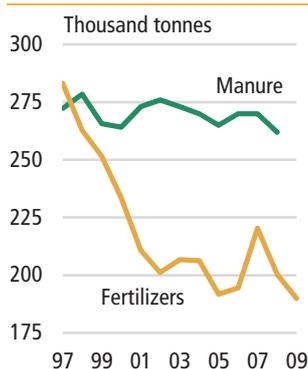


Environment and energy

1

Agriculture

Figure 1
Nitrogen in manure
and commercial ferti-
zizers



www.statbank.dk/kvael2 and
kvael3

Declining use of fertilizers in agriculture

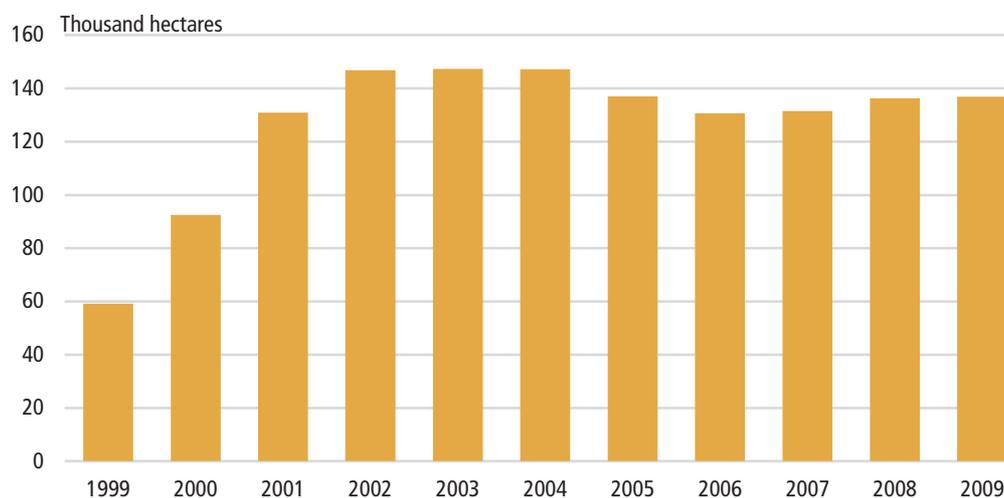
Agricultural production of animal and vegetable products involves the use of manure and commercial fertilizers. This causes large quantities of nitrogen and small quantities of phosphorus to be discharged into the soil. Some nitrogen and phosphorus are not received by plants and as a consequence is leached from the soil, leading to a discharge of these substances into the ocean via water run-offs.

The adverse effects include undesirable algae growth, resulting in an undesirable environmental state. As a result of restrictions in the total supply of nitrogen plus a better utilization of manure, the use of commercial fertilizer has been declining.

Action Plan for the Aquatic Environment II and III

The aim of the Action Plan for the Aquatic Environment II was to reduce emissions of nitrogen from agriculture. In order to minimize nitrogen leaching, it is intended to increase areas of wetlands, organic agriculture and agriculture and re-sowing of crops and to tighten up the requirements of harmonization, i.e. to ensure a better balance between the quantity of animal manure produced and the related area suited for manure at each individual farm. The reduction of emissions of phosphorus is included as the main theme in the Action Plan for the Aquatic Environment III.

Figure 2 Total area extent of organic farms



www.statbank.dk/oeko1

More organic farmland

The proportion of organic farmland has increased significantly since 1996. In recent years, the growth in organic farmland has been both decreasing and increasing and accounted for 137,000 hectares in 2009, corresponding to 5 per cent of all Danish farmland.

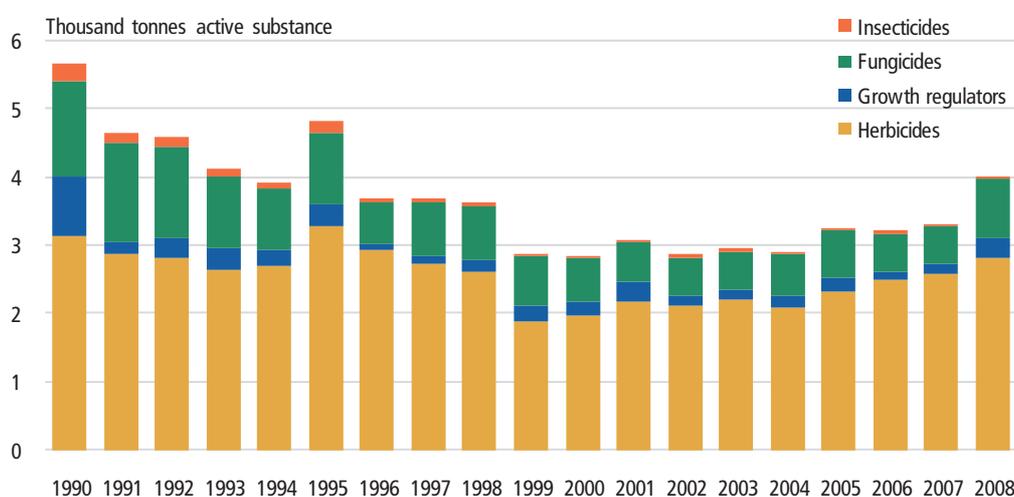
Combat of weeds, pests, and fungi is harmful for the environment

