

Data, tables, statistics and maps

ENERGY IN DENMARK 2016



Danish Energy
Agency

Energy in Denmark, 2016

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Design

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Internet

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Sources

Danish Energy Agency – Energy statistics 2016

Statistics Denmark

Danish Meteorological Institute

Danmarks Nationalbank

Danish Energy Agency

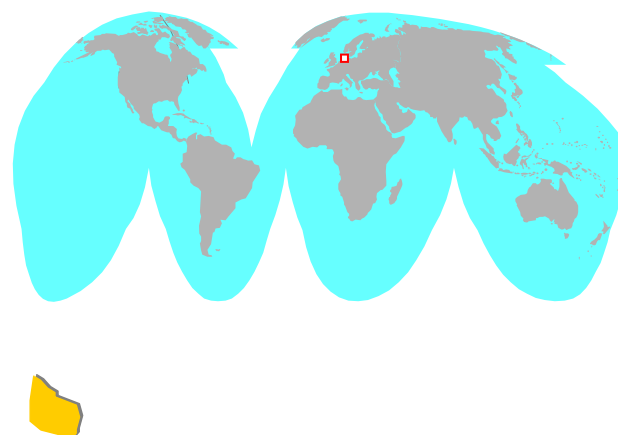
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July 2018

GENERAL INFORMATION ON DENMARK



Geography (2017)

Area, km ²	42 925
Coastline, km	8 509
Number of islands	394
Forest area, %	13

Climate (2016)

Average temperature:	
January	0.3° C
July	16.4° C
Sunshine, hours	1 690
Precipitation, mm	701

Population (2017)

Population (Jan. 2017)	5 748 769
By age:	
0-19 years, %	22.8
20-59 years, %	52.2
60- years, %	25.0
Population density, per km ²	133.9

Currency (2016)

1 Krone (DKK)	=	100 øre
1 USD	=	6.73 DKK
1 EURO	=	7.45 DKK
1 GBP	=	9.11 DKK

Economics (2016)

GDP, billion DKK	2 066
Exports, billion DKK	1 107
Imports, billion DKK	979

Constitution and Government (2017)

Denmark is a constitutional monarchy
 Monarch is Queen Margrethe II
 The present government consists of:
 Venstre - The Liberal Party of Denmark
 The Conservative Party
 Liberal Alliance

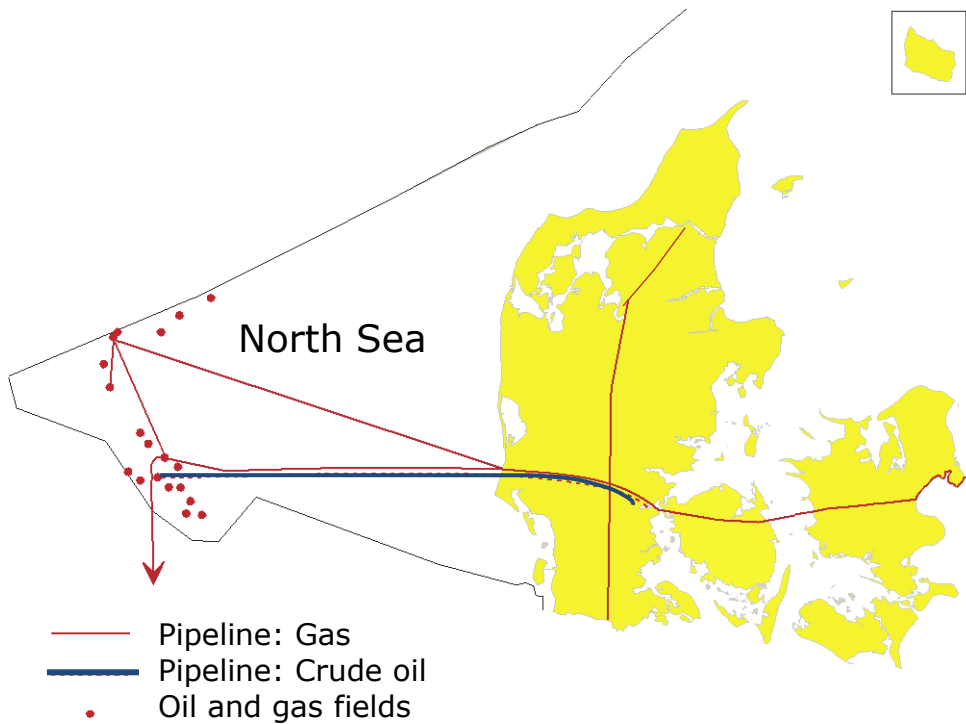
Labour Market (2016)

Labour force, '000	2 934
Employed, '000	2 748
Employed in industry, %	17.5
Employed in agriculture and fishing, %	2.5
Employed in commercial and public services, %	80.0

