	3 840	3 742	4 021	3 672	213%
Direct energy content [TJ]	321	407	682	751	1 017	1 097	1 078	1 172	265%

Electricity production by fuel

Electricity from renewable energy: share of domestic electricity supply¹⁾

									Change
[%]	1994	1996	1998	2000	2005	2007	2008	2009	'90 - '09
Renewable energy	5.0	5.5	10.8	15.3	26.3	27.0	26.7	27.4	443%
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	17.6	18.7	18.2	18.3	469%
Hydropower	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-44%
Biomass	1.5	2.0	2.5	3.1	7.9	7.5	7.7	8.1	446%
- Straw	0.2	0.5	0.7	0.5	2.3	2.3	1.6	1.8	671%
- Wood	0.3	0.2	0.4	0.6	2.8	2.5	3.2	3.6	<mark>96</mark> 0%
- Waste. renewable	0.9	1.2	1.4	2.0	2.8	2.7	2.9	2.8	202%
Biogas	0.3	0.3	0.5	0.6	0.8	0.8	0.8	0.9	252%

1) Calculated in accordance with the EU directive on renewable energy. i.e. the renewable energy share has been calculated in relation to total gross electricity production. including net imports of electricity.



Electricity production by fuel

In 2009. 63.7 PJ (49%) of total electricity production was generated using coal. which corresponds to an increase of 1.3% from 2008. A total of 24.2 PJ electricity was produced from natural gas. 4.2 PJ electricity was produced from oil and 38.8 PJ from renewable energy etc. (including non-biodegradable waste).

With 24.2 PJ. wind turbines accounted for the greatest contribution to renewable energy.

Despite a slight drop of 0.4 PJ in electricity from renewable energy. The share of domestic electricity supply from renewable energy sources increased from 2008 to 2009. This is due to a fall in the domestic electricity supply.

Fuel consumption for electricity production

									onange
Direct energy content [TJ]	1980	1990	1995	2000	2005	2007	2008	2009	'90 - '09
Total fuel consumption	261 835	227 001	304 741	276 974	265 330	298 413	274 343	272 139	19.9%
Oil	47 533	9 215	33 049	40 356	11 867	11 120	9 754	10 865	17.9%
- Orimulsion	-	-	19 672	33 503	-				•
Natural gas	-	6 181	30 413	68 868	65 912	52 916	53 483	49 386	699%
Coal	214 012	207 173	226 853	134 205	127 119	167 627	145 843	146 156	-29%
Waste, non-renewable	-	187	2 571	4 847	7 004	8 901	9 094	8 600	4 489%
Renewable energy	290	4 244	11 855	28 698	53 429	57 848	56 169	57 132	1 246%
Solar energy	-	-	0	4	8	9	9	8	•
Wind power	38	2 197	4 238	15 268	23 810	25 816	24 940	24 194	1 001%
Hydropower	123	101	109	109	81	102	93	68	-33%
Biomass	90	1 503	6 385	11 456	27 115	29 496	28 685	30 221	1 911%
- Straw	-	363	1 505	2 021	7 715	8 067	5 527	6 397	1 662%
- Wood	90	745	909	2 518	9 405	8 726	10 179	11 550	1 450%
- Waste, renewable	-	395	3 971	6 917	9 996	12 703	12 979	12 274	3 011%
Biogas	39	444	1 122	1 861	2 415	2 426	2 442	2 641	495%

Other fuels than coal for electricity production





Net exports of electricity by country

Until 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 8.7% of total fuel consumption.

Change

This share increased during the following years and since the late 1990s it has accounted for around 40%-50%.

In 2009, oil, natural gas and renewable energy etc. together accounted for 46.3% of fuel consumption for electricity production. This figure is more or less unchanged relative to 2008 and amongst other things reflects a small increase in the share of renewable energy etc. (23.8% to 24.2%) and a slight fall in the share covered by natural gas (19.5% to 18.1%).

Foreign trade in electricity varies more in Denmark than in any other European country. 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, and therefore sensitive to precipitation etc., fuel prices, and the price of CO2 allowances.

In 2009, Denmark's overall net imports of electricity were 1.2 PJ. This was the result of net imports from Norway and Sweden of 8.6 PJ and 2.5 PJ, respectively, and net exports to Germany of 9.8 PJ.

									change
[MW]	1994	1996	1998	2000	2005	2007	2008	2009	'94 - '09
Total	10 774	11 045	12 187	12 600	13 091	13 129	13 156	13 409	24.5%
Large-scale units	9 126	8 575	8 783	8 160	7 710	7 634	7 556	7 446	-18.4%
- Electricity	2 186	2 188	1 429	1 429	444	850	838	838	-61.7%
- CHP	6 940	6 387	7 354	6 731	7 267	6 784	6 718	6 608	-4.8%
Small-scale units	773	1 255	1 412	1 462	1 575	1 688	1 745	1 782	131%
Autoproducers	339	382	534	574	664	671	681	687	103%
Solar energy	0	0	1	2	3	3	3	3	2 950%
Wind power	527	822	1 446	2 390	3 127	3 124	3 163	3 482	561%
Hydropower	9	10	11	10	11	9	9	9	•

Electricity capacity

Electricity capacity



CHP share of thermal power and district heating production



Total electricity production capacity has increased significantly since 1983. Wind power capacity has also increased and in 2009 accounted for 26% of total electricity capacity of 13,409 MW.

Electricity capacity at large-scale units has been declining slightly in recent years after a peak in the mid-1990s. Electricity capacity at small-scale CHP units, however, has been increasing slightly.

After some years with almost constant wind power capacity, from 2008 to 2009 capacity increased by 10.1%, amongst other things because the new offshore wind farm at Horns Rev was put into operation.

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

In 2009, 55.0% of thermal electricity production (i.e. total production less wind power and hydropower) was produced simultaneously with heating. This figure is almost unchanged from 2008. In 1990, the share was 36.8%, while it was 17.6% in 1980.

In 2009, 77.2% of district heating was produced together with electricity. The corresponding figures were 58.8% in 1990 and 39.1% in 1980.

District heating production by type of production plant

Direct energy content [TJ]	1980	1990	1995	2000	2005	2007	2008	2009	'90 - '09
Total gross electricity pro- duction	79 016	92 411	119 090	119 725	128 466	124 374	127 536	130 664	41.4%
Large-scale CHP units	30 757	51 511	64 388	56 271	58 241	54 445	55 280	58 189	13.0%
Small-scale CHP units	30	2 145	19 665	33 027	32 727	27 426	27 753	24 910	1 <mark>06</mark> 1%
District heating plants	43 655	27 755	20 393	12 539	16 712	19 493	20 992	24 338	-12.3%
Autoproducers									
- CHP units ¹⁾	130	694	3 857	8 375	14 884	16 050	16 662	17 718	2 453%
- Heat units ¹⁾	4 444	10 306	10 787	9 513	5 901	6 960	6 848	5 508	-46.6%
Own use in production	-	-	-1 438	-1 533	-1 308	-1 127	-1 244	-1 231	
Large-scale CHP units	-	-	-1 156	- 866	- 384	- 299	- 297	- 313	•
Small-scale CHP units	-	-	- 152	- 637	- 656	- 596	- 777	- 794	•
District heating plants	-	-	- 130	- 30	- 267	- 232	- 170	- 124	•
Total net production	79 016	92 411	117 652	118 192	127 158	123 247	126 292	129 433	40.1%
Net imports	-	122	141	144	153	148	153	153	25.4%
Domestic supply	79 016	92 533	117 793	118 336	127 311	123 395	126 445	129 586	40.0%
Consumption in refineries	-	- 428	- 380	- 275	- 355	- 405	- 425	- 425	-0.6%
Distribution losses	-19 754	-18 507	-23 559	-23 667	-25 462	-24 679	-25 289	-25 917	40.0%
Final consumption	59 262	73 599	93 854	94 393	101 494	98 311	100 731	103 244	40.3%

¹⁾ Gross and net production are by definition identical.



District heating production by type of production plant

District heating production is generated at largescale CHP units, small-scale CHP units, district heating units and by auto producers such as industrial enterprises, nurseries and waste treatment enterprises.

Change

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

Total district heating production was 130.7 PJ in 2009. Compared with 1990, district heating production increased by 41%; compared with 1980 it increased by 65%.

14

Change

									Change
Direct energy content [TJ]	1994	1996	1998	2000	2005	2007	2008	2009	'94 - '09
Total gross production	113 092	131 800	127 247	119 725	128 466	124 374	127 536	130 664	15.5%
Oil	6 335	8 892	7 530	4 433	6 103	4 480	4 443	5 912	-6.7%
- Orimulsion	-	1 033	1 080	1 291	-	-	-	-	•
Natural gas	25 370	34 222	36 985	41 620	39 377	35 787	37 331	36 038	42.0%
Coal	55 748	58 399	50 685	38 873	34 187	32 926	32 989	34 141	-38.8%
Surplus heat	2 676	2 917	3 104	3 622	3 110	3 215	2 705	2 563	-4.2%
Waste. non-renewable	4 989	6 644	7 195	7 921	9 808	10 445	10 807	10 346	107%
Renewable energy	17 974	20 726	21 749	23 256	35 880	37 521	39 262	41 664	132%
Solar energy	6	6	16	24	53	56	55	100	1633%
Geothermal energy	42	32	54	58	172	287	250	241	469%
Biomass	17 399	20 045	20 882	22 193	34 414	36 011	37 846	40 145	131%
- Straw	4 318	5 502	5 326	5 696	7 681	7 603	6 714	7 494	73.5%
- Wood	4 327	5 008	5 274	5 153	12 086	12 419	14 270	16 451	280%
- Bio oil	223	52	13	39	650	1 081	1 439	1 435	543%
- Waste. renewable	8 532	9 482	10 268	11 304	13 998	14 907	15 423	14 766	73.1%
Biogas	348	510	765	903	1 169	1 077	1 047	1 114	220%
Heat pumps	178	133	33	78	72	89	64	64	-63.9%

District heating production by fuel

Fuel consumption for district heating production

Direct energy content [TJ]	1980	1990	1995	2000	2005	2007	2008	2009	'90 - '09
Total fuel consumption	75 443	69 878	77 823	73 286	75 571	75 656	78 972	83 341	19.3%
Oil	51 304	4 766	5 076	3 726	4 322	3 310	3 049	4 250	-10.8%
- Orimulsion	-	-	241	646					•
Natural gas	-	12 131	18 883	22 203	22 044	21 211	22 399	23 733	9 5.6%
Coal	13 527	30 898	28 701	19 459	17 121	16 518	16 547	17 128	-44.6%
Surplus heat	-	-	-	-		2	3	4	•
Waste. non-renewable	3 215	4 500	5 919	7 027	7 450	6 607	7 012	6 709	49.1%
Renewable energy	7 397	17 583	19 244	20 871	24 633	28 008	29 962	31 517	79.2%
Solar energy	-	6	6	24	53	60	63	105	1654%
Geothermal energy	-	96	94	116	344	575	499	483	403%
Biomass	7 382	17 400	18 753	20 073	23 453	26 608	28 667	30 184	73.5%
- Straw	290	3 640	4 753	5 013	2 576	5 851	5 472	6 100	67.6%
- Wood	324	3 541	4 606	4 983	9 484	10 126	11 393	12 887	264%
- Bio oil	-	744	251	49	761	1 202	1 794	1 622	118%
- Waste. renewable	6 768	9 475	9 142	10 028	10 633	9 430	10 007	9 575	1.1%
Biogas	15	81	334	582	707	678	669	680	740%
Heat pumps	-	-	57	75	76	87	63	65	•

Fuel consumption for district heating production, percentage distribution



There was a significant change in the fuel used in the production of district heating in the period 1980 to 2009. In 2009 the distribution was: 45.8% renewable energy etc. (of which nonbiodegradable waste 8.1%. biomass 36.1% and other renewables 1.6%). natural gas 28.5%. coal 20.5% and oil 5.1%.

Consumption of natural gas and renewable energy etc. has increased year by year. In 1990. the percentages for natural gas and renewable energy etc. were 17.4% and 31.6% (including biomass 24.9%). respectively.

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 2009. In 1990. this constituted 44.2% of the total consumption of fuel for district heating.

Energy Supply and Consumption 2009

Direct Energy Content [TJ]	Total	Crude Oil	Refinery Feed- stocks	Refinery Gas	LPG	Napht ha (LVN)	Avia- tion Gaso- line	Motor Gasoline	Other Kerose ne	JP1	Gas- /Diesel Oil	Fuel Oil	Waste Oil	Petro- leum Coke	Orimul- sion
Total Energy Supply															
- Primary Production	1 007 618	554 826	-	-	-	-	-	-	-	-	-	-	-	-	-
- Recycling	92	-	-	-	-	-	-	-	-	-	-	-	92	-	-
- Registered Imports	602 347	150 972	230	-	209	-	108	32 177	-	36 110	88 370	47 906	-	5 144	-
- Registered Exports	-772 090	-367 920	-12 226	-	-4 468	- 477	-	-50 102	-	-15 365	-50 401	-76 731	-	- 376	-
- Border Trade	-7 518	-	-	-	-	-	-	821	-	-	-8 967	-	-	628	-
- International Marine Bunkers	-21 625	-	-	-	-	-	-	-	-	-	-10 433	-11 091	-	-	-
- Supply from Blending	- 260	-	30	-	- 1	- 926	3	30	109	- 252	-1 073	1 820	-	-	-
- Stock Changes	-11 995	-3 806	2 460	-	132	- 49	- 9	-1 188	-	-2 750	-4 974	-4 444	-	1 039	-
Statistical Difference	12 418	1 563	-1 350	0	24	926	- 19	- 408	-	- 222	2 331	7 038	-	13	-
Extraction and Gasification	-26 640	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Refineries															
- Input and Net Production	- 313	-335 635	10 856	15 419	6 441	526	-	91 611	-	17 776	141 271	51 420	-	-	-
- Own Use in Production	-15 905	-	-	-13 898	-	-	-	-	-	-	- 5	- 77	-	-	-
Used in Distribution	-2 024	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Large-scale Power Units	-														
- Fuels and Production	- 735	-	-	-	-	-	-	-	-	-	- 899	- 33	-	-	-
- Own Use in Production	- 44	-	-	-	-	-	-	-	-	-			-	-	-
Large-scale CHP Units	-														
- Fuels used and Production	-77 990	-	-	-	- 0	-	-	-	-	-	-1 580	-8 355	-	-	-
- Own Use in Production	-6 738	-	-	-	-	-	-	-	-	-					
Wind Turbines	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydro Power Plants	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Small-scale CHP Units	-														
- Fuels and Production	-7 216	-	-	-	-	-	-	-	-	-	- 125	- 8	-	-	-
- Own Use in Production	-1 224	-	-	-	-	-	-	-	-	-	-	-	-	-	-
District Heating Units	-														
- Fuels and Production	-1 254	-	-	-	-	-	-	-	-	-	-1 407	- 350	- 2	-	-
- Own Use in Production	- 124	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Autoproducers	-														
- Electricity Units	- 7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
- CHP Units	-8 394	-	-	-1 521	-	-	-	-	-	-	- 60	- 751	- 2	-	-
- Heat Units	1 680	-	-	-	-	-	-	-	-	-	- 22	-	- 0	-	-
Town Gas Works	- 82	-	-	-	- 1	-	-	-	-	-	- 6	-	-	-	-
Distribution Losses etc.	-33 970	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Final Energy Consumption	-														
- Non-energy Use	-10 564	-	-	-	-	-	-	-	-	-	-	-	-	-	-
- Road	-160 218	-	-	-	- 119	-	-	-71 688	- 0	-	-88 069	-	-	-	-
- Rail	-4 533	-	-	-	-	-	-	-	-	-	-3 111	-	-	-	-
- Domestic Sea Transport	-8 107	-	-	-	-	-	-	-	-	-	-6 489	-1 617	-	-	-
- Air Transport, International	-32 846	-	-	-	-	-	- 4	-	-	-32 842	-	-	-	-	-
- Air Transport, Domestic	-1 451	-	-	-	-	-	- 73	- 1	-	-1 376	-	-	-	-	-
- Military Transport	-2 191	-	-	-	-	-	- 5	- 9	-	-1 079	-1 099	-	-	-	-
- Agriculture and Forestry	-24 019	-	-	-	- 114	-	-	- 31	- 3	-	-14 389	- 57	-	-	-
- Horticulture	-6 084	-	-	-	- 11	-	-	- 3	-	-	- 466	- 539	-	-	-
- Fishing	-6 105	-	-	-	- 12	-	-	- 1	-	-	-6 075	- 17	-	-	-
- Manufacturing	-91 877	-	-	-	-1 029	-	-	- 97	- 13	-	-6 665	-4 067	- 88	-5 819	-
- Construction	-7 190	-	-	-	- 85	-	-	- 20	- 0	-	-5 429	-	-	-	-
- Wholesale	-12 599	-	-	-	- 62	-	-	-	- 3	-	- 479	- 0	-	- 0	-
- Retail Trade	-10 263	-	-	-	- 2	-	-	-	- 1	-	- 82	- 0	-	- 0	-
- Private Service	-35 775	-	-	-	- 177	-	-	-	- 6	-	- 839	- 23	-	- 0	-
- Public Service	-24 353	-	-	-	- 27	-	-	-	- 10	-	-1 410	- 9	-	- 0	-
- Single Family Houses	-140 962	-	-	-	- 495	-	-	-1 092	- 67	-	-15 762	-	-	- 628	-
 Multi-family Houses 	-48 870	-	-	-	- 201	-	-	-	- 5	-	-1 658	- 14	-	- 0	-