Pesticides are chemical products mainly used within agriculture to combat weeds, fungi, and insects. Effective control of pests, weeds, and fungi in fields has had an indirect effect on the number of animals that feed on insects.

The effect might be fatal or entail a reduction in the reproductive abilities of the relevant animals. Pesticides are divided into products that protect crops against weeds (herbicides), against fungus infection (fungicides), and against insects (insecticides).

There are also products that shorten crops (growth regulators). For a number of years, the use of pesticides has been declining, but since 2000 an increase can be seen.

Figure 3 Pesticide sales to agriculture



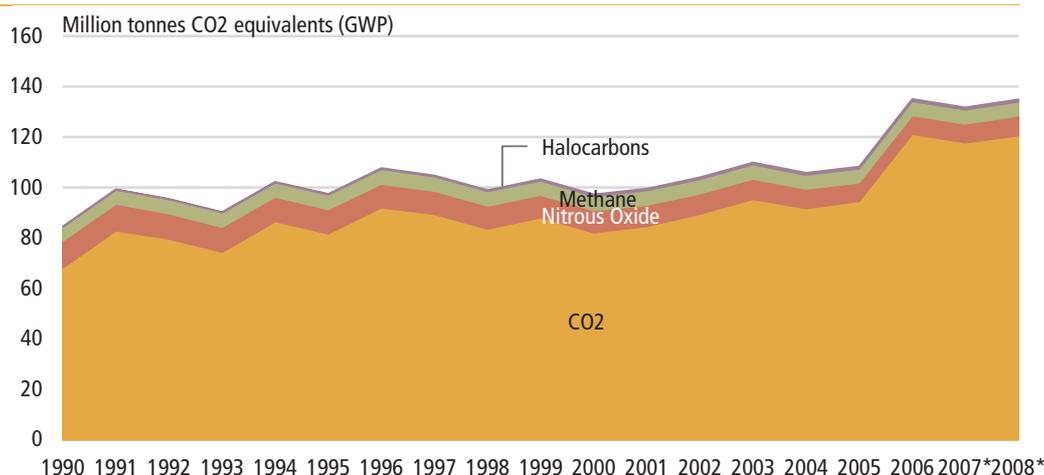
2

Greenhouse Gas Emissions

Greenhouse gases

89 per cent of the global warming potential from Danish greenhouse gases came from CO₂ in 2008. Methane accounted for 4 per cent, while nitrous oxide contributed 6 per cent. The emissions of halocarbons constituted less than 1 per cent of the total Danish global warming potential. By converting the emissions into CO₂-equivalents account have been taken for the fact that the effects of the substances on the atmosphere, and, thus, their global warming potentials, are different.