Note: Adjusted means adjusted for climate and fuels for net electricity exports

ENERGY PRODUCTION

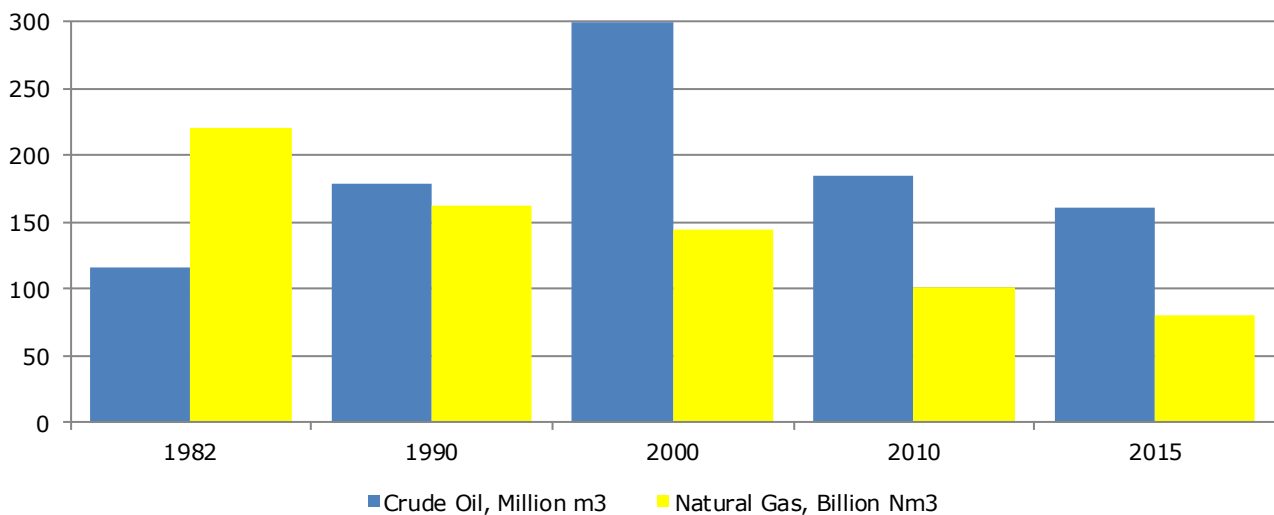
Danish oil and gas fields and pipelines



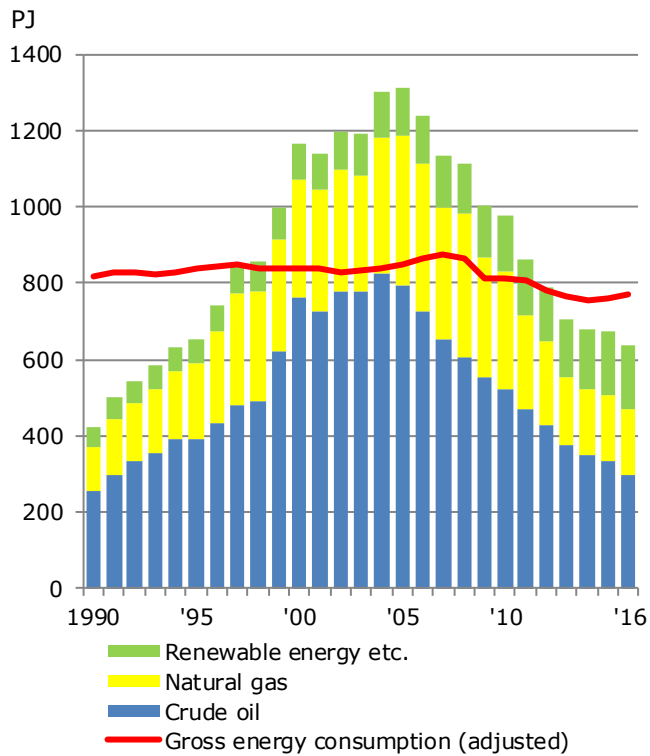
In 2016, there were nineteen oil and gas fields of varying size (fifteen oil and four gas fields). Seven fields are situated in the northern part of the Central Graben, while all the other fields are situated in the southern region of the Central Graben. Denmark is the third largest oil producer in Western Europe trailing only UK and Norway.

Energy production [PJ]	1980	1990	2000	2010	2016
Total production	40	424	1165	979	638
Crude oil	13	256	765	523	298
Natural gas	0	116	310	307	170
Waste, non-renewable	5	7	14	17	16
Renewable energy	23	45	76	131	155

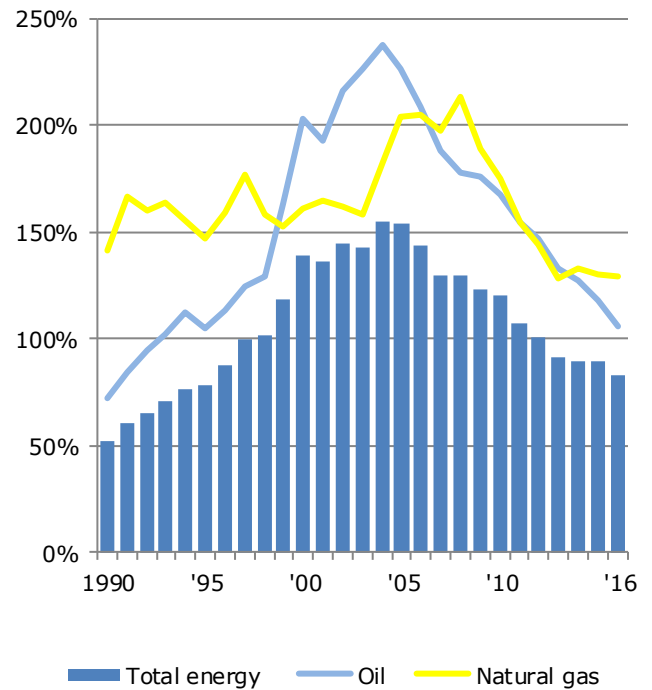
Oil and gas reserves and resources (Ultimo)



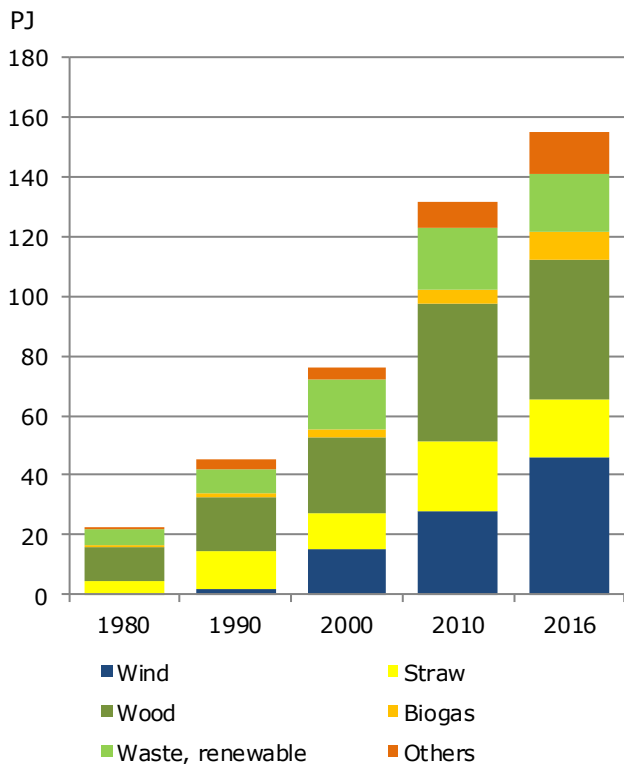
Energy production and energy consumption