White Spirit, Lubricant s and Bitumen	Natural Gas	Coal	Coke etc	Solar Ener- gy	Wind Power	Hydro Power	Geoth ermal Power	Straw	Wood Chips	Fire- wood	Wood Pellets	Wood Waste	Biogas	Wastes	Fish Oil, Bio- diesel and et- hanol	Heat Pumps	Electri- city	District Heating	Town Gas
	045.050						400	47.000	0.007	00.054	0.005	F / 44	4 4 7 4		4 000				
-	315 250	-	-	586	24 194	68	483	17 339	9 827	23 054	2 325	5 641	4 1 7 1	38 616	4 889	6 348	-	-	-
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	140.945	105 405	624	-	-	-	-	-	4 212	2 005	17 052	-	-	-	2 1 2 2	-	40 348	153	-
- 307	-149 865	-1579	- 2	-	-	-	-	-	-	-	-	-	-	-	-3 122	-	-39 148	-	-
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- 101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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-	-28 687	-162 570	-	-	-	-	-	-5 262	-4 127	-	-6 976	-1 030	- 13	- 45	-	-	82 467	58 189	-
																	-6 425	- 313	-
-	-	-	-	-	-24 194	-	-	-	-	-	-	-	-	-	-	-	24 194	-	-
-	-	-	-	-	-	- 68	-	-	-	-	-	-	-	-	-	-	68	-	-
-	-29 589	- 472	-	-	-	-	-	-3 134	-2 411	-	-	- 8	-1 834	-10 772	-	-	16 226	24 910	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	- 430	- 794	-
-	-8 355	- 104	-	- 105	-	-	- 483	-4 101	-5 617	-	-2 294	- 545	- 116	- 484	-1 622	-	- 7	24 338	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	- 124	-
-	-	-	-	- 8	-	-	-	-	-	-	-	-	- 13	-	-	-	15	-	-
-	-6 179	- 138	-	-	-	-	-	-	- 568	-	-	- 400	-1 240	-22 982	-	-	7 729	17 718	-
-	- 309	-	-	-	-	-	-	-	- 7	-	-	- 453	- 104	-2 876	-	-	- 58	5 508	-
-	- 577	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	502
-	- 118	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-7 914	-25 917	- 20
-10 564	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	- 343	-	-	-	-
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-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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-	- 806	- 118	-	-	-	-	-	-1 937	- 27	-	-	-	- 342	-	-	- 374	-5 822	-	-
-	- 904	-1 195	-	-	-	-	-	-	-	-	-	- 50	-	-	-	-	- 930	-1 985	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-27 231	-3 368	- 751	-	-	-	-	-	-1 055	-	- 945	-3 155	- 173	- 959	-	-1 200	-29 294	-5 925	- 43
	- 314	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-1 342	-	-
	-15/4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-5 815	-4 666	-
-	- 952	-	-	-	-	-	-	-	-	-	-	-	-	400	-	-	-0 385	-2 840	-
	-3 693	-	-	- 71	-	-	-	-	- 144	-	- 010	- 0	- 335	- 498	-	-	-17 U83	- 12 908	- 13
	-2 700	-	- 4	- / 1	-	-	-	-2 905	- 140	-25.050	- 919	-	-	-	- 42	-4 775	-7 204	-7 /20	- 22
	-22 309	- 0	- 0	- 331	-	-	-	-2 700	- 01	20 009	-0 240	-	-	-	- 42	-4 //0	-27 120	-31 019	- 220
	-4 126	- 9	- 6	- 71	-	-	-	-	-	-	-	-	-	-	-	-	-7 220	-33 3/6	- 184

Gross energy consumption

	1980	1990	1995	2000	2005	2007	2008	2009	'90-'09
Adjusted total gross energy consumption. Fuel equivalent [PJ]	814	819	840	839	851	874	863	814	-0.7%
Fuels	814	819	840	839	851	874	863	814	-0.7%
Oil	546	355	374	376	352	347	338	316	-10.9%
Natural gas	0	82	134	192	192	175	177	167	104%
Coal and coke	241	327	265	175	166	192	187	172	-47.3%
Waste, non-renewable	3	6	9	13	16	17	17	16	190%
Renewable energy	24	50	59	82	125	143	144	143	186%
Energy products	814	819	840	839	851	874	863	814	-0.7%
Oil	446	338	335	329	333	332	325	301	-10.9%
Natural gas	0	59	83	98	100	100	98	92	55.5%
Coal and coke	22	17	16	12	11	11	10	5	-68.2%
Waste, non-renewable	0	0	1	1	1	1	1	1	79.5%
Renewable energy	16	28	28	33	44	58	58	54	92 .5%
Electricity	249	297	298	286	279	291	288	275	-7.3%
District heating	73	78	79	79	81	81	83	85	9.1%
Town gas	7	2	1	1	1	0	1	1	-68.6%
Uses	814	819	840	839	851	874	863	814	-0.7%
Energy sector	17	28	38	44	52	49	51	45	59.9%
Non-energy use	16	13	13	13	12	13	11	11	-18.8%
Transport	144	172	186	203	218	226	223	211	23.2%
Agriculture and industry	228	227	233	227	214	215	208	186	-18.1%
Trade and service	130	132	127	125	127	134	134	131	-0.4%
Households	277	248	243	227	229	238	236	230	-7.3%
Observed total energy consump- tion [PJ]	830	753	841	817	835	864	843	809	7.5%
Oil	555	343	372	370	348	345	336	316	-8.1%
Natural gas	0	76	133	186	188	171	172	165	117%
Coal and coke	252	255	272	166	155	195	172	169	-33.8%
Waste, non-renewable	3	5	9	13	16	16	17	16	219%
Renewable energy	24	48	58	80	124	140	141	142	198%
Foreign trade in electricity	- 4	25	- 3	2	5	- 3	5	1	-95.3%
Foreign trade in district heating	-	0	0	0	0	0	0	0	25.4%

Observed energy consumption and adjusted gross energy consumption



*) Adjusted for climate variations and fuels for net exports of electricity.

Observed energy consumption is the registered energy consumption within a calendar year. Gross energy consumption is derived by adjusting observed energy consumption for the fuel consumption linked to foreign trade in electricity. Adjusted gross energy consumption is also adjusted for climate variations with respect to a normal weather year. The objective is to obtain a clearer picture of developments in domestic energy consumption.

Change

Adjusted gross energy consumption was 814 PJ in 2009, which is 5.7% lower than in 2008. This development is strongly affected by the slowdown in economic activity and in 2009, for the first time, this figure was lower than in 1990. Compared with 1990, consumption fell by 0.7%.

Observed energy consumption was 809 PJ in 2009, which is 4.0% less than in 2008. Compared with 1990, observed energy consumption was 7.5% higher. This should be seen in the context of significantly higher net imports of electricity in 1990 than in 2009, which in 1990 led to low fuel consumption for electricity production.



Gross energy consumption by fuel

Gross energy consumption by energy product after transformation



Gross energy consumption by use



Adjusted gross energy consumption was 0.7% lower in 2009 than in 1990, however consumption of individual fuels has followed rather varied trends.

Consumption of oil fell drastically up until 1993, after which it rose again and stabilized, first at around 380 PJ and then at around 350 PJ. After this, there was another drop. Compared with 1990, oil consumption went down 10.9%. Consumption of coal, which primarily takes place at CHP plants, has decreased by 47.3% since 1990. Consumption of natural gas and renewable energy etc. (i.e. renewable energy and non-biodegradable waste) went up by 104% and 186%, respectively, in the period.

In 2009 consumption of oil, natural gas and coal fell by 6.5%, 6.0% and 7.7%, respectively, compared with 2008. Consumption of renewable energy etc. fell by 1.3%.

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

Fuel consumption for electricity production was 275 PJ in 2009, which is 4.5% less than in 2008. Compared with 1990, fuel consumption fell by 7.3% due to more efficient electricity production and a growing share of wind power.

Fuel consumption for district heating was 85 PJ in 2009, which is 1.3% more than in 2008. Compared with 1990, fuel consumption increased by 9.1%. Also in this regard, production has become more efficient, as district heating production has increased by 41.4% 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 5.4% lower in 2009 than the year before. In the agriculture and industry sector, as well as the trade and service sector, gross energy consumption fell by 10.4% and 2.1%, respectively, while for households it fell by 2.4%. In the energy sector (platforms in the North Sea and oil refineries) gross energy consumption fell by 12.4%.

Compared with 1990, gross energy consumption for transport increased by 23.2%. In the trade and service sector, gross energy consumption fell by 0.4%, while it fell by 18.1% and 7.3%, respectively, for the agriculture and industry sector and for households. From 1990 to 2009, developments were very much affected by the fact that electricity and district heating can be generated with ever smaller fuel consumption.

Final energy consumption

Direct energy content [TJ]	1980	1990	1995	2000	2005	2007	2008	2009	'90-'09
Climate adjusted Total final energy consumption	609 585	604 200	635 165	651 093	666 260	683 177	670 347	631 322	4.5%
By energy product									
Oil	430 738	321 946	312 655	312 354	312 290	315 379	305 474	286 647	-11.0%
Natural gas	-	50 060	70 192	72 674	72 415	71 234	70 034	65 475	30.8%
Coal and coke	21 623	17 243	16 186	12 389	10 826	11 310	9 551	5 481	-68.2%
Waste, non-renewable	206	336	520	698	1 135	900	721	603	79 .5%
Renewable energy	16 036	28 106	27 698	32 563	43 646	57 613	57 515	54 110	9 2.5%
Electricity	78 336	103 176	111 346	117 572	120 732	121 022	120 141	113 802	10.3%
District heating	57 715	81 679	95 297	102 152	104 669	105 272	106 465	104 717	28.2%
Town gas	4 930	1 654	1 271	691	547	450	446	487	-70.6%
By uses									
Non-energy purpose	16 253	13 004	13 403	12 619	12 064	12 964	11 100	10 564	-18.8%
Total transport	143 337	170 216	184 358	201 209	215 789	224 020	221 564	209 346	23.0%
Road transport	100 945	129 943	139 607	153 666	161 923	171 915	168 396	160 218	23.3%
Rail transport	5 016	4 765	4 957	4 339	4 488	4 363	4 559	4 533	-4.9%
Sea transport, domestic	5 588	6 344	7 625	6 857	8 026	6 330	8 113	8 107	27.8%
Air transport	23 642	27 515	28 720	34 822	37 627	39 002	39 019	34 297	24.6%
Military transport	8 145	1 649	3 449	1 525	3 726	2 410	1 477	2 191	32.9%
Total agriculture and industry	167 712	159 453	167 794	167 606	158 656	157 493	151 981	135 631	-14.9%
Agriculture and forestry	18 484	22 584	22 083	24 110	22 197	22 531	23 707	24 098	6.7%
Horticulture	11 338	10 540	9 821	8 588	7 412	7 494	7 060	6 190	-41.3%
Fishing	7 312	10 785	8 324	9 451	7 488	6 887	6 286	6 105	-43.4%
Manufacturing	124 586	109 250	120 235	117 806	113 406	112 040	106 451	92 039	-15.8%
Construction	5 992	6 295	7 331	7 651	8 152	8 542	8 476	7 200	14.4%
Total trade and service	78 314	77 047	77 698	80 607	85 065	86 824	86 639	83 636	8.6%
Wholesale	19 045	13 795	13 307	13 895	12 909	13 260	13 211	12 684	-8.1%
Retail trade	9 702	8 883	8 728	9 324	9 993	10 497	10 624	10 321	16.2%
Private service	25 955	28 812	31 239	32 904	36 247	37 515	37 596	36 050	25.1%
Public service	23 612	25 557	24 423	24 484	25 916	25 552	25 208	24 580	-3.8%
Total households	203 969	184 479	191 913	189 052	194 686	201 876	199 063	192 145	4.2%
Single family houses	155 657	136 823	141 798	139 337	144 192	151 517	148 303	142 684	4.3%
Multi-family houses	48 312	47 656	50 115	49 715	50 494	50 359	50 759	49 460	3.8%
Observed Total final energy consumption	616 980	580 617	631 471	632 823	658 847	666 696	657 097	628 009	8.2%



Final energy consumption by use

Final energy consumption by energy product



Gross energy consumption and final energy consumption per DKK million GDP



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 consumption by households.

Final energy consumption in 2009 was 631 PJ, which is 5.8% lower than in 2008. Final consumption was 4.5% higher compared with 1990.