Figure 4 Greenhouse Gas Emissions from Danish Economic Activities



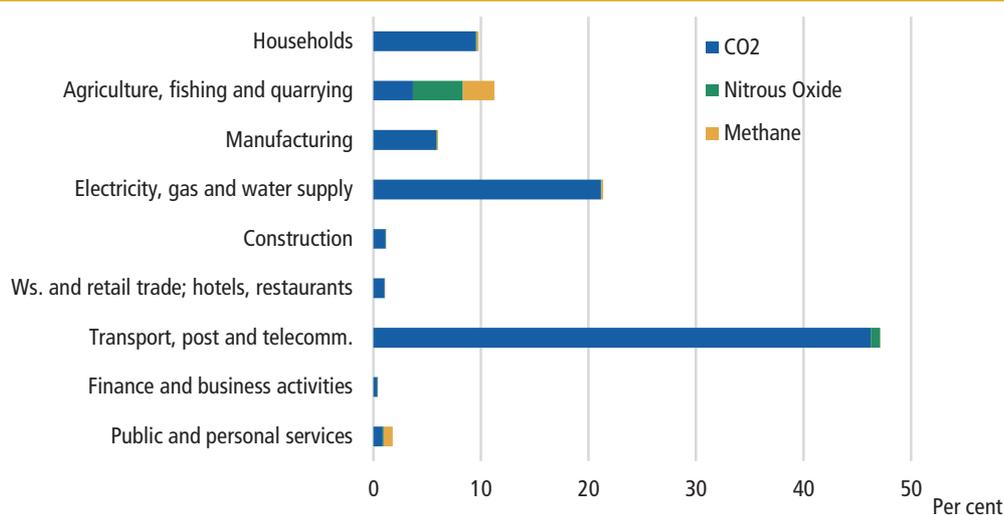
Note: The halocarbons (at the top of the figure) constitute less than 1 million tonnes CO₂-equivalents and are hardly visible.

Greenhouse Gas Emissions from Industries and Households

When CO₂, methane and nitrous oxide emissions are taken as a whole and assessed in relation to their global warming potential, between 1990 and 2008, the industries have contributed 90 per cent of all Danish man-made emissions, with households making up the remaining 10 per cent.

Agriculture, fishing and quarrying contributed 11 per cent of the global warming potential. It is largely due to emissions of methane and nitrous oxide from agriculture, while emissions of CO₂ played a minor role.

Figure 5 Greenhouse Gas Emissions from Industries and Households. 2007*



Note: Emissions are calculated as CO₂-equivalents (GWP).

In 2008, *Electricity, gas and water supply* contributed 21 per cent of the global warming potential from greenhouse gases. This includes all Danish production of electricity and district heating.

All emissions in connection with production of electricity and district heating come from this industry, while the use of electricity and district heating in the industries and households cause no direct emissions.

Transport, post and telecommunication caused 47 per cent of the global warming potential from CO₂, methane and nitrous oxide. Included are all emissions from businesses that carry out transport as a service to other businesses and households.

On the other hand, it does not include transport activities carried out by businesses and households on their own behalf, using their own cars and lorries, etc.

Greenhouse Gas Emissions from transport

Greenhouse Gas Emissions from transport activities in industries and the households made up 60 per cent of the total greenhouse gas emissions. Emissions from Danish operated ships abroad contributed 46 per cent of total emissions and 77 per cent of emissions from all transport activities.

Emissions from the households' use of cars contributed 35 per cent of greenhouse gas emissions when that part of the emissions related to Danish operated ships and planes bunkering of fuel abroad is excluded.

3

Public sector response

Environmental taxes

Denmark's environmental policy involves an increasing use of environmental taxes or more precise environmentally related taxes. Environmental taxes comprise of pollution, energy, resource, and transport related taxes.

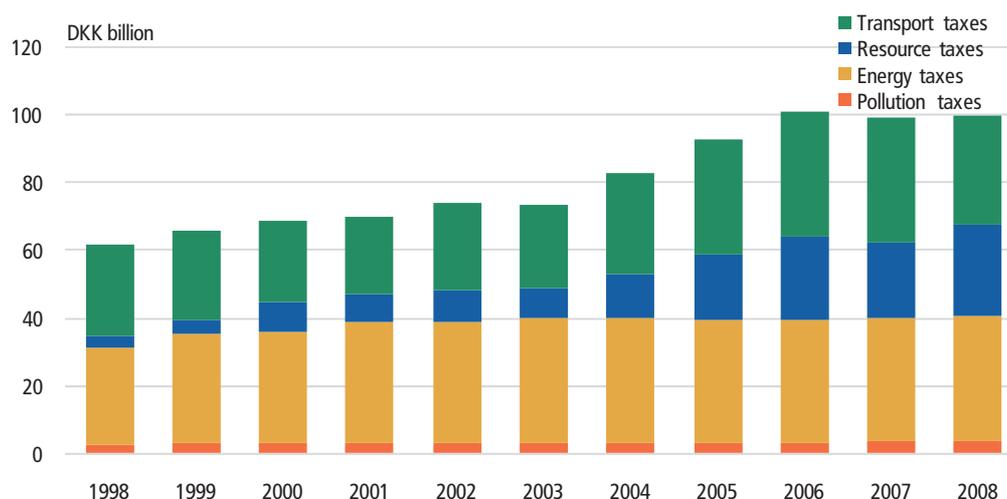
In 2009, the total revenue generated from these taxes was DKK 79.4 billion, corresponding to around 10 per cent of total revenues from taxes and duties.