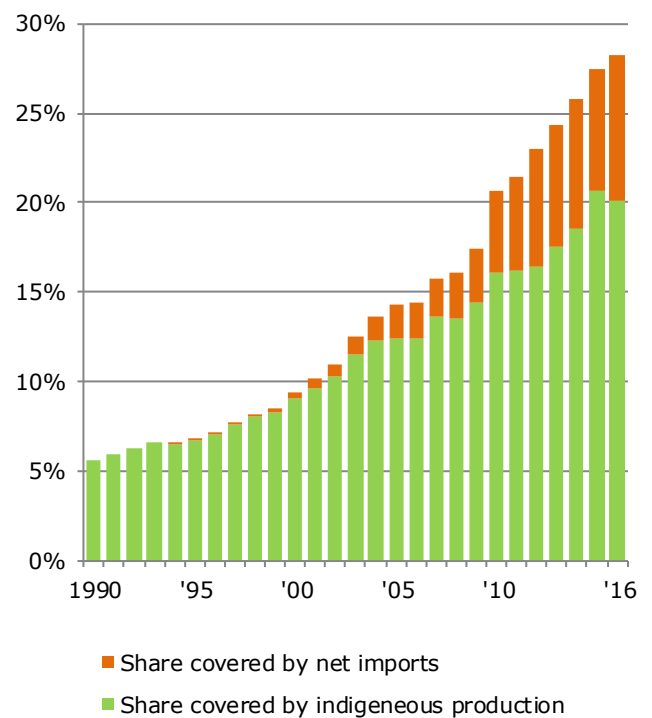
Degree of self-sufficiency



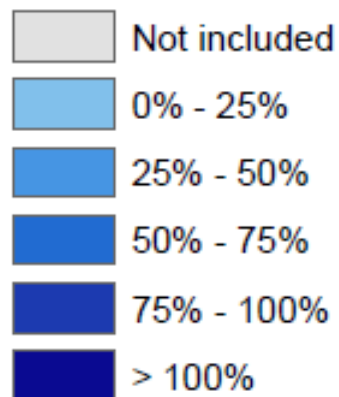
Renewable energy production by type



Consumption of renewable energy – share of total energy consumption

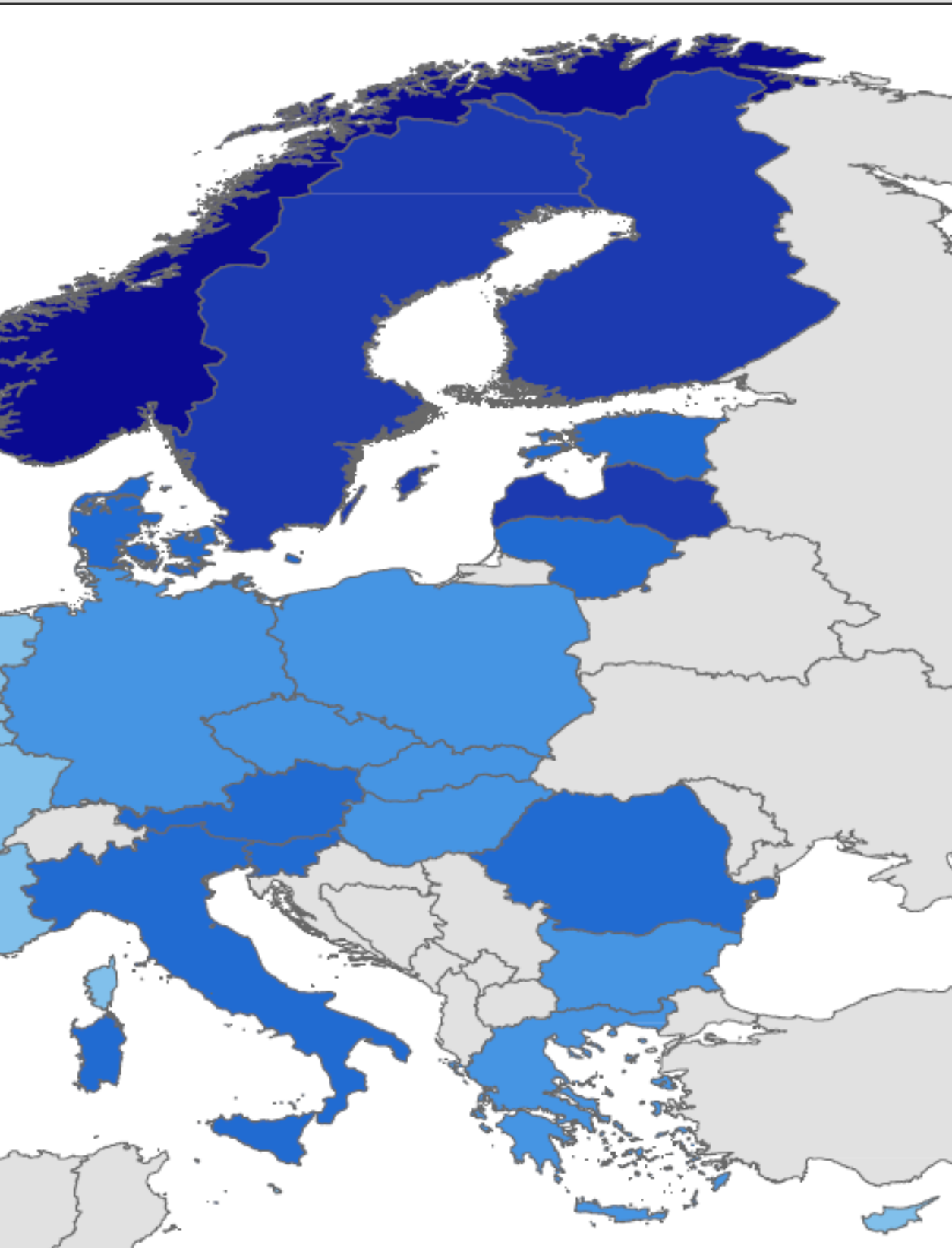


Degree of Self-sufficiency



Source: Eurostat and IEA

Energy - Total Energy, 2015

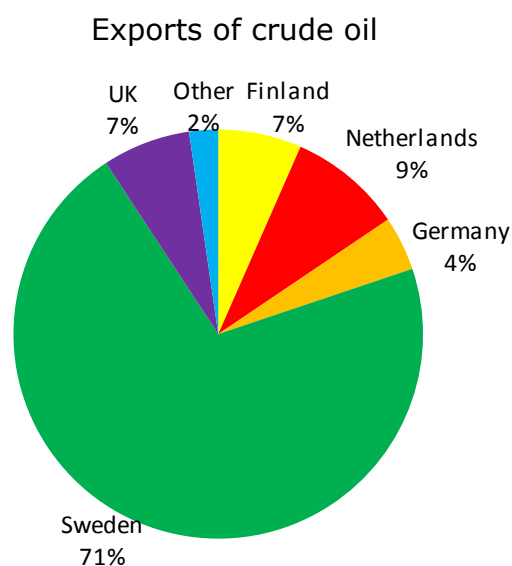
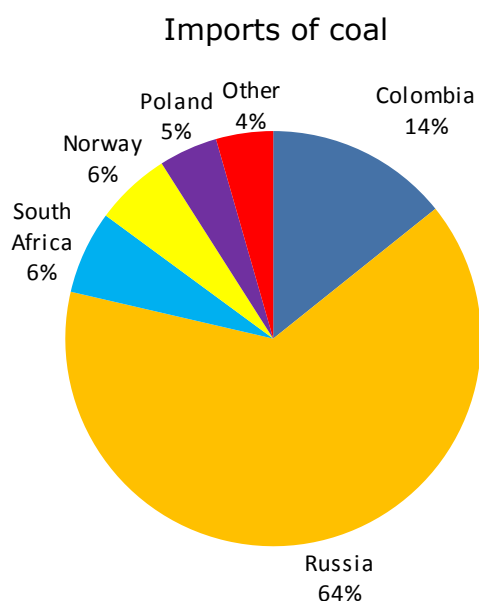