Energy consumption for the transport sector increased steadily throughout most of the period. However, it fell in the last two years. In 2009 consumption fell by 5.5%. From 1990 to 2009, consumption increased by 23.0%. Energy consumption in the agriculture and industry sector fell by 14.9% from 1990 to 2009, while consumption in the trade and service sector and households increased by 8.6% and 4.2%, respectively.

Final energy consumption fell by 5.8% from 2008 to 2009. Consumption of oil fell by 6.2%, while consumption of natural gas and coal (for other uses than electricity and district heating production) fell by 6.5% and 42.6%, respectively. Electricity consumption fell by 5.3%, while consumption of district heating fell by 1.6%.

Since 1990, final consumption of natural gas has increased by 30.8%, while consumption of electricity and district heating has increased by 10.3% and 28.2%, respectively. In the same period, consumption of oil and coal fell by 11.0% and 68.2%, respectively.

Final consumption of renewable energy was 5.9% lower in 2009 than in the year before. Compared with 1990, consumption of renewable energy grew by 92.5%.

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 2009 the fall in energy consumption was greater than the fall in GDP.

In 2009 gross energy consumption was 0.595 TJ per DKK million GDP (calculated in 2000 prices, chained values), as opposed to 0.818 TJ in 1990; i.e. fuel intensity was reduced by 27.3% during this period. Intensity fell by 1.0% in 2009 relative to the year before.

If developments in GDP are instead compared with developments in final energy consumption, energy intensity fell by 23.5% from 1990 to 2009. This reduction is less, because the increased efficiency of the transformation sector is not included. Intensity fell by 1.1% in 2009 compared with the year before.

Final electricity consumption

Direct energy content [TJ]	1980	1990	1995	2000	2005	2007	2008	2009	'90-'09
Climate adjusted Total final electricity consumption	78 336	103 176	111 346	117 572	120 732	121 022	120 141	113 802	10.3%
Rail transport	479	736	854	1 253	1 351	1 282	1 360	1 422	93.2%
Agriculture and industry	27 682	36 597	40 444	43 265	44 093	42 818	41 939	37 401	2.2%
Agriculture	5 086	5 457	5 522	5 968	5 904	5 877	5 924	5 829	6.8%
Horticulture	467	686	960	1 079	971	952	1 034	930	35.6%
Manufacturing	21 362	29 400	32 854	35 004	35 944	34 526	33 414	29 301	-0.3%
Construction	767	1 054	1 107	1 214	1 274	1 463	1 567	1 342	27.3%
Trade and service	21 788	30 147	32 847	35 715	37 479	39 320	39 552	38 555	27.9%
Wholesale	3 599	5 451	5 305	5 936	5 973	6 246	6 119	5 816	6.7%
Retail trade	3 784	5 202	5 134	5 742	6 260	6 398	6 539	6 387	22.8%
Private service	8 347	11 715	13 391	14 903	15 866	17 185	17 591	17 093	45.9%
Public service	6 058	7 778	9 016	9 134	9 380	9 491	9 303	9 259	19.0%
Households	28 388	35 696	37 202	37 339	37 810	37 602	37 290	36 423	2.0%
Single family houses	21 431	27 011	28 221	28 210	28 279	27 989	27 783	27 195	0.7%
Multi-family houses	6 957	8 686	8 980	9 129	9 530	9 613	9 507	9 228	6.2%
Observed Total final elec- tricity consumption	78 571	102 103	111 174	116 831	120 469	120 519	119 729	113 695	11.4 %

Final electricity consumption by use



Electricity consumption's share of total energy consumption



Electricity consumption by manufacturing industries was 12.3% lower in 2009 than in 2008. The large drop means that electricity consumption is almost unchanged relative to 1990 (a 0.3% drop).

Change

The trade and service sector continues to show increasing electricity consumption. From 1990 to 2009 electricity consumption grew by 27.9%. In 2009 electricity consumption was 2.5% lower than the year before.

Following a sharp increase in electricity consumption by households from 1980 to 1990. electricity consumption increased only slightly up to 2006. Electricity consumption has been falling over the past three years. In 2009 consumption fell by 2.3%. Electricity consumption increased by 2.0% relative to 1990.

From 1980 to 1990 electricity consumption's share of total energy consumption grew significantly in all areas of consumption except transport. Since then the share grew moderately until the late 1990s and then stagnated. In 1980 the share was 12.9%, in 1990 it was 17.1%, in 2000 it was 18.1% and in 2009 it was 18.0%.

In the trade and service sector electricity consumption's share of total energy consumption increased until 2001 and has remained almost unchanged since then. In 2009 electricity consumption amounted to 46.1% of total energy consumption. In manufacturing industries and households the share of electricity was 31.8% and 19.0% respectively. In households the share was lower in 2009 than in 1990.

Energy consumption for transport by type



Energy consumption for transport by fuel type



Energy consumption for road transport



Road Transport

Energy consumption for transport was 209.3 PJ in 2009 which is 5.5% lower than the year before. Energy consumption followed an upward trend from 2002 to 2007 but fell in 2008 and in 2009. Compared with 1990, energy consumption for transport has increased by 23.0%.

In 2009 energy consumption for road transport fell by 4.9%. Energy consumption for road transport is calculated as sales in Denmark, adjusted for crossborder trade. Cross-border trade in diesel fuel deducted from Danish sales was 9.0 PJ in 2009, while cross-border trade in petrol added to Danish sales of petrol was 0.8 PJ.

Consumption for international air travel grew steadily throughout almost the whole period 1990-2007 only interrupted by a drop in 2002. Consumption for international air travel dropped by 12.1% in 2009 and is now in line with consumption in 2000.

Consumption of petrol fell by 3.8% from 2008 to 2009, while consumption of diesel fuel also fell by 5.2%.

Considering developments in individual fuel types for transport from 1990 to 2009, diesel consumption increased by 60.1% while consumption of petrol fell by 3.5%. Consumption of aviation fuels increased by 22.1%.

Consumption of other types of fuel fell by 32.9% in the same period. Other types of fuel include auto gas (LPG) for road transport, fuel oil for sea transport, as well as electricity consumption by railways. The latter increased by 93.2% but continues to represent only a modest share of total energy consumption for transport. Consumption of other types of fuel also includes bioethanol and biodiesel, which together amounted to 0.34 PJ in 2009.

Energy consumption for road transport is by far the largest contributor to total energy consumption for transport. For nearly the whole period from 1980-2002 road transport's share has been steadily increasing. However. in 2004 and 2005 the share of road transport fell due to large increases in consumption for international air travel. In 1980. 1990 and 2002 the share of road transport was 70.4%. 76.3% and 77.8% respectively, while in 2009 it was 76.5%.

As consumption of diesel fuel has increased significantly since 2002, diesel fuel is now the most common fuel for road transport. In 2009 the share of diesel fuel was 55.0%. In the years 1980. 1990 and 2008 the share of diesel fuel was 32.3%. 42.1% and 55.5% respectively.

Final energy consumption by passenger and freight transport



Energy consumption for passenger transport by means of transport



Energy consumption for freight transport by means of transport



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

Generally, 2009 figures should be considered preliminary.

Out of the total energy consumption for transport in 2009, which amounted to 209.3 PJ, passenger transport accounted for 138.5 PJ, corresponding to 66.2%. Energy consumption for freight transport was 68.6 PJ, corresponding to 32.8%, while energy consumption for transport by Danish Defence was 2.2 P.J.

Energy consumption for passenger transport fell by 3.5% from 2008 to 2009, while energy consumption for freight transport fell by 10.2%. Considering the trend from 1990 to 2009, energy consumption for passenger transport increased by 22.5%, while energy consumption for freight transport increased by 23.7%.

Energy consumption for passenger transport is mainly used for transport by car and for international air travel. In 2009, energy consumption for these means of transport accounted for 67.1% and 20.4%, respectively.

Energy consumption for cars and vans (under 2 tonnes) fell by 1.5% from 2008 to 2009, while energy consumption for international air travel fell by 10.2%. From 1990 to 2009 energy consumption for cars and vans increased by 23.2%, while energy consumption for international air travel grew by 40.9%

Energy consumption for freight transport is mostly by lorries and vans (2-6 tonnes). In 2009, energy consumption by these types of vehicle made up 34.0% and 52.8%, respectively, of total energy consumption for freight transport.

Energy consumption for lorries fell by 9.7% from 2008 to 2009, while energy consumption for vans fell by 8.9%. Energy consumption for lorries increased by 0.2% from 1990 to 2009, while energy consumption for vans increased by 51.9%.

Direct energy content [TJ]	1980	1990	1995	2000	2005	2007	2008	2009	Change '90-'09
Observed consumption Total transport	143 337	170 216	184 358	201 209	215 789	224 020	221 564	209 346	23.0%
LPG	880	464	41	425	323	216	182	119	-74.4%
Aviation fuel	201	155	153	119	107	105	99	82	-46.8%
Petrol	67 830	74 327	80 998	88 976	82 126	78 331	74 557	71 698	-3.5%
JP4	7 500	-	-	-	-	-	-	-	•
Petroleum	129	462	52	39	14	19	2	0	-99.9%
JP1	23 473	28 828	30 189	35 810	39 959	40 619	39 753	35 297	22.4%
Gas/diesel oil	41 053	61 685	70 497	73 077	90 529	102 098	104 230	98 768	60.1%
Fuel oil	1 791	3 560	1 573	1 509	1 379	1 097	1 159	1 617	-54.6%
Bioethanol	-	-	-	-	-	252	210	204	•
Bio diesel							10	139	•
Electricity	479	736	854	1 253	1 351	1 282	1 360	1 422	93.2%
Road transport	100 945	129 943	139 607	153 666	161 923	171 915	168 396	160 218	23.3%
Rail transport	5 016	4 765	4 957	4 339	4 488	4 363	4 559	4 533	-4.9%
Sea transport. domestic	5 588	6 344	7 625	6 857	8 026	6 330	8 113	8 107	27.8%
Domestic air travel	2 103	3 133	2 488	1 722	1 207	1 482	1 654	1 451	-53.7%
International air travel	21 540	24 381	26 232	33 100	36 420	37 520	37 365	32 846	34.7%
Military transport	8 145	1 649	3 449	1 525	3 726	2 410	1 477	2 191	32.9%
Passenger transport	96 122	113 105	121 601	134 315	137 911	140 315	143 643	138 545	22.5%
Freight transport	39 070	55 462	59 308	65 370	74 153	81 294	76 444	68 610	23.7%
Military transport	8 145	1 649	3 449	1 525	3 726	2 410	1 477	2 191	32.9%

Final energy consumption for transport

Final energy consumption in agriculture and industry

									Change
Direct energy content [TJ]	1980	1990	1995	2000	2005	2007	2008	2009	'90-'09
Climate-adjusted consumption Tot. agriculture and industry	167 712	159 453	167 794	167 606	158 656	157 493	151 981	135 631	-14.9%
Energy products:									
Oil	112 269	65 613	61 224	58 460	53 743	52 783	48 887	45 135	-31.2%
Natural gas	-	25 281	35 375	35 606	32 433	32 365	32 114	29 348	16.1%
Coal and coke	19 126	16 315	15 623	12 339	10 817	11 301	9 532	5 459	-66.5%
Waste. non-biodegradable	18	9	11	66	541	462	416	395	•
Renewable energy	5 256	10 080	8 555	8 615	8 221	9 733	10 846	9 866	-2.1%
Electricity	27 682	36 597	40 444	43 265	44 093	42 818	41 939	37 401	2.2%
District heating	2 949	5 409	6 399	9 210	8 788	7 987	8 205	7 984	47.6%
Town gas	413	149	164	45	19	43	43	43	-71.4%
Uses:									
Agriculture and forestry	18 484	22 584	22 083	24 110	22 197	22 531	23 707	24 098	6.7%
Nurseries	11 338	10 540	9 821	8 588	7 412	7 494	7 060	6 190	-41.3%
Fishing	7 312	10 785	8 324	9 451	7 488	6 887	6 286	6 105	-43.4%
Manufacturing industries	124 586	109 250	120 235	117 806	113 406	112 040	106 451	92 039	-15.8%
Building and construction	5 992	6 295	7 331	7 651	8 152	8 542	8 476	7 200	14.4%

Energy and electricity consumption in agriculture and industry







Energy consumption by individual industry in the agriculture and industry sector



'Agriculture and industry' covers agriculture (including machine stations and forestry), nurseries, fisheries, manufacturing industries (excl. refineries), as well as building and construction. Manufacturing industries account for around 70% of total energy consumption in the agriculture and industry sector.

In 2009 climate-adjusted energy consumption in agriculture and industry was 135.6 PJ, which is 10.8% less than the year before. Compared with 1990, energy consumption decreased by 14.9%.

After adjustment for climate differences, electricity consumption was 37.4 PJ in 2009, which is 10.8% less than the year before. Compared with 1990, electricity consumption increased by 2.2%.

Since 1980 the development in energy consumption in the agriculture and industry sector has been characterized by falling oil consumption and increasing electricity consumption. From 1985 there was a shift from oil and coal to natural gas.

In 2009 consumption of oil and coal for agriculture and industry fell by 7.7% and 42.7%, respectively, compared with 2008, while consumption of natural gas and renewable energy etc. fell by 8.6% and 8.9%, respectively. In 2009 consumption of electricity and district heating was 10.8% and 2.7%, respectively, less than the year before.

Consumption of natural gas in the period 1990-2009 increased by 16.1%, while consumption of oil and coal fell by 31.2% and 66.5%, respectively. Consumption of renewable energy etc. increased by 1.7%. Consumption of electricity and district heating has increased by 2.2% and 47.6%, respectively since 1990.

Energy consumption in agriculture went up 1.6% in 2009. In nurseries and fisheries, energy consumption fell by 12.3% and 2.9%, respectively, while energy consumption in manufacturing industries and building and construction fell by 13.5% and 15.1%, respectively.

From 1990 to 2009, energy consumption in agriculture increased by 6.7%, while in building and construction energy consumption increased by 14.4%. In nurseries, fisheries and manufacturing industries, energy consumption fell by 41.3%, 43.4% and 15.8%, respectively.

From 1990 to 2009, energy consumption in agriculture increased by 6.7%, while in building and construction energy consumption increased by 14.4%. In nurseries, fisheries and manufacturing industries, energy consumption fell by 41.3%, 43.4% and 15.8%, respectively.

Electricity consumption's share of total energy consumption



Energy and electricity consumption in manufacturing industries



Composition of energy consumption in manufacturing industries



The share of electricity consumption in total energy consumption in the agriculture and industry sector increased from 16.5% in 1980 to 27.6% in 2009.

In manufacturing industries the share of electricity increased from 17.1% in 1980 to 31.8% in 2009.

In agriculture the share of electricity was 24.2% in 2009, which is unchanged relative to 1990. In 1980 the share was 27.5% For nurseries, the share of electricity has increased strongly over the years: 4.1% in 1980, 6.5% in 1990 and 15.0% in 2009. However, the share of electricity in nurseries has fallen from the peak in 2003 at 16.4%.