Total revenue generated from energy related taxes amounted to DKK 36.4 billion in 2009, corresponding to 45.7 per cent of total revenue from environmental related taxes.

In 2009, transport related taxes accounted for 31.4 per cent of environmental related taxes while resource related taxes accounted for 19.0 per cent and pollution related taxes accounted for 3.7 per cent.

The decline from 2008 to 2009 in resource related taxes can mainly be explained by a fall in corporation tax on hydrocarbon manufacturing of DKK 5 billion and a fall in hydrocarbon tax of DKK 5.8 billion. The decline in transport related taxes can be attributed to a fall in the motor vehicle registration duty of DKK 7.4 billion.

Figure 6 Environmental taxes



Compared to Statistical Yearbook 2009 the relationship between "pollution taxes" and "resource taxes" has changed. The change is caused by the hydrocarbon tax and corporation tax on hydrocarbon manufacturing as these taxes are now classified as resource taxes instead of pollution taxes. The change has been implemented back in time.

www.statbank.dk/mreg2s

4

Energy consumption

Denmark self-sufficient as regards energy

Since 1997, Denmark has been energy self-sufficient thanks to the extraction of crude oil and natural gas from the North Sea and the production of renewable energy. The total production has increased until 2005.

In 2006 there was a significant decrease in the production of energy, primarily due to a decrease in the production of oil and natural gases. The decrease has continued in the years after, but still the production of energy remains significantly higher than the total consumption of energy in Denmark.

Changed composition of the energy consumption

Gross energy consumption is made up as the consumption of oil, natural gas, coal and renewable energy, etc. When calculating gross energy consumption, adjustments are made to take into account imports and exports of electricity. Total gross energy consumption fell by 4 per cent between 2008 and 2009.

Since 1990, the composition of fuel use has changed significantly as there has been an increase in the consumption of natural gas and renewable energy and a decrease particularly in the coal consumption.

More renewable energy sources

The consumption of renewable energy has increased over a number of years and now accounts for 19 per cent of total gross energy consumption.

Renewable energy plays a particularly important part with regard to environmental issues like emissions of greenhouse gases and global warming, as an increase in the use of such energy causes a reduction in greenhouse gas emissions by replacing the use of fossil fuels, e.g. coal and oil.

Renewable energy sources include the greenhouse gas emission free types of energy, e.g. wind power and solar power as well as carbon-dioxide neutral fuels, e.g. hay and wood, which absorb carbon dioxide from the atmosphere during growth, only to release it again when they are incinerated.