IMPORTS AND EXPORTS OF ENERGY

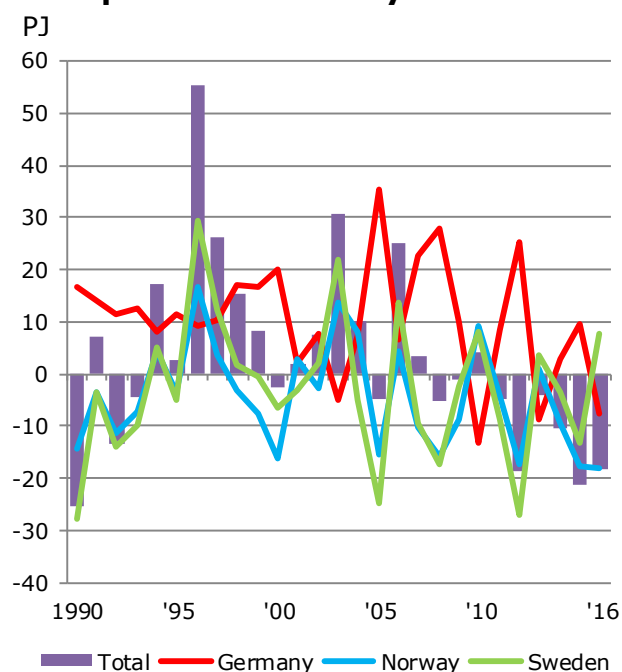
Imports and exports of energy products, 2016

	Imports	Exports
Crude oil [1000 tonnes]	3 835	3 877
Oil products [1000 tonnes]	9 259	8 599
Natural gas [million Nm ³]	646	2 004
Coal [1000 tonnes]	2 886	21
Electricity [GWh]	14 976	9 919

Imports of coal and exports of crude oil by country, 2016



Net exports of electricity



In Denmark, the foreign trade in electricity varies more than in any other European country. Foreign trade is strongly affected by price trends at the Nordic Electricity Exchange, Nord Pool, which is significantly influenced by the varying precipitation conditions in Norway and Sweden where electricity generation is dominated by water power.

In 2016, the Danish net imports of electricity totalled 18.2 PJ. It was the result of net imports of 18.2 PJ from Norway and 7.8 PJ net imports from Germany, whilst the net export to Sweden was 7.8 PJ.

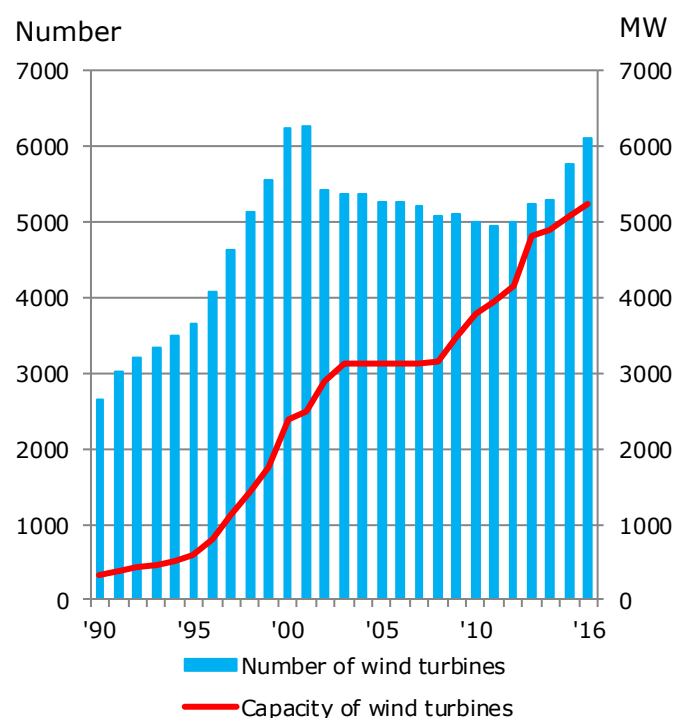
Number of wind turbines by size

	1990	2000			2016		
	Onshore turbines	Onshore turbines	Offshore turbines	Total	Onshore turbines	Offshore turbines	Total
Total	2 664	6 193	41	6 234	5 603	516	6 119
– 499 kW	2 654	3 651	11	3 662	2 219	11	2 230
500 – 999 kW	8	2 283	10	2 293	2 431	10	2 441
1000 – 1999 kW	2	251	-	251	362	-	362
2000 – kW	-	8	20	28	591	495	1 086

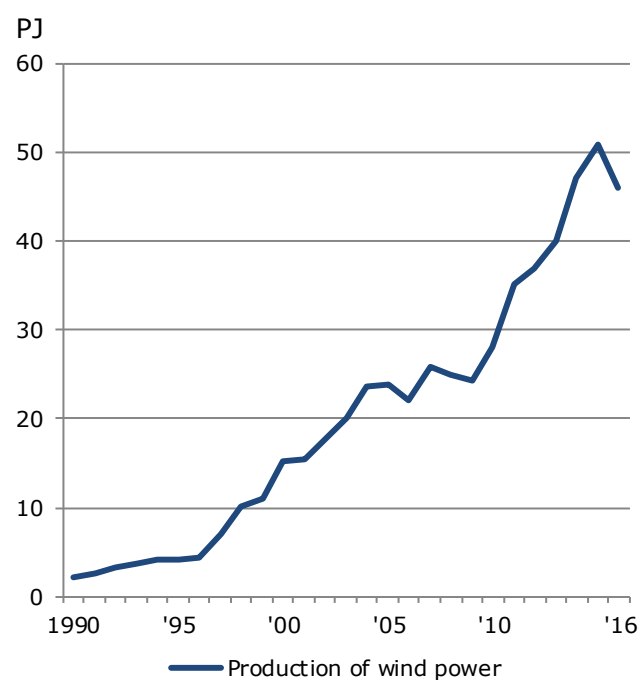
Total capacity of wind turbines by size [MW]