Climate-adjusted energy consumption in manufacturing industries fell from 106.5 PJ in 2008 to 92.0 PJ in 2009, corresponding to a fall of 13.5%. Compared with 1990, energy consumption decreased by 15.8%.

Electricity consumption was 29.3 PJ in 2009, which is 12.3% less than in 2008. Electricity consumption has decreased by 0.3% since 1990.

Developments in the consumption of individual energy products correspond to developments in energy consumption in agriculture and industry as a whole.

The composition of energy consumption in manufacturing industries has changed significantly since 1980, when oil consumption was dominant. From 1980 to 1990, the share of oil halved from 62.2% to 31.3%. Up to 2009, the share fell further to 19.4%.

Natural gas makes up an increasing share of energy consumption in manufacturing industries. In 2009 the share was 29.7%, as opposed to 20.7% in 1990. In 1980 natural gas was not yet being marketed.

The share of coal dropped from 15.1% in 1980 to 12.3% in 1990 and 4.5% in 2009. The shares of renewable energy etc. and district heating more than doubled from 1980 to 2009, now representing 8.2% and 6.5%, respectively.

Electricity consumption's share increased from 17.1% in 1980 to 26.9% in 1990 and 31.8% in 2009.



Energy intensity in agriculture and industry

Electricity intensity in agriculture and industry



TJ per DKK million gross equivalent (2000 prices)

Energy consumption per employee in manufacturing industries

Climate-adjusted Toe/1000 Euro (2000 prices) 350 300 250 200 150 100 50 0 1980 '85 '95 '00 '05 '09 '90 Electricity Total

Energy intensity has been calculated as climateadjusted energy consumption in relation to gross added value (GAV) in constant 2000 prices, chained values.

Energy intensity in agriculture and industry dropped by 20.0% from 1990 to 2009. Energy intensity followed an upward trend up to 1993, after which a drop occurred. In 2009 energy intensity was 0.567, i.e. 0.567 TJ of energy were used for every DKK 1 million GAV in agriculture and industry. This figure is unchanged in relation to 2008.

Energy intensity increased by 10.1% in manufacturing industries from 1990 to 1993, while it fell by 28.9% from 2003 to 2009. In 2009 energy intensity fell by 2.0%.

In 2009 energy intensity in agriculture and nurseries fell by 0.4%. Compared with 1990, it fell by 24.4%. According to the most recent national accounts from Statistics Denmark, the large increase in 2005-2007 was due to significant decreases in GAV.

Electricity intensity has been calculated as climateadjusted energy consumption in relation to gross added value (GAV) in constant 2000 prices, chained values.

As with energy intensity, the trend in electricity intensity changes after 1993. Up to 1993 electricity intensity rose by 11.4%, while it fell by 13.7% from 1993 to 2009. In 2009, electricity intensity was 0.156, i.e. 0.156 TJ of electricity (corresponding to 43,424 kWh) were used for every DKK 1 million GAV in the agriculture and industry sector. Electricity intensity increased by 0.5% in 2009.

Electricity intensity in manufacturing industries fell by 0.6% in 2009. In agriculture and nurseries electricity intensity fell by 1.7%. According to the most recent national accounts from Statistics Denmark, the large increase in electricity intensity in agriculture and nurseries in 2005-2007 was due to significant decreases in GAV.

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, measured as GAV per employee.

Energy consumption per employee was 258.2 GJ in 2009, as opposed to 268.4 GJ the year before. This corresponds to a decrease of 3.8%. Compared with 1990, energy consumption per employee grew by 18.4%.

Electricity consumption per employee was 82.2 GJ in 2008, as opposed to 84.3 GJ the year before, corresponding to a drop of 2.5%. Compared with 1990, electricity consumption per employee increased by 40%.

Energy and electricity consumption in the trade and service sector



The trade and service sector includes wholesale, retail, private and public service. Public service is limited to governance and services available to the community on non-market terms.

Climate-adjusted energy consumption was 83.6 PJ in 2009, which is 3.5% lower than the year before. Compared with 1990, consumption increased by 8.6%.

In 2009, electricity consumption was 38.6 PJ after climate-adjustment, which is 2.5% lower than in 2008. Compared with 1990, electricity consumption increased by 27.9%.





Composition of energy consumption in the trade and service sector



Since 1980, the trade and service sector has seen a heavy fall in oil consumption and an increase in electricity and district heating consumption. Furthermore, since the mid-1980s there has been a shift from oil to natural gas. Other than what is included in electricity and district heating, renewable energy etc. only represents a modest share of total energy consumption.

In 2009 there was a fall in consumption of oil and natural gas of 8.2% and 8.9%, respectively. Consumption of electricity and district heating, the most dominant energy sources, fell by 2.5% and 1.5%, respectively.

Compared with 1990, oil consumption fell by 78.7%, while natural gas consumption increased by 34.8%. In 2009, consumption of electricity and district heating was 27.9% and 30.4% higher, respectively, compared with 1990.

In the period 1980-2009 there were large shifts in the relative size of individual energy products.

In 1980, oil made up about half of total energy consumption. The other half was electricity (28%) and district heating (22%).

2009 shows a different picture altogether. The most important energy product is electricity, with 46.1% of total energy consumption, followed by district heating with 36.6%. Natural gas and oil make up 11.1% and 3.8%, respectively. The share of renewable energy etc. in the trade and service sector is 2.4%.



Energy consumption by sector

Energy consumption for heating in the trade and service sector



Electricity consumption by sector



In 2009, 72% of energy consumption in the trade and service sector was in private and public service, while wholesale and retail trade accounted for the remaining 28%.

In wholesale and retail, energy consumption fell by 4.0% and 2.8%, respectively from 2008 to 2009. In private and public service, energy consumption fell by 4.1% and 2.5%, respectively.

Compared with 1990, energy consumption in wholesale fell by 8.1%, while consumption in retail grew by 16.2%.

Energy consumption in the private service sector is significantly higher today than in 1990. Consumption has gone up 25.1% since 1990. In the public service sector, energy consumption fell by 3.8% in 2009, compared with 1990.

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 utilized. The difference is local heat loss in individual homes, e.g. from oil and natural gas boilers.

Final energy consumption for space heating in the trade and service sector was 44.5 PJ in 2009, which is 4.2% lower than the year before. Compared with 1990, consumption fell by 1.1%.

Net energy consumption was 40.8 PJ in 2009, which is 3.7% lower than the year before. Compared with 1990, net energy consumption increased by 6.1%. This increase is due to a shift from oil to natural gas and district heating, where local losses are significantly lower.

Electricity consumption increased in the trade and service sector up to 2008. In 2009, electricity consumption in wholesale and retail was 5.0% and 2.3% lower, respectively, than in 2008. In private and public service, electricity consumption fell by 2.8% and 0.5%, respectively.

From 1990 to 2009, electricity consumption in wholesale and retail increased by 6.7% and 22.8%, respectively. Electricity consumption in the public service sector increased by 19.0%. In the private service sector the increase was 45.9%, which is significantly higher.



Energy intensity in the trade and service

Electricity intensity in the trade and service sector Climate adjusted

TJ per DKK million gross equivalent in 2000

Public Service



Energy consumption per employee in the trade and service sector



Energy intensities have been calculated as climateadjusted energy consumption in relation to gross added value (GAV) in constant 2000 prices, chained values.

Energy intensity was 0.106 in 2009, i.e. for every DKK 1 million GAV in the trade and service sector, 0.106 TJ of energy were used. This is 1.3% less than the year before.

Energy intensity in the trade and service sector fell by 26.2% from 1990 to 2009. For wholesale and retail, energy intensities fell by 47.2% and 21.7%, respectively. For the private service sector and the public service sector, intensities fell by 20.3% and 24.6%, respectively.

Electricity intensities have been calculated as climate-adjusted electricity consumption in relation to gross added value (GAV) in constant 2000 prices, chained values.

In 2009 electricity intensity was 0.049, i.e. for every DKK 1 million GAV in the trade and service sector, 0.049 TJ of electricity (corresponding to 13,585 kWh) were used. Electricity intensity fell by 0.3% in 2009 relative to the year before.

Electricity intensity in the trade and service sector fell by 13.0% from 1990 to 2009. For wholesale and retail, electricity intensities fell by 38.7% and 17.3%, respectively. In the private and public service sectors, electricity intensities fell by 7.1% and 6.6%, respectively.

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

Energy consumption per employee was 38.4 GJ in 2009, as opposed to 39.2 GJ the year before. This corresponds to a decrease of 2.0%. Compared with 1990, energy consumption per employee fell by 11.1%.

Electricity consumption per employee was 17.7 GJ in 2009, as opposed to 17.9 GJ the year before, corresponding to a drop of 1.1%. Compared with 1990, electricity consumption per employee increased by 4.8%.

Final energy consumption in the trade and service sector

									Change
Direct energy content [TJ]	1980	1990	1995	2000	2005	2007	2008	2009	'90-'09
Climate-adjusted consumption Total trade and service	78 314	77 047	77 698	80 607	85 065	86 824	86 639	83 636	8.6%
Oil	38 337	14 850	7 660	5 874	4 428	3 383	3 455	3 170	-78.7%
Natural gas	-	6 902	8 468	7 739	9 989	10 733	10 215	9 302	34.8%
Coal and coke	-	98	68	-	-	-	-	-	-100%
Waste. non-biodegradable	188	327	509	633	593	438	305	208	-36.4%
Renewable energy	523	1 152	1 264	2 136	2 233	2 186	2 036	1 788	55.2%
Electricity	21 788	30 147	32 847	35 715	37 479	39 320	39 552	38 555	27.9%
District heating	17 117	23 449	26 794	28 458	30 301	30 732	31 044	30 576	30.4%
Town gas	361	121	89	52	42	33	32	36	-70.6%
Wholesale	19 045	13 795	13 307	13 895	12 909	13 260	13 211	12 684	-8.1%
Retail trade	9 702	8 883	8 728	9 324	9 993	10 497	10 624	10 321	16.2%
Private service	25 955	28 812	31 239	32 904	36 247	37 515	37 596	36 050	25.1%
Public service	23 612	25 557	24 423	24 484	25 916	25 552	25 208	24 580	-3.8%

Final energy consumption in households

									Change
Direct energy content [TJ]	1980	1990	1995	2000	2005	2007	2008	2009	'90-'09
Climate-adjusted consumption Total households	203 969	184 479	191 913	189 052	194 686	201 876	199 063	192 145	4.2%
Oil	121 022	58 998	46 863	35 444	27 617	23 760	22 049	20 197	-65.8%
Natural gas	-	17 877	26 349	29 329	29 993	28 136	27 705	26 825	50.1%
Coal and coke	2 498	830	496	49	8	9	19	22	-97.4%
Renewable energy	10 256	16 874	17 880	21 812	33 192	45 442	44 413	42 112	150%
Electricity	28 388	35 696	37 202	37 339	37 810	37 602	37 290	36 423	2.0%
District heating	37 649	52 820	62 104	64 484	65 580	66 553	67 216	66 157	25.2%
Town gas	4 157	1 384	1 019	594	486	375	371	408	-70.5%
Single family houses	155 657	136 823	141 798	139 337	144 192	151 517	148 303	142 684	4.3%
Oil	102 281	52 233	43 232	32 741	25 032	21 978	20 054	18 293	- <mark>6</mark> 5.0%
Natural gas	-	15 143	22 508	24 907	25 472	23 483	23 106	22 638	49.5%
Coal and coke	1 249	136	179	17	0	1	7	6	-95.4%
Renewable energy	10 249	16 860	17 849	21 766	33 138	45 380	44 347	42 042	149%
Electricity	21 431	27 011	28 221	28 210	28 279	27 989	27 783	27 195	0.7%
District heating	18 190	24 685	29 254	31 372	32 007	32 482	32 805	32 288	30.8%
Town gas	2 258	754	554	323	264	204	202	222	-70.6%
Multi-family dwellings	48 312	47 656	50 115	49 715	50 494	50 359	50 759	49 460	3.8%
Oil	18 740	6 766	3 631	2 703	2 585	1 782	1 995	1 904	-71.9%
Natural gas	-	2 733	3 841	4 422	4 522	4 653	4 599	4 187	53.2%
Coal and coke	1 249	693	317	32	8	8	12	16	-97.8%
Renewable energy	8	14	31	46	54	62	66	71	403%
Electricity	6 957	8 686	8 980	9 129	9 530	9 613	9 507	9 228	6.2%
District heating	19 459	28 135	32 851	33 112	33 573	34 071	34 411	33 868	20.4%
Town gas	1 899	630	465	271	222	171	169	186	-70.4%



Energy consumption by households







Energy consumption per household

Energy consumption by households is greatly influenced by the weather. The figure shows that 1989-90 and 2000 were very hot years with low energy consumption, whereas 1996 was exceptionally cold.

In 2009 climate-adjusted energy consumption by households was 192.1 PJ, accounting for 30% of total final energy consumption in Denmark. 159.5 PJ of the 192.1 PJ was used for heating and 32.6 PJ were used for electrical appliances etc.

Climate-adjusted energy consumption by households fell by 3.5% from 2008 to 2009. Compared with 1990, energy consumption increased by 4.2%. This should be seen in the context of a 13.5% increase in the number of households.

There have been significant changes in the composition of household energy consumption since 1980. In the whole period shown, oil consumption has fallen significantly due to the conversion to district heating and since the mid-1980s to natural gas as well. Firewood and wood pellets consumption has increased dramatically since 2000.

In 2009 district heating amounted to 34.4% of household energy consumption, and renewable energy and electricity amounted to 21.9% and 19.0%, respectively. Consumption of natural gas, oil and town gas amounted to 14.0%, 10.5% and 0.2%, respectively.

Household electricity consumption increased dramatically from 1980 to the early 1990s, and subsequently remained more or less constant until 2000. After showing an increasing trend from 2001 to 2006, electricity consumption is now falling again. In 2009, electricity consumption fell by 2.3%.

In 2009, average energy consumption per household was 75.4 GJ, which is 4.2% lower than the year before. Of this, 62.6 GJ were used for space heating and hot water, corresponding to the energy content in 1,750 litres of heating oil. Energy consumption by households went down by 8.2% compared with 1990.

In 2009 average electricity consumption per household for electrical appliances and lighting was 12.2 GJ, corresponding to 3,400 kWh. This is 4.7% more than in 1990, but 3.2% less than in 2008.

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

Heating installations in homes



Energy consumption for heating homes



Net energy consumption and heat loss when heating homes



The significant changes in the composition of energy consumption by energy type reflect changes in the composition of heating installations in homes over time. Until the mid-1980s, oil boilers clearly dominated the market, after which district heating became the most common source of heat. In 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 boilers.

As at 1 January 2010, the total of 2.75 million heating installations could be analyzed as follows: district heating installations 61.3%, natural gas boilers 15.1%, oil boilers 14.0%, and other installations, including log wood boilers and electric heating, 9.6%.