Figure 7 Gross energy consumption

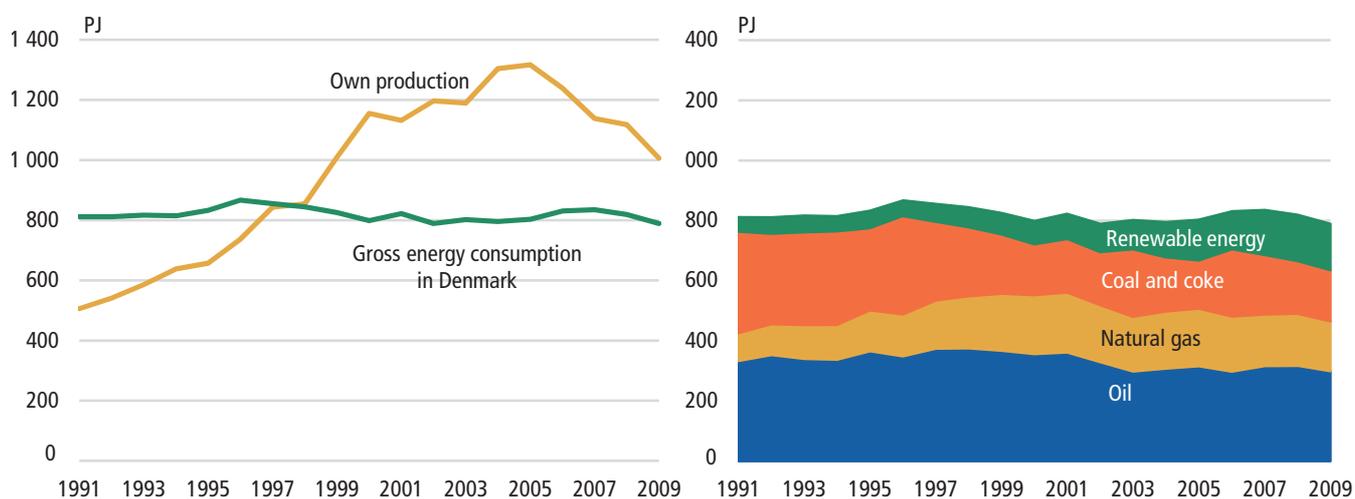


Table 325 Extraction of raw materials

	1990	1995	2000	2009
	m ³ in thousands			
Extraction of raw materials, total	33 976	34 210	40 945	31 289
Extraction from land area:	28 106	28 558	33 809	25 361
Sand, gravel and stone	22 534	21 721	27 587	19 294
Quartz sand	186	191	479	332
Granite	811	662	199	156
Clay	462	739	788	364
Expanded clay	303	311	313	125
Moler	195	186	227	202
Chalk, limestone	2 924	4 049	3 405	2 735
Peat	399	259	247	211
Other raw materials	292	440	563	1 941
Extraction from sea area				
Sand, gravel, sand for land filling etc.	5 870	5 652	7 136	5 928

Source: National Forest and Nature Agency

www.statbank.dk/rst, rst01 and rst3

Table 326 Greenhouse gas emissions from the Danish economy

	1990	1995	2000	2005	2006	2007*	2008*
	1 000 tonnes CO ₂ equivalents						
Agriculture, fishery and quarrying	17 102	16 246	15 900	14 824	14 563	14 392	14 698
Manufacturing	8 281	9 365	9 331	8 787	7 937	8 278	8 288
Electricity, gas and water supply	24 999	30 318	23 054	23 374	20 072	27 721	22 931
Construction	821	934	1 093	1 365	1 375	1 448	1 562
Ws. and retail trade, hotels and restaurants	1 424	1 358	1 204	1 290	1 300	1 389	1 423
Transport, post and telecommunication	14 774	17 199	24 891	31 100	39 110	49 096	54 895
Finance and business activities	381	343	389	478	480	512	507
Public and personal services	2 704	2 761	2 487	2 676	2 710	2 547	2 544
Industries, total	70 350	78 406	78 167	84 039	87 779	105 346	106 790
Households	9 854	10 918	10 406	10 627	10 413	10 146	9 885
Others	3 715	1 667	2 660	2 901	2 248	2 223	2 147
Total	83 920	90 991	91 234	97 567	100 440	117 714	118 821
Reduction due to biomass growth	-2 831	-2 993	-664	-3 465	-1 797	-2 783	-2 977
Greenhouse gas emissions from the Danish economy	81 089	87 998	90 569	94 101	98 643	114 931	115 844
Of which							
Danish operated ships' bunkering abroad	9 360	11 166	19 330	25 858	32 955	42 543	48 177
Danish operated planes' bunkering abroad	275	431	520	465	1 628	1 820	1 856
Total industries, excl. bunkering abroad	60 716	66 809	58 317	57 716	53 195	60 984	56 757
Emissions from biomass	4 641	5 869	7 169	10 142	10 893	11 335	12 110

www.statbank.dk/mreg5

	1990	1995	2000	2006	2007*	2008*
	1 000 tonnes CO ₂ equivalents					
Total	22 167	25 728	34 004	59 148	67 959	73 157
Road traffic, households	4 623	5 598	6 037	6 122	6 164	5 966
Road traffic, industries	4 804	5 166	5 343	6 619	7 178	7 130
Trains	295	306	230	229	230	239
Danish operated ships' bunkering in Denmark	810	1 103	933	727	704	758
Danish operated ships' bunkering abroad	9 360	11 166	19 330	42 591	50 639	56 126
Danish operated planes' bunkering in Denmark	2 001	1 959	1 610	1 027	1 074	1 074
Danish operated planes' bunkering abroad	275	431	520	1 833	1 970	1 864
	per cent					
Total	100.0	100.0	100.0	100.0	100.0	100.0
Road traffic, households	20.9	21.8	17.8	10.4	9.1	8.2
Road traffic, industries	21.7	20.1	15.7	11.2	10.6	9.7
Trains	1.3	1.2	0.7	0.4	0.3	0.3
Danish operated ships' bunkering in Denmark	3.7	4.3	2.7	1.2	1.0	1.0
Danish operated ships' bunkering abroad	42.2	43.4	56.8	72.0	74.5	76.7
Danish operated planes' bunkering in Denmark	9.0	7.6	4.7	1.7	1.6	1.5
Danish operated planes' bunkering abroad	1.2	1.7	1.5	3.1	2.9	2.5