	1990	2000			2016		
	Onshore turbines	Onshore turbines	Offshore turbines	Total	Onshore turbines	Offshore turbines	Total
Total	326	2 340	50	2 390	3 974	1 271	5 245
– 499 kW	317	533	5	538	197	5	202
500 – 999 kW	6	1 512	5	1 517	1 655	5	1 660
1000 – 1999 kW	3	279	0	279	444	-	444
2000 – kW	-	16	40	56	1 679	1 261	2 940

Number of wind turbines and size of capacity



Production of wind power



ELECTRICITY AND HEAT

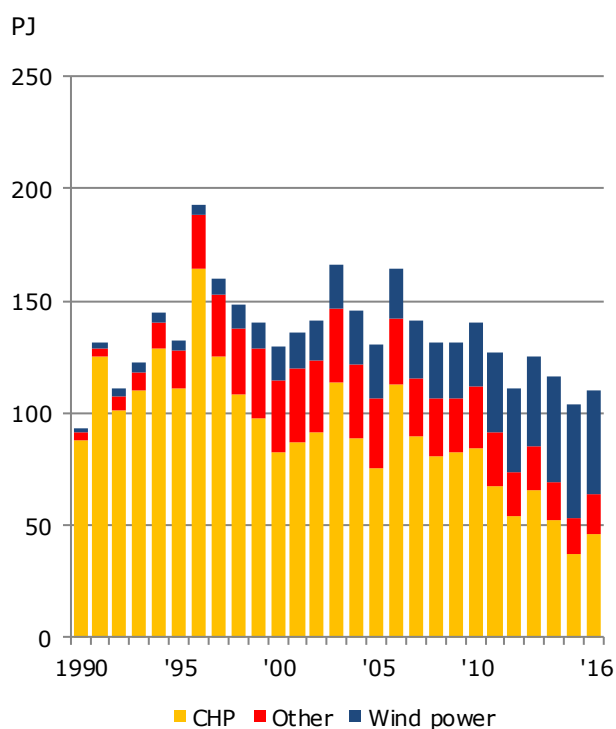
Electricity production by fuel

[PJ]	1994	2000	2010	2016
Total gross production	145	130	140	110
Oil	10	16	3	1
Natural gas	8	32	28	8
Coal	120	60	61	32
Wind	4	15	28	46
Other	3	7	19	23

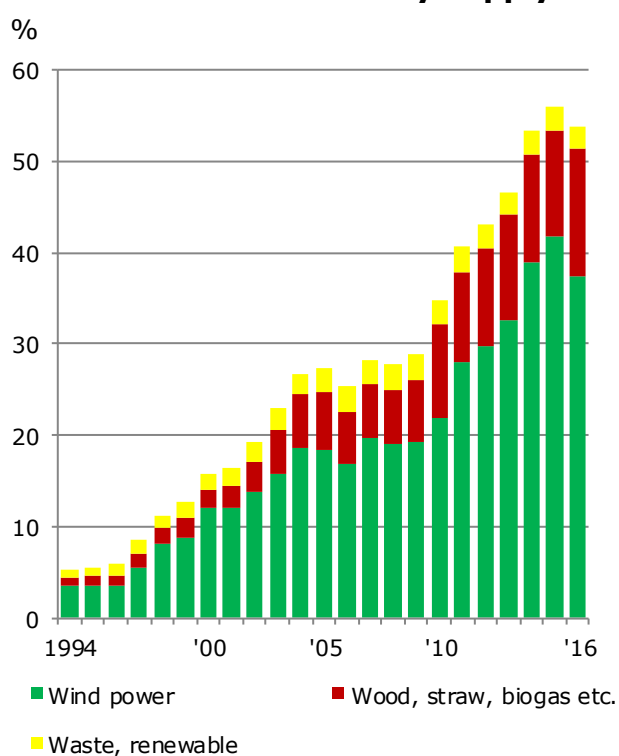
Electricity capacity (ultimo)

[MW]	1994	2000	2010	2016
Total electricity capacity	10 767	12 598	13 450	14 247
Large-scale units	9 126	8 160	7 175	5 688
Small-scale units	773	1 462	1 819	1 839
Autoproducers	339	574	638	615
Wind	521	2 390	3 802	5 245
Solar	-	1	7	851
Hydro	8	10	9	9

Electricity production by type



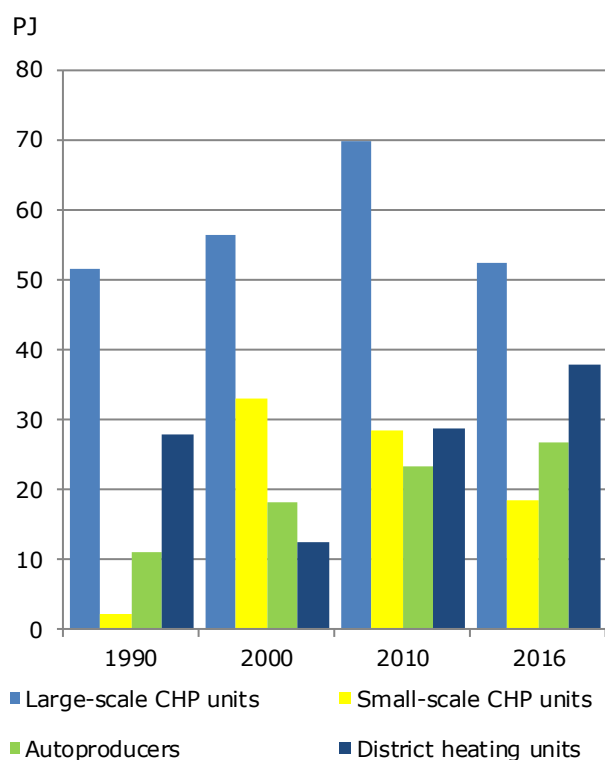
Electricity generated by renewables: Share of domestic electricity supply