Source: Statistics Denmark

Energy consumption for heating (space heating and hot water) fell from 179.8 PJ in 1980 to 159.5 PJ in 2009, corresponding to a fall of 11.2%. This fall has occurred even though the total heated area has increased by 32.2% during the same period. The fall in energy consumption took place from 1980 to 1990. After an upward trend up to 2007, consumption for heating fell again. From 2008 to 2009 consumption fell by 3.6%.

In the period 1980 to 2009 energy consumption for heating per m2 fell by 32.9%. This fall can be explained by improvements in the insulation of older dwellings as well as a shift away from old oil boilers to more efficient natural gas boilers and district heating installations. In addition to this, to be in compliance with building regulations, new dwellings use less energy per m² than existing dwellings. Since 1990 energy consumption for heating per m² fell by 14.0%.

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

While final consumption for heating as mentioned fell by 11.2% from 1980 to 2009, net energy consumption for space heating and hot water in households increased by 6.1% in the same period. The different trend is due to the extensive shift from oil heating to district heating and later also to natural gas heating, where the local losses are considerably smaller.

However, recent years' large increases in consumption of firewood and wood pellets have taken the trend in the opposite direction. Both final energy consumption and net energy consumption for heating have therefore gone up since 2000.

Private consumption and electricity consumption in households



Household stock of electrical appliances



Specific electricity consumption of household appliances



In the period 1990-2009 total household electricity consumption increased by 2.0%, whereas electricity consumption for appliances and lighting etc. increased by 16.1%. This big difference is due to a significant fall in electricity consumption for heating.

In the same period private consumption increased by 35.8%; i.e. considerably more than electricity consumption for appliances and lighting etc. This may seem surprising, considering the large increase in the number of electrical appliances during this period. The explanation is significant falls in the specific electricity consumption of electrical appliances, see below.

From 1998 to 2003 private consumption and electricity consumption for appliances and lighting etc. more or less followed the same trend. From 2004 to 2009 the increase in private consumption was greater than the increase in electricity consumption for appliances and lighting etc.

The past 30 years have seen a sharp increase in the stock of almost all electricity-consuming household appliances.

For instance, since 1990 the number of microwaves has increased by more than 325%, while the number of dishwashers and tumble dryers has increased by 187% and 216%, respectively. Television sets, washing machines and refrigerators have also increased considerably in numbers. With an increase of 26%, separate freezers have seen a more moderate growth.

Source: ElmodelBOLIG

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

The average annual electricity consumption of a freezer fell from 605 kWh in 1990 to 322 kWh in 2009, i.e. by 46.8%. Electricity consumption for a washing machine fell by 37.6%, while the fall for a tumble dryer was 30.9% in the same period. Other electrical appliances, apart from television sets, have also experienced considerable reductions in average specific annual consumption.

Source: ElmodelBOLIG

Carbon and other greenhouse gas accounts

Carbon 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 environment commitment means that, in accordance with EU burden sharing of the total EU reduction commitment under the Kyoto Protocol, Denmark must reduce average emissions of greenhouse gases in the period 2008-2012 by 21% in relation to the base year. In 2007 the base year was determined in relation to emissions in 1990 for CO_2 , CH_4 and N_2O and 1995 for the fluorinated greenhouse gases (the F-gases).

In 2008, total emissions of greenhouse gases (without adjustments) were 63.8 million tonnes CO_2 equivalents, which is 7.9% lower than base year emissions of 69.3 million tonnes CO_2 equivalents. Including adjustments in the energy statistics for fluctuations in temperature and net exports of electricity, the level in 2008 was 65.7 million tonnes CO_2 equivalents, corresponding to a drop of 15.0% relative to an adjusted

CO₂ emissions from energy consumption

Million tonnes CO₂



CO₂ emissions by fuel



base year. The greenhouse gas inventory for 2009 will not be ready until 2011. Total greenhouse gas inventories include both CO₂ emissions from energy use (however, unlike the separate carbon accounts in the energy statistics, 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 and certain industrial processes). Emissions of five other greenhouse gases are also included in the commitment (methane (CH₄), nitrous oxide (N_2O), hydro fluorocarbons (HFCs), per fluorocarbons (PFCs) and sulphur hexafluoride (SF₆)) and these are converted to CO_2 equivalents. To meet the 2008-2012 commitment, reductions achieved in connection with certain carbon removals by forests and soils, as well as from projects in other countries (JI and CDM projects) will also be included in calculations.

Source: The Danish Energy Agency and the National Environmental Research Institute

The Danish Energy Agency calculates both observed CO₂emissions and adjusted CO₂emissions, which take annual temperature variations and foreign trade in electricity into account, see the statement of energy consumption on page 18. The purpose of the adjusted calculations is to illustrate the trends underlying the development. Unlike previously, the calculations include CO₂emissions from non-biodegradable waste.

In 2009, observed CO_2 emissions from energy consumption were 49.0 million tonnes, which is 3.6% less than in 2008. Observed CO_2 emissions dropped by 7.8% compared with 1990. This was despite Denmark's large net imports of electricity in 1990 as opposed to very low net imports of electricity in 2009.

Adjusted CO_2 emissions from energy consumption fell to 49.4 million tonnes in 2009; a drop of 6.2%. Compared with 1990, the drop is 19.2%.

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

This shift in fuels has led to a reduction in CO_2 emissions, as consumption of oil and coal entails greater CO_2 emissions than consumption of natural gas and renewable energy. While gross energy consumption has fallen by 0.7% since 1990, CO_2 emissions have fallen by 19.2%.

CO₂ emissions per fuel unit and kWh electricity



CO₂ emissions by sector

Million tonnes CO₂



CO₂ emissions from end-consumption of energy Adjusted

Million tonnes 70 60 50 4C 30 20 10 0 '90 '95 '00 '05 '09 Energy Sector Transport Agriculture and Industry Trade and Services Households

The figure for gross energy consumption is almost unchanged compared with 1990, 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 CO_2 is bound to each unit of fuel consumed. In 2009, each GJ of adjusted gross energy consumption was linked to 60.7 kg CO_2 , as opposed to 74.7 kg in 1990. This corresponds to a reduction of 18.7%.

One kWh of electricity sold in Denmark in 2009 led to 567 grams of CO₂emissions. In 1990 CO₂emissions amounted to 937 grams per kWh of electricity sold. This corresponds to a reduction of 39.6%. 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. In recent years, CO₂emissions per kWh of electricity sold have been fairly stable.

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 53.1 million tonnes total observed CO_2 emissions in 1990, 25.2 million tonnes came from the transformation sector and 26.5 million tonnes came from final consumption, while the energy sector emitted 1.4 million tonnes.

In 2009 total observed CO₂emissions were 49.0 million tonnes, of which 22.0 million tonnes were from the transformation sector, 24.6 million tonnes were from final energy consumption, and 2.3 million tonnes were from the energy sector. The transformation sector has seen a fall of 3.2 million tonnes of CO₂relative to 1990, although electricity and district heating production grew significantly in this period.

Analyzing CO_2 emissions from production of electricity, district heating and town gas by endconsumer provides a picture of the breakdown of total CO_2 emissions between the energy sector, transport, industries, and households.

In 2009 the agriculture and industry sector and transport were responsible for the largest shares of total CO₂emissions, with 24.2% and 31.3%, respectively. Households and the trade and service sector accounted for 23.0% and 16.4%, respectively, while the energy sector accounted for 5.2% of CO₂emissions.

Compared with 1990, CO_2 emissions from transport increased by 22.5%. However, industries and households have seen considerable falls. In the agriculture and industry sector, and in the trade and service sector, CO_2 emissions fell by 33.2% and 25.6% respectively, while for households they fell by 37.4%.

Observed CO₂ emissions from energy consumption

1000 tonnes									Change
Observed emissions	1980	1990	1995	2000	2005	2007	2008	2009	'90-'09
Total emissions	64 294	53 117	60 277	53 591	50 827	53 746	50 800	48 965	-7.8%
Emissions by fuel	64 294	53 117	60 277	53 591	50 827	53 746	50 800	48 965	-7.8%
Oil	40 048	24 178	26 197	26 205	24 187	24 182	23 368	22 304	-7.7%
Natural gas	1	4 323	7 546	10 624	10 676	9 709	9 772	9 366	117%
Coal and coke	23 975	24 222	25 824	15 774	14 737	18 563	16 334	16 040	-33.8%
Waste, Non-renewable	270	394	710	988	1 228	1 292	1 326	1 255	219%
Emissions by use	64 294	53 117	60 277	53 591	50 827	53 746	50 800	48 965	-7.8%
Energy sector	880	1 391	1 884	2 312	2 429	2 470	2 364	2 307	65.9%
Transformation sector	30 147	25 201	30 813	24 234	21 110	24 034	21 997	22 028	-12.6%
Electricity production	24 038	20 756	26 070	20 238	17 277	20 461	18 337	18 171	-12.5%
District heating production	5 539	4 344	4 665	3 954	3 801	3 546	3 628	3 824	-12.0%
Town gas production	570	101	78	42	33	27	32	33	-67.1%
Final energy consumption	33 267	26 525	27 581	27 045	27 288	27 242	26 439	24 629	-7.1%
Transport	10 440	12 419	13 444	14 638	15 709	16 307	16 128	15 224	22.6%
Agriculture and industry	10 425	7 788	8 128	7 578	7 021	6 959	6 458	5 660	-27.3%
Trade and service	2 960	1 395	1 070	862	916	839	816	766	-45.1%
Households	9 442	4 924	4 939	3 967	3 642	3 138	3 037	2 979	-39.5%

Observed CO_2 emissions are 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 CO_2 emissions. CO_2 emissions are not attributed to renewable energy and non-renewable waste.

CO₂ emissions from energy consumption, adjusted^{*)}

1000 tonnes

1000 tonnes									Change
Adjusted emissions	1980	1990	1995	2000	2005	2007	2008	2009	'90-'09
Total emissions	62 570	61 181	59 839	55 354	52 386	53 847	52 688	49 416	-19.2%
Emissions by fuel	62 570	61 181	59 839	55 354	52 386	53 847	52 688	49 416	-19.2%
Oil	39 384	25 034	26 375	26 724	24 461	24 344	23 555	22 350	-10.7%
Natural gas	1	4 646	7 603	10 955	10 955	9 945	10 050	9 435	103%
Coal and coke	22 916	31 100	25 149	16 677	15 738	18 259	17 752	16 375	-47.3%
Waste, Non-renewable	269	400	712	998	1 232	1 299	1 332	1 256	214%
Emissions by use	62 570	61 181	59 839	55 354	52 386	53 847	52 688	49 416	-19.2%
Energy sector	880	1 391	1 884	2 312	2 429	2 470	2 364	2 307	65.9%
Transformation sector	28 809	32 410	30 257	25 489	22 487	23 771	23 602	22 412	-30.8%
Electricity production	22 868	27 330	25 421	21 046	18 468	19 793	19 603	18 465	-32.4%
District heating production	5 382	4 972	4 758	4 398	3 986	3 950	3 966	3 914	-21.3%
Town gas production	559	108	78	45	33	28	34	34	-69.0%
Final consumption	32 881	27 379	27 698	27 553	27 470	27 607	26 722	24 697	-9.8%
Transport	10 440	12 419	13 444	14 638	15 709	16 307	16 128	15 224	22.6%
Agriculture and industry	10 360	7 967	8 154	7 690	7 062	7 046	6 525	5 676	-28.8%
Trade and service	2 890	1 531	1 085	927	943	894	859	776	-49.3%
Households	9 191	5 463	5 015	4 298	3 757	3 360	3 211	3 021	-44.7%

*) Adjusted for fuel consumption for net exports 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 18. In this statement, energy consumption has been adjusted for temperature fluctuations relative to a normal weather year

and fuel consumption linked to foreign trade in electricity. In cold years or years with net electricity exports, the adjustment is therefore negative, while in warmer years or years with net imports of electricity, the adjustment is positive.

Total emissions of greenhouse gases

								Change
1000 tonnes CO ₂ equivalents	Base year	1990	1995	2000	2005	2007	2008	Base year -'08
Total observed emissions 1)	69 323	68 923	76 340	68 295	63 827	66 843	63 845	-7.9%
Total observed net emissions	69 323	68 036	77 863	68 141	61 812	67 732	65 309	-5.8%
Total observed net emissions	69 323	68 036	77 863	68 141	61 812	67 732	65 309	-5.8%
From energy consumption	51 817	51 824	59 770	52 130	49 609	52 671	49 725	-4.0%
Energy and transformation sector	26 315	26 357	32 603	26 039	23 063	26 036	23 868	-9.3%
Final energy consumption	25 502	25 467	27 167	26 091	26 546	26 635	25 857	1.4%
- Transport	10 650	10 821	12 307	12 364	13 496	14 374	14 072	32.1%
- Industry	5 493	5 493	5 966	6 105	5 688	5 767	5 278	-3.9%
- Trade and service and households	9 359	9 153	8 894	7 623	7 361	6 494	6 507	-30.5%
Industrial processes. flaring etc.	2 911	2 718	3 317	4 235	3 138	3 192	2 854	-2.0%
Fugitive emissions and flaring	304	344	483	747	607	548	505	66.2%
Industrial processes	2 470	2 240	2 727	3 389	2 442	2 543	2 257	-8.6%
Solvents and product use	137	135	107	99	88	100	92	-32.8%
From agriculture	13 048	13 109	11 975	10 698	9 901	9 759	10 025	-23.2%
Animals' digestion	3 259	3 261	3 135	2 876	2 724	2 799	2 819	-13.5%
Manure	1 437	1 536	1 556	1 567	1 587	1 562	1 555	8.2%
Agricultural land	8 352	8 312	7 285	6 254	5 590	5 397	5 651	-32.3%
Other emissions	1 547	1 271	1 279	1 233	1 179	1 222	1 241	-19.8%
Waste disposal	1 334	1 111	1 104	1 069	1 019	1 064	1 057	-20.8%
Wastewater treatment	213	137	147	137	134	129	152	-28.7%
Other waste		24	28	26	26	30	32	-
Forest and land use	0	- 887	1 523	- 154	-2 015	889	1 464	
Forests	0	- 879	-1 098	- 885	-1 193	380	442	
Land use		- 8	2 621	732	- 821	509	1 022	

Note: This table only includes Denmark's emissions and removal of greenhouse gases. In the total climate accounts in relation to Denmark's climate commitment for 2008-2012, credits that are part of the CO₂ removals under "Forest and land use", and credits from reductions achieved through projects in other countries and allowance purchases must also be included.

¹⁾ Total emissions without the contribution from "Forest and land use", as only a part of this is to be included in the climate accounts for 2008-2012.

Source: National Environmental Research Institute

Observed and Adjusted Greenhouse Gas Emissions

1000 tonnes CO ₂ equiva- lents	Base year	1990	1995	2000	2005	2007	2008	2009*	Change Base year -'09
Total observed emissions 1)	69 323	68 923	76 340	68 295	63 827	66 843	63 845	62 098	-10.4%
Total adjusted emissions ¹⁾	77 357	76 986	75 902	70 058	65 386	66 944	65 733	62 549	-19.1%

Note: See the note above. Denmark's reduction commitment of 21% under the Kyoto Protocol should be regarded in relation to a base year without adjustments for fluctuations in climate and fuel consumption linked to foreign trading in electricity. The adjusted greenhouse gas accounts can only be used to illustrate the effect of initiatives and other national effects influencing CO₂ emissions connected to Denmark's own energy consumption.