	1990	2008*
	mio. tonnes	
Total CO₂ emissions from the Danish economy (Environmental Accounts)	68.2	120.6
- Binding of CO ₂ in biomass	5.6	11.9
Biomass used as fuels	4.6	11.7
Further biomass growth	1.0	0.2
- Danish CO ₂ emissions abroad	11.4	57.5
Ships	9.2	55.0
Planes	0.3	1.8
- Other differences related to transports and cross border trade	2.0	0.6
= Total emissions accounted for in the Kyoto Protocol	51.2	51.2

www.statbank.dk/mreg5

	1985	1990	1995	2000	2005	2009
Monitoring stations	1 374	1 370	1 301	1 295	1 249	1 260
Acceptable water quality	1 017	1 251	1 227	1 250	1 225	1 203
Unacceptable water quality	288	70	54	28	10	44
Beach areas where bathing is forbidden	69	49	20	17	14	13

Source: Environmental Protection Agency

www.blst.dk

	2007	2008	2009
	tonnes		
Sales of pesticide products¹			
Total sale	13 236	11 944	9 673
Herbicides	7 328	7 023	4 872
Fungicides	1 666	1 889	1 452
Algicides	19	46	22
Insecticides	1 713	882	1 475
Slimicides for use in paper pulp	0	0	10
Products against pests on farm animals	72	21	17
Plant growth regulators	334	480	419
Combined fungicides and insecticides	13	18	12
Soil disinfectants	8	7	10
Rodenticides	282	287	275
Repellents	17	26	11
Products for the protection of woodwork	1 784	1 265	1 105
Of which active ingredients²			
Active ingredients, total	3 963	4 528	3 267
Herbicides	2 792	2 988	2 218
Fungicides	662	958	572
Algicides	3	8	4
Insecticides	76	94	74
Slimicides for use in paper pulp	0	0	0
Products against pests on farm animals	8	1	2
Plant growth regulators	173	311	270
Combined fungicides and insecticides	5	7	5
Soil disinfectants	8	7	9
Rodenticides	1	3	1
Repellents	3	5	3
Products for the protection of woodwork	232	146	108

¹ A pesticide product comprises one or more effective substances, emulators, adhesives and inactive fillers. ² That part of the product which has a toxic effect.

Source: Danish Environmental Protection Agency

www.statbank.dk/pest2

Table 331 Energy account for Denmark. 2009*

	Crude oil and semi- manufactured oil	Coal, coke, etc.	Oil products	Natural gas	Other gas	Renewable energy resources	Electricity	District heating
	————— thousand tonnes —————			mio. Nm ³	thousand tonnes	TJ	GWh	TJ
Production	13 186	-	7 284	8 074	465	132 307	34 452	129 586
Imports	3 707	6 674	17 835	-	4	22 745	11 209	-
Total supply (= total use)	16 894	6 674	25 118	8 074	468	155 052	45 661	129 586
Change in inventories	-49	-2 191	851	75	-4	-	-	-
Waste and cable losses	81	47	62	3	4	865	2 619	25 917
Exports	8 829	1 974	5 767	3 796	94	931	10 875	-
Total domestic supply	8 033	6 845	18 439	4 200	374	153 256	32 167	103 669
Total industries	8 033	6 844	16 335	3 530	340	118 441	22 119	38 473
Households	-	1	2 104	670	34	34 815	10 048	65 195
Agriculture, fishing and quarrying	-	54	812	736	3	3 145	1 968	2 006
Agriculture, horticulture and forestry	-	50	641	44	3	2 371	1 833	1 985
Fishing	-	-	146	-	0	-	70	-
Mining and quarrying	-	4	25	692	0	774	66	21
Manufacturing	8 033	153	580	783	322	5 876	7 258	5 694
Mfr. of food, beverages and tobacco	-	62	172	374	7	569	2 201	993
Mfr. of textiles and leather	-	-	9	10	0	1	155	163
Mfr. of wood products, printing and publishing	-	-	33	86	3	2 468	1 036	1 148
Mfr. of refined petroleum products, chemicals and plastic products etc.	8 026	-	60	129	291	130	2 050	1 586
Mfr. of other non-metallic mineral products	-	220	282	150	8	723	882	122
Mfr. of basic metals and fabr. metal products	-	0	128	168	10	328	2 345	2 150
Mfr. of furniture and manufacturing n.e.c.	-	-	18	12	1	1 609	391	179
Electricity, gas and water supply	-	6 637	342	1 703	0	108 082	883	14
Construction	-	-	432	8	2	-	423	-
Wholesale and retail trade, hotels, restaurants	-	-	340	100	2	-	4 424	10 245
Sale and repair of motor vehicles, sale of auto fuel	-	-	83	10	0	-	381	1 053
Wholesale, except of motor vehicles	-	-	182	38	1	-	1 615	3 889
Retail trade and repair work, exc. of m. vehicles	-	-	59	27	0	-	1 694	2 794
Hotels and restaurants	-	-	17	25	1	-	734	2 508
Transport, post and telecommunication	-	-	13 467	11	3	-	1 920	1 118
Transport ¹	-	-	13 445	6	3	-	1 377	596
Post and telecommunications	-	-	22	5	0	-	543	522
Finance and business activities	-	-	117	55	1	-	1 290	5 645
Finance and insurance	-	-	7	9	-	-	264	903
Letting and sale of real estate	-	-	26	7	0	-	171	752
Business activities	-	-	84	39	1	-	855	3 990
Public and personal services	-	-	245	135	7	1 338	3 953	13 752
Public administration	-	-	99	12	2	130	354	1 266
Education	-	-	31	32	2	321	967	3 308
Human health activities	-	-	13	19	1	201	569	1 948
Social institutions etc.	-	-	35	27	-	351	794	2 715
Associations, culture and refuse disposal	-	-	66	44	3	335	1 268	4 514
Of which Danish operated ships' bunkering abroad	-	-	11 459	-	-	-	-	-
Of which Danish operated planes' bunkering abroad	-	-	592	-	-	-	-	-