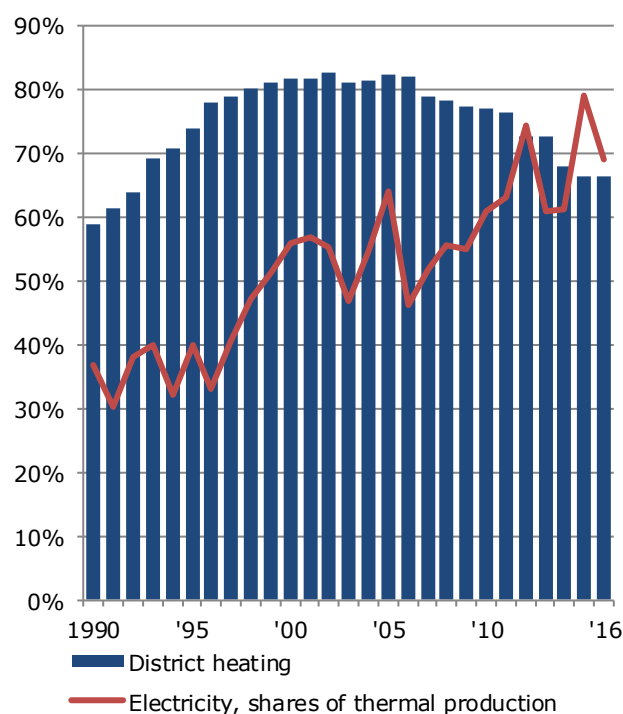
District heating by fuel [PJ]

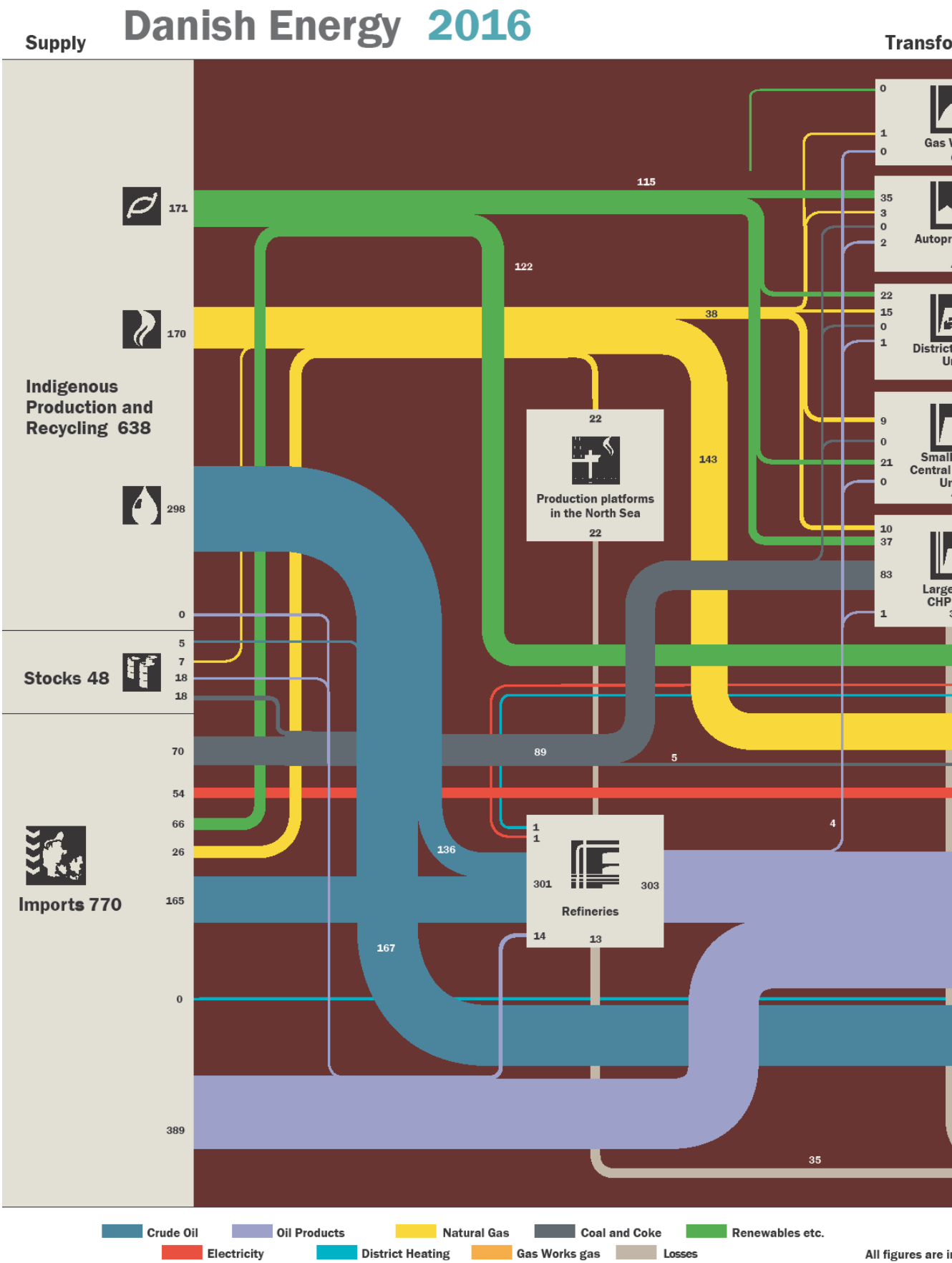
	1994	2000	2010	2016
Total gross production	113	120	150	136
Oil	6	4	5	1
Natural gas	25	42	45	25
Coal	56	39	36	25
Surplus heat	3	4	3	4
Waste, non-renewable	6	9	11	13
Renewable energy	17	22	51	67
of which:				
- Straw	4	6	12	11
- Wood	4	5	24	36
- Biofuels	0	0	2	0
- Waste, renewable	7	11	13	15
- Biogas	0	1	1	3
- Other	0	0	0	2