¹⁾ See above.

 $^{2)}$ While emissions up to and including 2007 comply with Denmark's climate reporting, emissions in this column are calculated on the basis of the new assumption of distribution of waste into renewable and non-renewable waste. This new assumption about waste means an increase in the total greenhouse gases of around 0.6 million tonnes of CO₂.

* The preliminary emissions account for 2008 is solely based on CO_2 emissions from energy consumption as calculated in the Energy Statistics 2008. Total greenhouse gas emissions are calculated by assuming that all emissions other than CO_2 from energy consumption are constant at the values for 2007, calculated by the National Environmental Research Institute. This new assumption about waste is also applied here.

Emissions of greenhouse gases

Million tonnes CO₂ equivalents



Observed net emissions of greenhouse gases by origin

Million tonnes CO₂ equivalents



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

Observed emissions of greenhouse gases were 63.8 million tonnes of CO₂equivalents in 2008, which is 4.5% less than in 2007. Compared with the base year, observed emissions decreased by 7.9%.

Adjusted for climate fluctuations and fuel consumption linked to foreign trade in electricity, emissions of greenhouse gases were 65.7 million tonnes of CO2 equivalents in 2008, which is 1.8% less than in 2007. Compared with the base year, adjusted emissions decreased by 15.0%.

Source: The National Environmental Research Institute, www.dmu.dk

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.

In 2008, observed emissions were: emissions from energy consumption 76.1%, emissions from agriculture 15.4%, industrial processes, flaring etc. 4.4%, forest and land use 2.2%, and other emissions, 1.9%.

Source: The National Environmental Research Institute, www.dmu.dk



Observed emissions by type of greenhouse gas in 2008

The greenhouse gases included in the statement of total emissions have very different contributions. With 79.4%, CO_2 accounts for the largest part of total greenhouse gas emissions. Nitrous oxide is the second-largest contributor to total emissions with 10.5%, followed by methane (CH₄) with 8.7%.

By far the most important source of CO_2 emissions is fuel consumption for energy purposes. The most important source of both methane and nitrous oxide emissions is agriculture, but waste treatment also significantly contributes to methane emissions.

Source: The National Environmental Research Institute, www.dmu.dk

		Observed CO	2-emissions of	energy consur	nergy consumption									
1000 tonnes	Tota	al	ETS		Non-ET	s								
	2008	2009	2008	2009	2008	2009								
Total	50 800	48 965	24 863	24 336	26 051	24 725								
Energy sector	2 364	2 307	2 479	2 404										
Transformation sector	21 997	22 028	19 758	19 859	2 239	2 170								
Final energy consumption	26 439	24 629	2 627	2 073	23 812	22 556								
Transport	16 128	15 224	0	0	16 128	15 224								
Agriculture and industry	6 458	5 660	2 627	2 073	3 831	3 587								
- horticulture	285	242	10	15	274	227								
- manufacturing	4 116	3 404	2 616	2 058	1 499	1 345								
- other agriculture and industry	2 057	2 014	0	0	2 057	2 014								
Trade and service	816	766	0	0	816	766								
Households	3 037	2 979	0	0	3 037	2 979								

Observed CO₂ emissions from energy consumption in 2008 and 2009

¹⁾ Include CO₂ emissions from oil, natural gas and coal, while CO₂ emissions from non-renewable waste are not included.



Observed CO_2 emissions from energy consumption in 2009, ETS and non-ETS sectors

The EU emissions trading scheme (ETS) covers about half of CO_2 emissions from energy consumption. However, the share varies from sector to sector.

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

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 emissions trading scheme. The scheme almost exclusively covers emissions from manufacturing industries.

Total observed emissions of greenhouse gases in 2009

1000 tonnes CO ₂ equivalents	Total*)	ETS, from energy consumption	ETS, from processes and flaring	Not covered by EU $\mathrm{ETS}^{\star)}$
Total	62 098	24 336	1 125	36 637

Note: The preliminary emissions account for 2008 is solely based on CO_2 emissions from energy consumption as calculated in the Energy Statistics 2008. Total greenhouse gas emissions are calculated by assuming that all emissions other than CO_2 from energy consumption are constant at the values for 2007, calculated by the National Environmental Research Institute. This new assumption about waste is also applied here.

*) Preliminary figures

Energy consumption up to 2025

Each year, the Danish Energy Agency prepares baseline projections of energy production, energy consumption and energy-related greenhouse gas emissions on the basis of expectations for economic growth, fuel prices etc. This expected future scenario corresponds to a situation without new political initiatives, but with implementation of instruments already adopted. The projections are presented below and are made on the assumption of an oil price of USD 100 per barrel in 2020 (measured at 2008 prices), and on a long-term CO₂allowances price of DKK 186 per tonne (2020). The figures are based on Energy Statistics 2008 and the projections from April 2010. It should be stressed that these are projections based on a number of assumptions and *not* a forecast.

Macroeconomic assumptions and exchange rate assumptions are in agreement with the convergence program of the Ministry of Finance from February 2010, and the assumptions for fossil fuel prices are based on the latest projections of world market prices in World Energy Outlook 2009 (WEO2009) by the IEA. Furthermore, it should be noted that projections by their very nature are very uncertain. More information on projections is available (in Danish) at http://www.ens.dk/DA-DK/INFO/TALOGKORT/FREMSKRIVNINGER/Sider/Forside.aspx



Gross energy consumption by fuel

The projections of gross energy consumption up to 2025, adjusted for fuels for electricity exports, show a fairly constant movement with an increasing trend at the end of the period. This trend should be seen against the backdrop of increased ambitions for energy savings and expansion of energy production on the basis of renewable energy sources.

In the projections, consumption of fossil fuel falls by 8% from 2009 to 2020.

Renewable energy - share of gross energy consumption



The Energy Agreement of 21 February 2008 contains an objective to increase the share of renewable energy to 20% of gross energy consumption by 2011. In the projections, the renewable energy share in 2011 is 21%.

Consumption of renewable energy increases steadily during the entire projection period, mostly through an increase in the use of solid biomass for electricity and heat production. Moreover, contributions derive from increased wind energy production, biogas, solar heating and biofuels in the transport sector.

The large increase in 2013 is primarily from the planned offshore wind farm near Anholt, which is expected to be in operation from 2013.



Final energy consumption by use





Final energy consumption increases slightly in the projections from 642 PJ in 2009 to 680 PJ in 2025, which corresponds to a total increase of 5.9%.

This increase can be attributed to an increase in the energy consumption by the transport sector and an increase in energy consumption by industries towards the end of the period, while the energy consumption of households decreases throughout the period. The reduction in energy consumption by households, and partly also industries, is very much the result of energy savings initiatives.

Overall, final energy consumption, exclusive of transport, increases by 2.2% in the period 2009-2025.

It is assumed that GDP will grow by an average of 1.8% annually from 2009 to 2025.

Final energy consumption is expected to increase by an average of 0.4% annually up to 2025.

Energy intensities



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

Continued falling energy intensities are expected for both industries and households.

Energy expenditure by industries and households

Billion DKK, current prices



Revenues from energy, CO₂ and sulphur taxes

Billion DKK, current



Expenses for Public Service Obligations (PSO) in electricity

Billion DK, current prices



Payment of Subsidies for Environmentally-friendly Electricity

Small-scale CHP Units

Biomasse etc.

Wind Power

Energy expenditure has been calculated on the basis of the 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.

Overall energy expenses were DKK 181.4 billion in 2008, which is 11.6% more than the year before. Households paid DKK 74.4 billion, the agriculture and industry sector paid DKK 53.4 billion, while the trade and service sector, including public service, paid DKK 43.7 billion.

Energy expenditure 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 expenditure has been increasing. The increase from 2007 to 2008 was due to high energy prices in 2008.

Source: Statistics Denmark

Revenues from energy taxes calculated in 2009 prices were DKK 36.4 billion in 2009, which is 1.0% less than in 2008. In addition to energy taxes, revenues include CO₂ and sulphur taxes. The largest contribution to revenues in 2009 is from gas/diesel fuel (DKK 8.9 billion), electricity (DKK 8.8 billion), petrol (DKK 8.7 billion), and CO₂ taxes (DKK 4.9 billion).

Compared with 1990, when CO₂ and sulphur taxes had not yet been introduced, revenues increased by 161%. Gas/diesel, electricity and petrol have seen growths of 182%, 105% and 54%, respectively, since 1990.

In 2009, energy, CO₂ and sulphur taxes amounted to 4.5% of total tax revenues in Denmark. This figure is unchanged in relation to 2008.

Source: Statistics Denmark

Total expenses for PSO were DKK 3.5 billion in 2009, compared with DKK 1.6 billion in 2008.

For 2009, total support for environmentally friendly electricity production was DKK 2.9 billion, divided between wind power (DKK 1.2 billion), biomass etc. (DKK 0.4 billion), and small-scale CHP (DKK 1.3 billion). Compared with 2008, this is a fall of DKK 1.9 billion, which is due, primarily, to the fact that the price of electricity on average was higher in 2009 than in 2008.

Net currency revenues from energy products

Billion DKK, current prices



Value of crude oil and natural gas production

Billion DKK, current prices



Exports of energy technology and equipment

Billion DKK, current prices



For 2009, net currency revenues from energy products were DKK 13.0 billion. There was a surplus on trade in oil, natural gas and electricity but a deficit on trade in coal. In 2008, net currency revenues were DKK 22.6 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 it consumes. However, a continued fall in the surplus is expected.

In the first half of the 1980s conditions were completely different, as net currency expenses 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 2009 was DKK 43.0 billion, compared with DKK 68.7 billion the previous year. The value of crude oil fell from DKK 51.6 billion to DKK 31.0 billion, and the value of natural gas fell from 17.1 billion to DKK 12.0 billion.

The value of the North Sea production depends on the size of the production as well as on prices on the world market. The considerable drop in the value of production in 2009 was due to falling oil and natural gas production as well as lower energy prices.

Compared with 1990, the value of the North Sea production has increased more than four-fold.

Source: Danish Oil and Gas Production 2008.

Exports of energy technology and equipment such as wind turbines, district heating pipes, thermostat valves, pumps etc. increased rapidly up to the year 2008, after which there was a drop of 11.8%. In 2008, exports reached a peak at DKK 65.8 billion, which is 150% more than in 2000. In 2009, Denmark exported energy technologies and equipment at a value of DKK 58.0 billion, corresponding to about 11.6% of total Danish goods exports. The corresponding figure in 2008 was 11.1%.

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, focusing on developments in exports and industry. More information is available at the Danish Energy Agency's website.

45

Gross energy consumption in the EU 27 and others 2008 –by share of renewable energy

		Share in percentage								
	Gross energy consumption. PJ	Oil	Natural gas	Coal	A- power	Rene- wa-ble energy and waste	From this biomass and waste	Other		
Sweden	2 093	29	2	5	33	32	19	0		
Latvia	192	34	29	2	0	30	24	5		
Austria	1 401	40	22	11	0	26	14	1		
Finland	1 519	30	11	15	16	25	21	3		
Denmark	831	41	21	20	0	18	15	1		
Portugal	1 043	52	17	10	0	18	12	3		
Romania	1 697	26	31	24	7	14	9	-1		
Slovenia	323	39	11	20	21	11	6	-2		
Estonia	245	18	13	59	0	11	11	-1		
Lithuania	383	33	28	2	28	9	8	-1		
Germany	14 386	35	22	24	11	9	6	-1		
EU27	75 246	36	25	17	13	8	5	0		
Italy	7 589	43	38	9	0	8	2	2		
Spain	5 940	48	25	10	11	8	4	-1		
France	11 461	33	15	5	41	7	4	-2		
Hungary	1 120	27	39	11	14	6	5	1		
Poland	4 112	26	13	56	0	6	5	0		
Slovakia	775	22	28	22	23	5	3	0		
The Czech Republic	1 927	22	15	43	15	5	4	0		
Bulgaria	835	25	15	38	20	5	3	-2		
Greece	1 335	56	11	27	0	5	3	2		
Holland	3 503	42	42	10	1	4	3	2		
Belgium	2 428	41	26	8	20	4	3	2		
Ireland	661	53	28	15	0	4	1	0		
Luxembourg	191	64	24	2	0	3	1	8		
UK	9 142	36	39	16	6	3	2	0		
Cyprus	120	96	0	1	0	3	1	0		
Malta	40	100	0	0	0	0	0	0		
Norway	1 248	40	16	3	0	45	4	-4		
USA	98 277	38	23	26	8	5	3	0		
Japan	21 052	42	18	24	13	3	1	0		

Source: Eurostat and IEA (numbers for USA and Japan)

Consumption of renewable energy in the EU 27 and others in 2008

			Share	in percenta	ge		
	Consump- tion of renew, energy and waste, PJ	Hydro- power	Wind power	Solar- energy	Geo- thermal energy	Biomass, incl. waste	Biofuel
Sweden	672	37.0	1.1	0.1	0.0	59.0	2.9
Latvia	58	19.3	0.4	0.0	0.0	80.2	0.1
Austria	359	38.1	2.0	1.4	0.5	52.4	5.2
Finland	383	16.1	0.2	0.0	0.0	82.8	0.8
Denmark	151	0.1	16.6	0.3	0.6	81.5	0.4
Portugal	185	13.2	11.2	0.8	4.2	63.5	3.0
Romania	230	27.0	0.0	0.0	0.5	67.2	4.9
Slovenia	36	40.6	0.0	0.0	0.0	56.8	2.6
Estonia	27	0.4	1.8	0.0	0.0	97.9	0.0
Lithuania	36	4.1	1.3	0.0	0.1	87.3	7.2
Germany	1 240	6.1	11.8	2.5	0.8	63.4	14.6
EU27	6 324	18.6	6.7	1.1	3.8	58.0	7.8
Italy	594	25.2	2.9	0.6	34.9	-3.9	5.2
Spain	458	18.5	25.3	3.2	0.1	47.4	5.5
France	844	27.4	2.4	0.2	0.6	57.5	11.4
Hungary	68	1.1	1.1	0.2	5.8	75.8	10.1
Poland	235	3.3	1.3	0.0	0.2	87.1	7.9
Slovakia	42	34.3	0.1	0.0	1.1	51.0	12.5
The Czech Republic	95	7.7	0.9	0.2	0.0	85.9	5.3
Bulgaria	41	24.9	1.1	0.0	3.4	66.9	0.4
Greece	67	17.8	9.3	10.8	1.1	55.6	4.3
Holland	146	0.3	10.5	0.7	0.1	76.7	11.7
Belgium	91	1,6	2.5	0.4	0.1	88.6	6.5
Ireland	24	14.7	36.7	0.5	0.7	37.1	9.5
Luxembourg	5	9.4	4.3	1.8	0.0	54.1	30.3
UK	234	8.0	10.9	1.0	0.0	65.9	14.1
Cyprus	4	0.0	0.0	64.8	0.3	17.4	17.2
Malta	0	0.0	0.0	0.0	0.0	0.0	0.0
Norway	565	88.9	0.6	0.0	0.0	9.9	0.6
USA	4 900	18.9	4.1	1.5	7.8	50.6	17.2
Japan	674	40.8	1.4	4.4	16.0	37.5	0.0