¹ The Danish operated ships and planes' bunkering abroad is part of the industry Transport.

Table 332	Gross energy consumption						
	1980	1990	1995	2000	2005	2008*	2009*
	TJ						
Total	894 135	904 604	979 134	1 048 703	1 239 679	1 553 083	1 277 730
Total industries	568 791	612 320	667 534	762 186	932 544	1 249 754	978 657
Households	325 343	292 284	311 601	286 517	307 135	303 329	299 073
Agriculture, fishing and quarrying	61 776	72 472	77 932	89 113	90 283	88 685	86 853
Agriculture, horticulture and forestry	50 081	47 607	50 913	48 607	49 254	49 552	49 880
Fishing	7 797	11 554	9 127	10 131	8 082	7 069	6 861
Mining and quarrying	3 898	13 311	17 892	30 375	32 948	32 063	30 113
Manufacturing	184 938	180 994	197 439	190 738	171 064	161 010	144 581
Mfr. of food, beverages and tobacco	47 728	47 082	49 751	45 495	44 312	41 940	37 993
Mfr. of textiles and leather	5 197	4 817	3 874	3 633	2 380	2 102	1 883
Mfr. of wood products, printing and publishing	18 367	20 568	18 538	19 951	15 979	14 298	13 092
Mfr. of refined petroleum, chemicals and plastic products etc.	35 245	40 525	48 864	50 842	40 747	40 512	39 996
Mfr. of other non-metallic mineral products	36 718	25 725	32 857	30 134	30 223	24 735	20 565
Mfr. of basic metals and fabr. metal products	36 703	35 386	36 722	34 177	30 584	32 178	26 999
Mfr. of furniture and manufacturing n.e.c.	4 979	6 890	6 832	6 506	6 840	5 245	4 054
Electricity, gas and water supply	2 853	4 193	4 936	4 425	5 243	6 842	7 641
Construction	13 027	15 605	15 658	16 688	19 903	24 134	22 456
Wholesale and retail trade, hotels, restaurants	65 036	61 775	60 342	56 748	58 159	65 761	64 330
Sale and repair of motor vehic., sale of fuel	9 312	7 369	7 855	7 568	7 847	8 354	8 101
Wholesale, except of motor vehicles	28 065	26 023	24 306	24 878	23 089	27 383	26 199
Retail trade and repair work, exc. of m. vehicles	19 806	19 786	18 887	15 755	18 419	20 051	19 958
Hotels and restaurants	7 853	8 597	9 294	8 547	8 805	9 973	10 072
Transport, post and telecommunication	170 013	205 805	237 223	330 781	508 394	816 770	566 946
Transport ¹	165 884	201 681	233 283	326 280	503 948	810 934	560 932
Post and telecommunications	4 129	4 124	3 940	4 501	4 447	5 835	6 014
Finance and business activities	14 694	19 113	17 321	17 852	22 626	24 059	23 159
Finance and insurance	3 657	4 213	3 438	3 393	3 160	4 017	3 661
Letting and sale of real estate	3 002	4 082	3 017	3 205	3 179	3 640	3 518
Business activities	8 035	10 818	10 865	11 254	16 288	16 402	15 980
Public and personal services	56 454	52 363	56 682	55 840	56 870	62 493	62 691
Public administration	15 652	10 265	11 431	9 474	11 109	8 834	9 072
Education	12 497	12 178	11 628	11 853	11 227	14 070	13 992
Human health activities	8 647	9 255	7 154	7 286	6 634	8 248	8 035
Social institutions etc.	7 907	8 229	8 728	10 781	11 430	12 195	11 951
Associations, culture and refuse disposal	11 751	12 437	17 740	16 445	16 470	19 146	19 642
Of which Danish operated ships' bunkering abroad	96 821	117 645	140 350	242 966	414 221	708 212	462 944
Of which Danish operated planes' bunkering abroad	2 360	3 777	5 915	7 144	22 367	25 702	25 750
Gross energy consump. in Denmark (excl. of bunk. abroad)	794 953	783 182	832 869	798 593	803 091	819 169	789 037