District heating production by type of producer



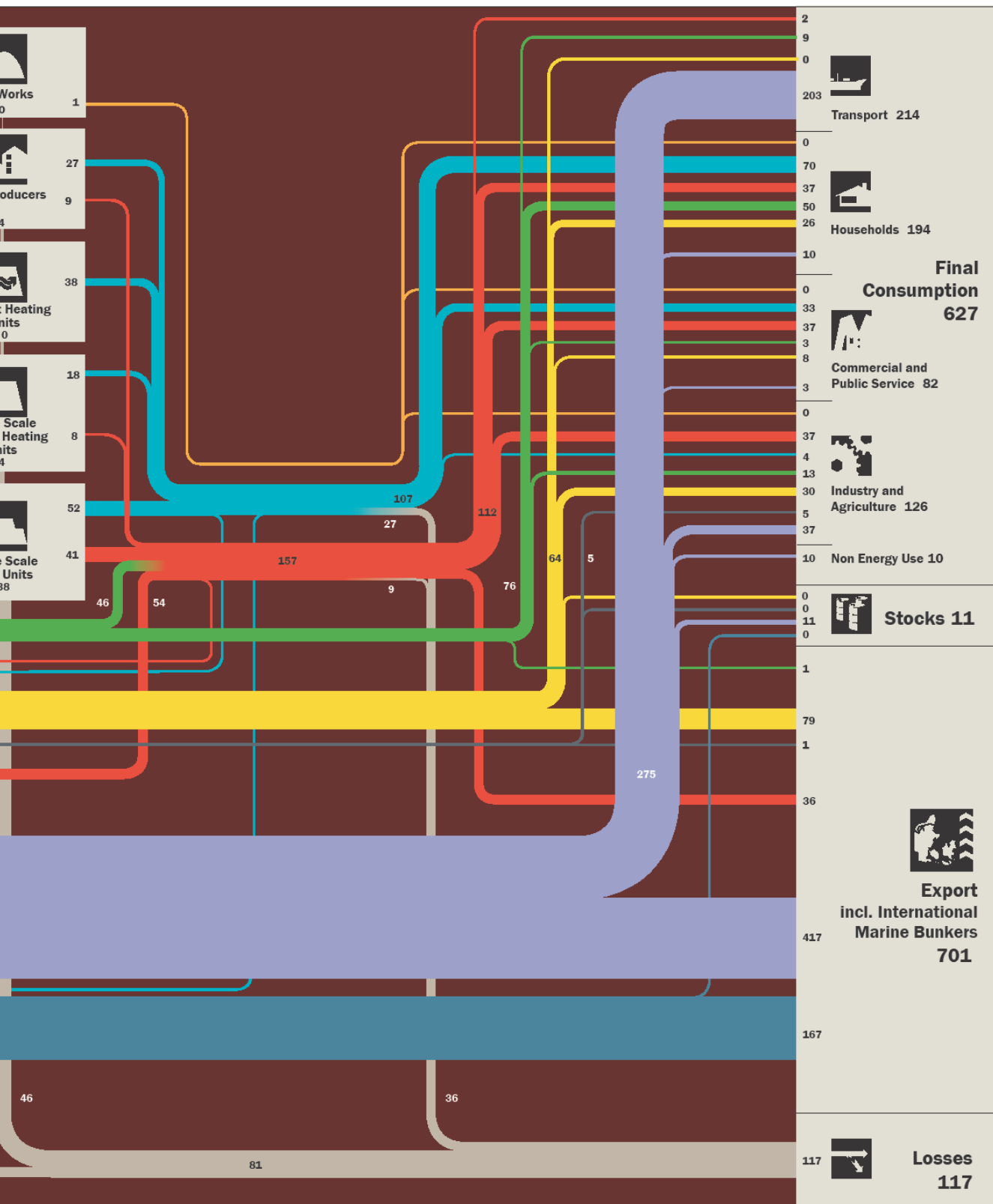
CHP shares of electricity and district heat production





Information

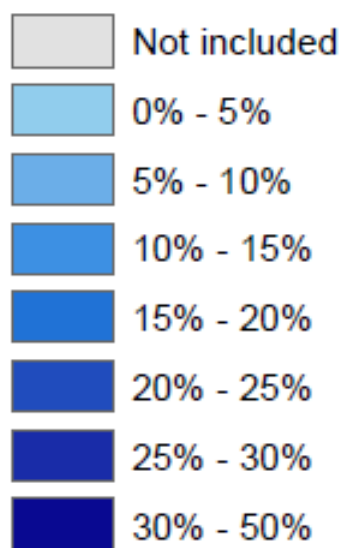
Deliveries



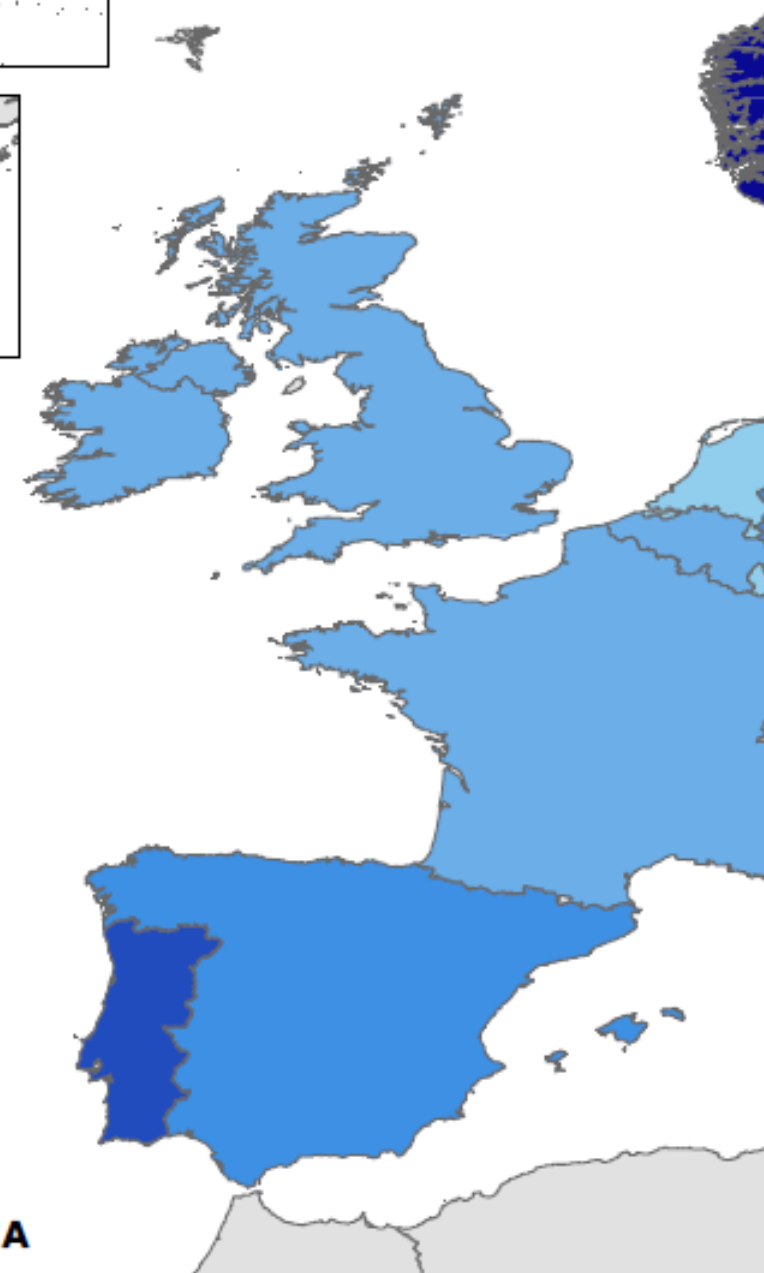
in Peta Joule (PJ)