Key Figures 2008 – ranked by degree of Self-sufficiency

	Self-sufficiency, pct.			Share of electric- ity from	Energy co per Ca	nsumption pita, GJ	Energy Intensity, Gross energy Consumption in toe per 1 million EUR (2000 prices)		
	Total	Oil	Natu- ral Gas	energy, pct.	Gross energy Con- sumption	Final En- ergy Con- sumption	2000	2008	
Denmark	134	178	221	29	152	119	112	103	
Holland	79	6	172	9	214	131	185	172	
UK	75	94	74	6	150	102	145	114	
Estonia	72	0	0	2	183	94	813	571	
The Czech Republic	72	2	2	5	182	102	659	525	
Rumania	72	46	72	28	79	48	913	615	
Poland	71	3	29	4	108	68	489	384	
Sweden	66	0	0	56	228	150	177	152	
Bulgaria	50	0	5	7	110	53	1362	944	
France	49	1	2	14	179	102	179	167	
EU27	47	16	38	17	151	98	187	167	
Slovenia	47	0	0	29	161	109	299	258	
Finland	45	0	0	31	287	204	246	218	
Germany	39	3	15	15	175	114	166	151	
Lithuania	39	4	0	5	114	60	571	418	
Latvia	39	0	0	41	85	77	441	309	
Hungary	39	17	19	6	112	71	488	401	
Slovakia	33	1	2	16	144	83	796	520	
Greece	31	0	0	8	119	79	205	170	
Austria	31	7	18	62	171	136	140	138	
Belgium	23	0	0	7	229	148	244	200	
Spain	21	0	0	21	131	88	196	176	
Portugal	18	0	0	27	98	72	197	182	
Italy	15	7	11	17	127	90	147	143	
Ireland	10	0	8	12	150	126	137	107	
Cyprus	3	0	0	0	152	104	237	213	
Luxembourg	2	0	0	4	395	375	165	155	
Malta	0	0	0	0	97	50	191	195	
Norway	735	981	1 793	109	264	167	143	137	
USA	75	35	87	10	314	212	211	179	
Japan	18	0	4	11	163	105	103	89	

Source: Eurostat and IEA (numbers for USA and Japan)

Reserves, production, stocks and consumption of oil by regions

									Change
	1980	1990	1995	2000	2006	2007	2008	2009	'90 - '09
Oil reserves*), 1000 million									
tonnes The World		407	140	454	1/0	1/0	100	400	22.004
North America	92	137	140	151	109	169	182	182	32.9%
South- and Central America	13	13	12	10	10	9 15	10	10	-23.9%
	4	10	11	13	15	15	27	27	1/8%
Middle Fast	13	00	11	10	20	20	102	102	14.2%
Africa	49	90	90	90 10	103	103	103	103	14.3%
Asia and the Pacific	/ F	8	10	13	10	10	17	17	15.20/
	5	5	5	0	0	0	6	0	15.3%
Oil production, million tonnes									
The World	3 089	3 172	3 283	3 612	3 909	3 902	3 935	3 821	20.5%
North America	671	656	646	651	647	642	620	629	-4.1%
South- and Central America	193	230	296	345	345	333	336	339	47.0%
Europe and Euro Asia	747	788	669	725	848	860	850	855	8.4%
Middle East	934	852	979	1 141	1 221	1 201	1 252	1 156	35.8%
Africa	301	321	339	371	473	485	486	459	43.2%
Asia and the Pacific	244	325	354	379	375	381	392	383	17.9%
Oil stocks*), million tonnes									
The OECD	271	211	203	210	217	213	214	217	2.8%
North America	116	87	75	74	83	81	80	83	-4.2%
Europe	131	103	104	109	111	108	111	112	8.8%
The Pacific	23	21	24	27	24	24	23	22	1.8%
AU									
Oil consumption, million tonnes	2.075	2 1 4 5	2 252	2 554	2 002	2 070	2 0 4 0	2 002	22.49/
The World	2 975	3 145	3 253	3 551	3 903	3 970	3 960	3 882	23.4%
The World North America	2 975 933	3 145 929	3 253 961	3 551 1 071	3 903 1 130	3 970 1 134	3 960 1 079	3 882 1 026	23.4% 10.3%
Oil consumption, million tonnes The World North America South- and Central America Furope and Furo Asia	2 975 933 160	3 145 929 167	3 253 961 194	3 551 1 071 226	3 903 1 130 243	3 970 1 134 252	3 960 1 079 259	3 882 1 026 256	23.4% 10.3% 53.4%
Oil consumption, million tonnes The World North America South- and Central America Europe and Euro Asia Middle East	2 975 933 160 1 197	3 145 929 167 1 129	3 253 961 194 937	3 551 1 071 226 928	3 903 1 130 243 969	3 970 1 134 252 954 305	3 960 1 079 259 957 225	3 882 1 026 256 914 236	23.4% 10.3% 53.4% -19.0%
Oil consumption, million tonnes The World North America South- and Central America Europe and Euro Asia Middle East Africa	2 975 933 160 1 197 102	3 145 929 167 1 129 169	3 253 961 194 937 204	3 551 1 071 226 928 222 115	3 903 1 130 243 969 278 121	3 970 1 134 252 954 305	3 960 1 079 259 957 325	3 882 1 026 256 914 336	23.4% 10.3% 53.4% -19.0% 99.5%
Oil consumption, million tonnes The World North America South- and Central America Europe and Euro Asia Middle East Africa Asia and the Pacific	2 975 933 160 1 197 102 66 516	3 145 929 167 1 129 169 94	3 253 961 194 937 204 104	3 551 1 071 226 928 222 115 988	3 903 1 130 243 969 278 131 1 152	3 970 1 134 252 954 305 137	3 960 1 079 259 957 325 143 1 198	3 882 1 026 256 914 336 144	23.4% 10.3% 53.4% -19.0% 99.5% 53.7%
Oil consumption, million tonnes The World North America South- and Central America Europe and Euro Asia Middle East Africa Asia and the Pacific	2 975 933 160 1 197 102 66 516	3 145 929 167 1 129 169 94 657	3 253 961 194 937 204 104 854	3 551 1 071 226 928 222 115 988	3 903 1 130 243 969 278 131 1 153	3 970 1 134 252 954 305 137 1 186	3 960 1 079 259 957 325 143 1 198	3 882 1 026 256 914 336 144 1 206	23.4% 10.3% 53.4% -19.0% 99.5% 53.7% 83.6%
Oil consumption, million tonnes The World North America South- and Central America Europe and Euro Asia Middle East Africa Asia and the Pacific	2 975 933 160 1 197 102 66 516	3 145 929 167 1 129 169 94 657	3 253 961 194 937 204 104 854	3 551 1 071 226 928 222 115 988	3 903 1 130 243 969 278 131 1 153	3 970 1 134 252 954 305 137 1 186	3 960 1 079 259 957 325 143 1 198	3 882 1 026 256 914 336 144 1 206	23.4% 10.3% 53.4% -19.0% 99.5% 53.7% 83.6%
Oil consumption, million tonnes The World North America South- and Central America Europe and Euro Asia Middle East Africa Asia and the Pacific Energy Consumption, total, million tonnes	2 975 933 160 1 197 102 66 516	3 145 929 167 1 129 169 94 657	3 253 961 194 937 204 104 854	3 551 1 071 226 928 222 115 988	3 903 1 130 243 969 278 131 1 153	3 970 1 134 252 954 305 137 1 186	3 960 1 079 259 957 325 143 1 198	3 882 1 026 256 914 336 144 1 206	23.4% 10.3% 53.4% -19.0% 99.5% 53.7% 83.6%
Oil consumption, million tonnes The World North America South- and Central America Europe and Euro Asia Middle East Africa Asia and the Pacific Energy Consumption, total, million tonnes The World	2 975 933 160 1 197 102 66 516 6 630	3 145 929 167 1 129 169 94 657 8 095	3 253 961 194 937 204 104 854 8 538	3 551 1 071 226 928 222 115 988 9 263	3 903 1 130 243 969 278 131 1 153 10 828	3 970 1 134 252 954 305 137 1 186 11 124	3 960 1 079 259 957 325 143 1 198 11 315	3 882 1 026 256 914 336 144 1 206	23.4% 10.3% 53.4% -19.0% 99.5% 53.7% 83.6% 37.9%
Oil consumption, million tonnes The World North America South- and Central America Europe and Euro Asia Middle East Africa Asia and the Pacific Energy Consumption, total, million tonnes The World North America	2 975 933 160 1 197 102 66 516 6 630 2 110	3 145 929 167 1 129 169 94 657 8 095 2 314	3 253 961 194 937 204 104 854 8 538 2 507	3 551 1 071 226 928 222 115 988 9 263 2 748	3 903 1 130 243 969 278 131 1 153 10 828 2 804	3 970 1 134 252 954 305 137 1 186 11 124 2 852	3 960 1 079 259 957 325 143 1 198 11 315 2 804	3 882 1 026 256 914 336 144 1 206 11 164 2 664	23.4% 10.3% 53.4% -19.0% 99.5% 53.7% 83.6% 37.9% 15.2%
Oil consumption, million tonnes The World North America South- and Central America Europe and Euro Asia Middle East Africa Asia and the Pacific Energy Consumption, total, million tonnes The World North America South- and Central America	2 975 933 160 1 197 102 66 516 66 516 6 630 2 110 253	3 145 929 167 1 129 169 94 657 8 095 2 314 327	3 253 961 194 937 204 104 854 8538 2 507 393	3 551 1 071 226 928 222 115 988 9 263 2 748 459	3 903 1 130 243 969 278 131 1 153 10 828 2 804 534	3 970 1 134 252 954 305 137 1 186 11 124 2 852 556	3 960 1 079 259 957 325 143 1 198 11 315 2 804 569	3 882 1 026 256 914 336 144 1 206 11 164 2 664 563	23.4% 10.3% 53.4% -19.0% 99.5% 53.7% 83.6% 37.9% 15.2% 72.2%
Oil consumption, million tonnes The World North America South- and Central America Europe and Euro Asia Middle East Africa Asia and the Pacific Energy Consumption, total, million tonnes The World North America South- and Central America Europe and Euro Asia	2 975 933 160 1 197 102 66 516 516 6 630 2 110 253 2 823	3 145 929 167 1 129 94 657 8 095 2 314 327 3 188	3 253 961 194 937 204 104 854 8538 2 507 393 2 762	3 551 1 071 226 928 222 115 988 9 263 2 748 459 2 807	3 903 1 130 243 969 278 131 1 153 1 153 10 828 2 804 534 2 971	3 970 1 134 252 954 305 137 1 186 11 124 2 852 556 2 960	3 960 1 079 259 957 325 143 1 198 11 315 2 804 569 2 956	3 882 1 026 256 914 336 144 1 206 11 164 2 664 563 2 770	23.4% 10.3% 53.4% -19.0% 99.5% 53.7% 83.6% 37.9% 15.2% 72.2% -13.1%
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Oil consumption, million tonnes The World North America South- and Central America Europe and Euro Asia Middle East Africa Asia and the Pacific Energy Consumption, total, million tonnes The World North America South- and Central America Europe and Euro Asia Middle East Africa Asia and the Dasifie	2 975 933 160 1 197 102 66 516 6 630 2 110 253 2 823 136 141	3 145 929 167 1 129 94 657 8 095 2 314 327 3 188 255 223	3 253 961 194 937 204 104 854 8 538 2 507 393 2 762 333 247	3 551 1 071 226 928 222 115 988 9 263 2 748 459 2 807 400 276	3 903 1 130 243 969 278 131 1 153 10 828 2 804 534 2 971 571 332	3 970 1 134 252 954 305 137 1 186 11 124 2 852 556 2 960 593 350	3 960 1 079 259 957 325 143 1 198 11 315 2 804 569 2 956 635 366 - 569	3 882 1 026 256 914 336 144 1 206 11 164 2 664 563 2 770 659 361 	23.4% 10.3% 53.4% 99.5% 53.7% 83.6% 37.9% 15.2% 72.2% -13.1% 158% 61.8%
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Oil consumption, million tonnes The World North America South- and Central America Europe and Euro Asia Middle East Africa Asia and the Pacific Energy Consumption, total, million tonnes The World North America South- and Central America Europe and Euro Asia Middle East Africa Asia and the Pacific Oil consumption - share of energy	2 975 933 160 1 197 102 66 516 6 630 2 110 253 2 823 136 141 1 166	3 145 929 167 1 129 94 657 8 095 2 314 327 3 188 255 223 1 788 ion,	3 253 961 194 937 204 104 854 8 538 2 507 393 2 762 333 247 2 296	3 551 1 071 226 928 222 115 988 9 263 2 748 459 2 807 400 276 2 573	3 903 1 130 243 969 278 131 1 153 1 153 10 828 2 804 534 2 971 571 332 3 617	3 970 1 134 252 954 305 137 1 186 11 124 2 852 556 2 960 593 350 3 814	3 960 1 079 259 957 325 143 1 198 11 315 2 804 569 2 956 635 366 3 985	3 882 1 026 256 914 336 144 1 206 11 164 2 664 563 2 770 659 361 4 147	23.4% 10.3% 53.4% -19.0% 99.5% 53.7% 83.6% 37.9% 15.2% 72.2% -13.1% 158% 61.8% 132%
Oil consumption, million tonnes The World North America South- and Central America Europe and Euro Asia Middle East Africa Asia and the Pacific Energy Consumption, total, million tonnes The World North America South- and Central America Europe and Euro Asia Middle East Africa Asia and the Pacific Oil consumption - share of energy total [pct.]	2 975 933 160 1 197 102 66 516 2 110 253 2 823 136 141 1 166 consumpt	3 145 929 167 1 129 94 657 8 095 2 314 327 3 188 255 223 1 788 ion,	3 253 961 194 937 204 104 854 8 538 2 507 393 2 762 333 247 2 296	3 551 1 071 226 928 222 115 988 9 263 2 748 459 2 807 400 276 2 573	3 903 1 130 243 969 278 131 1 153 1 153 10 828 2 804 534 2 971 571 332 3 617	3 970 1 134 252 954 305 137 1 186 11 124 2 852 556 2 960 593 350 3 814	3 960 1 079 259 957 325 143 1 198 11 315 2 804 569 2 956 635 366 3 985	3 882 1 026 256 914 336 144 1 206 11 164 2 664 563 2 770 659 361 4 147	23.4% 10.3% 53.4% -19.0% 99.5% 53.7% 83.6% 37.9% 15.2% 72.2% -13.1% 158% 61.8% 132%
Oil consumption, million tonnes The World North America South- and Central America Europe and Euro Asia Middle East Africa Asia and the Pacific Energy Consumption, total, million tonnes The World North America South- and Central America Europe and Euro Asia Middle East Africa Asia and the Pacific Oil consumption - share of energy total [pct.] The World	2 975 933 160 1 197 102 66 516 2 110 253 2 823 136 141 1 166 consumpt 45	3 145 929 167 1 129 94 657 2 314 327 3 188 255 223 1 788 ion, 39	3 253 961 194 937 204 104 854 8 538 2 507 393 2 762 333 2 47 2 296	3 551 1 071 226 928 222 115 988 9 263 2 748 459 2 807 400 276 2 573 38	3 903 1 130 243 969 278 131 1 153 1 153 10 828 2 804 534 2 971 571 332 3 617	3 970 1 134 252 954 305 137 1 186 11 124 2 852 556 2 960 593 350 3 814 36	3 960 1 079 259 957 325 143 1 198 11 315 2 804 569 2 956 635 366 3 985	3 882 1 026 256 914 336 144 1 206 11 164 2 664 563 2 770 659 361 4 147	23.4% 10.3% 53.4% 99.5% 53.7% 83.6% 37.9% 15.2% 72.2% -13.1% 158% 61.8% 132%
Oil consumption, million tonnes The World North America South- and Central America Europe and Euro Asia Middle East Africa Asia and the Pacific Energy Consumption, total, million tonnes The World North America South- and Central America Europe and Euro Asia Middle East Africa Asia and the Pacific Oil consumption - share of energy total [pct.] The World North America	2 975 933 160 1 197 102 66 516 2 110 253 2 823 136 141 1 166 consumpt 45 44	3 145 929 167 1 129 94 657 8 095 2 314 327 3 188 255 223 1 788 ion, 39 40	3 253 961 194 937 204 104 854 8 538 2 507 393 2 762 333 2 47 2 296 388 38	3 551 1 071 226 928 222 115 988 9 263 2 748 459 2 807 400 276 2 573 38 38 39	3 903 1 130 243 969 278 131 1 153 1 153 10 828 2 804 534 2 971 571 332 3 617 361	3 970 1 134 252 954 305 137 1 186 11 124 2 852 556 2 960 593 350 3 814 36 40	3 960 1 079 259 957 325 143 1 198 11 315 2 804 569 2 956 635 366 3 985 365 3985	3 882 1 026 256 914 336 144 1 206 11 164 2 664 563 2 770 659 361 4 147 35 38	23.4% 10.3% 53.4% 99.5% 53.7% 83.6% 37.9% 15.2% 72.2% -13.1% 158% 61.8% 132%
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Oil consumption, million tonnes The World North America South- and Central America Europe and Euro Asia Middle East Africa Asia and the Pacific Energy Consumption, total, million tonnes The World North America South- and Central America Europe and Euro Asia Middle East Africa Asia and the Pacific Oil consumption - share of energy total [pct.] The World North America South- and Central America Europe and Euro Asia Middle East Africa Asia and the Pacific Oil consumption - share of energy total [pct.] The World North America South- and Central America Europe and Euro Asia	2 975 933 160 1 197 102 66 516 2 110 253 2 823 136 141 1 166 consumpt 45 44 63 42	3 145 929 167 1 129 94 657 2 314 327 3 188 255 223 1 788 ion, 39 40 51 35	3 253 961 194 937 204 104 854 8 538 2 507 393 2 762 333 247 2 296 333 247 2 296	3 551 1 071 226 928 222 115 988 2 748 459 2 807 400 276 2 573 38 39 49 33	3 903 1 130 243 969 278 131 1 153 10 828 2 804 534 2 971 571 332 3 617 34 40 40 46 33	3 970 1 134 252 954 305 137 1 186 11 124 2 852 556 2 960 593 350 3 814 36 40 45 32	3 960 1 079 259 957 325 143 1 198 11 315 2 804 569 2 956 635 366 3 985 368 3 985	3 882 1 026 256 914 336 144 1 206 11 164 2 664 563 2 770 659 361 4 147 4 147 35 38 45 33	23.4% 10.3% 53.4% 99.5% 53.7% 83.6% 37.9% 15.2% 72.2% -13.1% 158% 61.8% 132%
Oil consumption, million tonnes The World North America South- and Central America Europe and Euro Asia Middle East Africa Asia and the Pacific Energy Consumption, total, million tonnes The World North America South- and Central America Europe and Euro Asia Middle East Africa Asia and the Pacific Outh- and Central America Europe and Euro Asia Middle East Africa Asia and the Pacific Oil consumption - share of energy total [pct.] The World North America South- and Central America Europe and Euro Asia Middle East Middle East	2 975 933 160 1 197 102 66 516 2 110 253 2 823 136 141 1 166 consumpt 44 63 42 75	3 145 929 167 1 129 94 657 2 314 327 3 188 255 223 1 788 ion, 39 40 51 35 66	3 253 961 194 937 204 104 854 8 538 2 507 393 2 762 333 247 2 296 333 247 2 296	3 551 1 071 226 928 222 115 988 9 263 2 748 459 2 807 400 276 2 573 38 39 49 33 56	3 903 1 130 243 969 278 131 1 153 10 828 2 804 534 2 971 571 332 3 617 34 40 46 33 49	3 970 1 134 252 954 305 137 1 186 11 124 2 852 556 2 960 593 350 3 814 36 40 45 32 52	3 960 1 079 259 957 325 143 1 198 1 1315 2 804 569 2 956 635 366 3 985 366 3 985 35 38 45 32 51	3 882 1 026 256 914 336 144 1 206 11 164 2 664 563 2 770 659 361 4 147 35 38 45 33 51	23.4% 10.3% 53.4% -19.0% 99.5% 53.7% 83.6% 37.9% 15.2% 72.2% -13.1% 158% 61.8% 132%
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*) At the end of the year