¹ The Danish operated ships and planes' bunkering abroad is part of the industry Transport.

Table 333 Manufacturers' energy consumption. 2009

	Solid fuel	Liquid fuel	Gas	Electricity	District heating
	thousand GJ				
Total¹	11 253	15 130	44 780	24 222	4 922
Extraction of gravel and stone	890	421	678	187	3
Mining support service activities	0	8	9	19	17
Production of meat and meat products	89	225	1 819	1 470	107
Processing and preserving of fish	488	432	1 162	440	62
Dairy products	0	593	3 860	772	1
Grain mill and bakery products	3	61	1 217	758	80
Other food products	1 220	3 323	2 958	2 377	512
Beverages	0	67	1 411	521	61
Tobacco products	0	27	120	89	17
Textiles	0	14	370	388	42
Wearing apparel	2	3	6	17	14
Leather and footwear	22	1	13	14	0
Wood and wood products	1 639	233	249	604	232
Paper and paper products	1 637	179	1 742	877	34
Printing etc.	0	16	206	499	132
Oil refinery etc.	0	766	13 879	1 139	586
Basic chemicals	0	205	1 638	1 637	428
Paints and soap etc.	607	139	2 266	863	76
Pharmaceuticals	0	193	928	1 173	677
Rubber and plastic products	17	78	588	1 653	104
Glass and ceramic products	0	10	951	437	28
Concrete and bricks	3 824	6 433	3 152	1 543	44
Basic metals	9	60	1 292	706	77
Fabricated metal products	131	1 015	1 429	1 551	324
Computers and communication equipment etc.	12	17	254	199	30
Other electronic products	2	4	34	182	76
Electric motors, etc.	1	8	81	118	40
Wires and cables	0	5	73	157	27
Household appliances, lamps, etc.	0	3	76	91	46
Engines, windmills and pumps	9	103	836	1 301	449
Other machinery	110	329	589	697	206
Motor vehicles and related parts	9	33	233	364	37
Ships and other transport equipment	3	34	363	273	58
Furniture	525	50	183	533	62
Medical instruments, etc.	0	7	25	90	91
Toys and other manufacturing	3	11	56	355	42
Repair and installation of machinery and equipment	0	26	36	129	99

Note: The table includes workplaces in firms with 20 or more employed in the industry.

¹ Incl. extraction of gravel, clay, stone and salt, etc.

Table 334 Production of renewable energy

	1990	2000	2009
	TJ		
Total production	47 688	77 519	121 632
Solar energy	100	335	586
Wind power	2 197	15 268	24 194
Hydro power	101	109	68
Straw	12 481	12 220	17 339
Wood chips	1 724	2 744	9 827
Firewood	8 757	12 432	23 054
Wood pellets	1 575	2 984	2 325
Wood wastes	6 191	6 895	5 641
Biogas	752	2 912	4 171
Waste combustion ¹	10 508	17 870	22 706
Biodiesel	-	-	3 268
Fish oil	744	49	1 622
Geothermal heat ²	2 558	3 701	6 831

¹ In 2008 the compilation method was changed with regard to the calculation of energy for waste.

² Heat pumps and geothermal power.

Source: Danish Energy Agency