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

Proved oil reserves at end 2009

Mia. tønder



Oil consumption by region

Million Barrels per Dag



Energy consumption by region



At the end of 2009, the world's total proved oil reserves totaled 1,333 billion barrels.

As much as 57% 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 21.2 years' unchanged production, while North America has reserves for 15.0 years. The R/P ratio for total world oil reserves is 45.7 years' unchanged production. However, new oil reserves are being discovered all the time, and total oil reserves increased by 1 billion barrels in 2009 due to new discoveries.

Source: BP Statistical Review of World Energy

Total world oil consumption was 85.2 million barrels per day in 2009, a fall of 1.4% from the year before. A total of 27.1% of this oil was consumed in North America, which accounted for only 16.5% of the world's crude oil production. Europe and Eurasia's share of oil consumption was 23.0%, while this region accounted for 22.4% of crude oil production. Neither North America nor Europe and Eurasia are self-sufficient in oil, as their consumption is greater than their production.

Asia Pacific's share was 30.9%, the Middle East's share was 8.5%, South and Central America's share was 6.7%, while Africa's share was 3.9%.

Total world oil consumption was 34.8% of total world energy consumption in 2009. For Europe and Eurasia this figure was 33.0%. The share has gone up by 0.6 percentage points relative to 2008.

Source: BP Statistical Review of World Energy

The world's energy consumption fell by 1.3% in 2009. This is the first time since the beginning of the 1980s that energy consumption has gone down. The fall in energy consumption is due to economic recession, especially in North America and in Europe and Eurasia.

Energy consumption fell by 5.0% in North America, by 6.3% in Europe and Eurasia, and by 1.4% in Africa in 2009.

In 2009, energy consumption increased by 3.7% in the Middle East, which was responsible for 6.0% of total world energy consumption.

The largest percentage increase in energy consumption from 2008 to 2009 was in Asia Pacific, where energy consumption went up 4.1%.

Source: BP Statistical Review of World Energy

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.
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 con- tractors on one side of the border and consumed on the other side due to differences in consumer prices. Border trade is not included in international statistics.
CO ₂ emissions	Emissions of carbon dioxide, mainly from use of energy. There are also a number of other sources, including flaring of gas in the North Sea, incineration of plastic waste and certain in- dustrial 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. The difference between the two for each fuel is the latent heat of vaporisation of the water produced during combustion of the fuel. Gross calorific value is the amount of heat released if the combusted products are cooled enough for their water vapour con- tent 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 energy statistics of the International Energy Agency (IEA) and Eurostat generally use gross calorific value. 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 year. From the 2005 statistics, the "degree days" of a normal 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 per cent of fuel consumption in households as well as the service sector and 50 per cent 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.
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 town gas supply.
Consumption in production/own use	Difference between gross and net production of an energy product. Consumption in production comprises finished products, i.e. 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 town 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 town gas, the loss is estimated to be 4%. In the case of natural gas, the loss is calculated from year to year.
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 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 constant prices (2000 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, i.e. lubrication, cleaning, and bitumen (asphalt) 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 town 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.
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. The efficiency is assumed to be 50 per cent.
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.
Gross energy consumption, adjusted	Observed gross energy consumption adjusted for climatic variations in relation to a normal 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	An energy-producing appliance regarded as a form of renewable energy. 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.
Imports and exports	Imports and exports refer to goods that have crossed national borders. Greenland and the Faeroe 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) = 103 TJ (Tera) = 106 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 that generate electricity and/or heat for sale to third parties as their primary activity. There are 19 such plants. West of the Great Belt are Vendsyssel, Aalborg, Studstrup, Aarhus, Randers, Skær-bæk, Vestkraft, Herning, Ensted and Funen power stations. East of the Great Belt are Amager, H.C. Ørsted, Svanemøllen, Asnæs, Avedøre, Kyndby, Stigsnæs, Masnedø and Østkraft.
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 town 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 town gas.
Manufacturing	The Danish Energy Authority defines manufacturing differently than Statistics Denmark. Refineries are not included as manufacturing industries in Danish Energy Authority statistics; rather, they are sorted in a particular category of consumption. Conversely, the extraction of gravel, stone, clay, salt, etc. is included.
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 per cent 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 wind turbines, and research and development related to environment-friendly electricity generation.
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, fuel wood, wood pellets, waste wood, fish oil, and renewable wastes), biogas, bioethanol, biodiesel, 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 and	
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 the 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,
Total energy supply	Denmark's total energy supply is domestic production of energy adjusted for imports and exports (including cross-border trade in oil products, international marine bunkers, and stock changes. The difference between total energy supply and actual energy consumption, observed is the statistical difference.
Town gas	Gas produced in urban gas stations. Town gas was formerly produced from coal and oil, but production since 1990 has almost exclusively been by transforming natural gas.
Transformation	Production of electricity, district heating and town 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.
Volume weight	The relationship between the weight of a specific volume of liquid and the weight of an equal volume of water at 4 degrees Celsius, measured in tonne/m ³ .
Waste oil	Oil used as fuel in industry and transformation, previously included in the energy statistics as lubricants.

Danish Energy Key Figures

									Change
Denmark	1980	1990	1995	2000	2005	2007	2008	2009	'90-'09
Energy Intensity. Gross Energy Consumption [TJ million per GDP]	0.998	0.818	0.748	0.649	0.618	0.604	0.601	0.595	-27.3%
Energy Intensity, Final Energy Consumption [TJ million per GDP]	0.748	0.603	0.565	0.503	0.471	0.472	0.467	0.462	-23.5%
Gross Energy Consumption per Capita [GJ]	159	160	161	157	157	161	158	148	-7.4%
Final Energy Consumption per Capita [GJ]	119	118	122	122	123	125	122	115	-2.6%
Rate of Self-sufficiency [%]	5	52	78	139	155	130	130	124	139%
Dependency on Oil [%]	67	43	45	45	41	40	39	39	-10.3%
Renewable Energy etc Share of Gross Energy Consumption [%]	2.9	6.1	7.0	9.8	14.7	16.4	16.6	17.5	188%
Pofinery Canacity [million tennes (year]	0.0	0.0	11 7	0.2	0.0	0.0	0.0	0.0	
Rennery Capacity [minion tornes/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	12 598	13 091	13 129	13 157	13 410	46.7%
Wind Turbine Capacity - Share of Total Electricity Capacity [%]	-	3.8	5.7	19.0	23.9	23.8	24.0	26.0	592%
Net Electricity Export - Share of Domestic Supply [%]	5.1	-22.5	2.3	-1.9	-3.8	2.6	-4.0	-1.0	-96%
CLID Production Chara of Electricity Consumption [9/]	10	27	40	E4	6.4	50	E4	FF	40.49/
CHP Production - Share of Electricity Consumption [76]	18	37	40	00	04	52	20	22	49.4%
[%]	39	59	74	82	82	79	78	77	31.2%
Renewable Energy etc., excl. Waste - Share of Total Electricity Consumption [%]	0.0	2.0	5.9	15.3	26.3	27.0	26.7	27.4	1 270%
CO ₂ Emissions per Capita, Adjusted [tonnes]	12.2	11.9	11.5	10.4	9.7	9.9	9.6	9.0	-24.7%
CO ₂ Emissions per kWh Sold [gram per kWh]	1 034	937	807	634	538	572	571	567	-39.6%
CO_2 Emissions per Consumed Unit of District Heating [kg per GJ]	91	68	51	47	39	40	39	38	-43.9%
CO ₂ Intensity, Gross Energy Consumption [tonnes per Million GDP]	77	61	53	43	38	37	37	36	-40.9%

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.

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 2009 Tax Rates in 2009

Calorific CO₂ Emis-Values sions Factors

	GJ/ton	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 Nm3	39.46	56.69
Town Gas	21.29	-
Coal in Electricity Plants	24.60	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	-
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	-
Wastes	10.50	32.50
Biodiesel	37.60	-
Bio ethanol	26.70	-
Fish Oil	34.30	-

Climate Adjustment

	Deg	Degree Days	
Years	Years	Normal Year	
2002	3011	3273	
2003	3150	3271	
2004	3113	3261	
2005	3068	3224	
2006	2908	3188	
2007	2807	3136	
2008	2853	3120	
2009	3061	3131	

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	120.52	6.94
Light Diesel Oil	77.62	7.03
Low Sulphur Diesel Oil	72.43	7.03
Other Uses		
LPG	53.60	6.09
Other Kerosene	55.29	7.24
Heating Diesel Oil	53.75	7.17
Fuel Oil	53.34	7.33
Petroleum Coke	55.29	7.24
Natural Gas	53.46	5.18
Electricity Plant Coal	57.00	8.52
Coke	60.00	10.28
Brown Coal	59.00	9.07
Electricity	165.56	24.72
Electricity for Space Heating	146.94	24.72

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

Volume Weights in 2008

	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 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 tønde (barrel, bbl)	=	158 liter
1 mtoe (mio. tons olieækvivalent)	=	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.

Do you need more data?

At www.ens.dk under "Facts & Figures" you can find: http://www.ens.dk/Facts_figures

Energy Stattistics 2009

- Electronic version of the publication
- Time series, and tables
- Danish enery flows

Data

Key tables: Monthly updates of:

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

Maps

Key maps showning aspects of the Danish Energy Sector



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