Renewable energy

Share of Total Energy Consumption

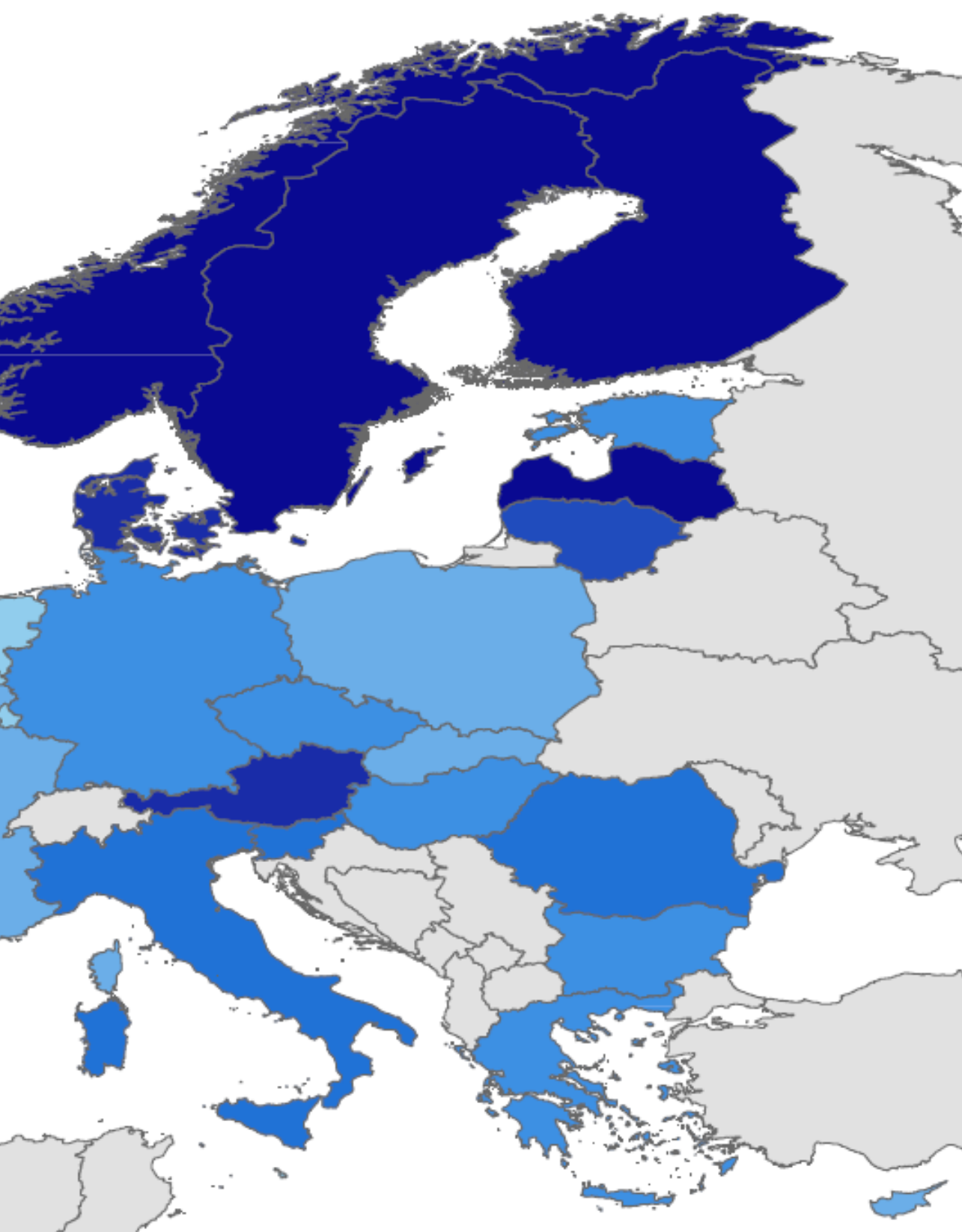


Source: Eurostat and IEA



Energy, 2015

Consumption (TPES)



ENERGY CONSUMPTION

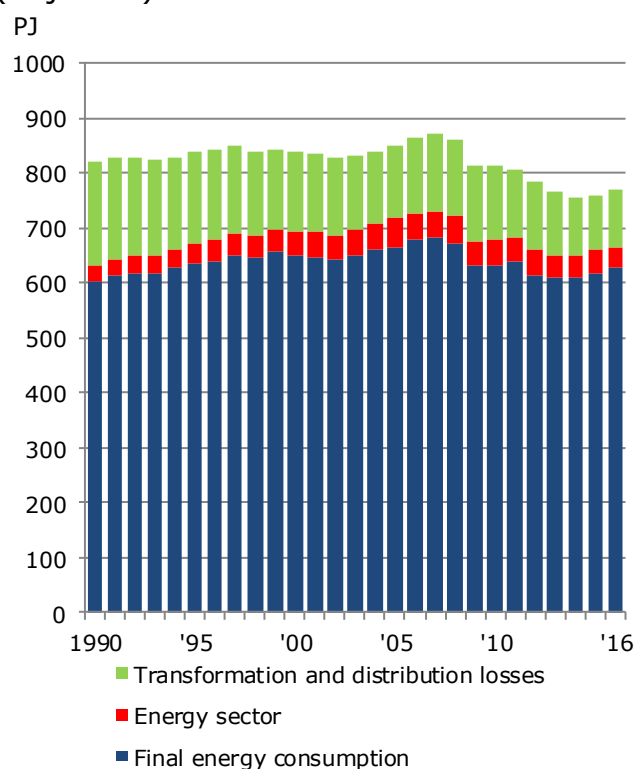
Gross energy consumption by fuel

Adjusted [PJ]	1980	1990	2000	2010	2016
Total gross energy consumption	814	819	839	814	770
Oil	546	355	376	312	280
Natural gas	0	82	192	176	131
Coal and coke	241	327	175	147	116
Waste, non-renewable	5	8	14	16	18
Renewable energy	22	48	81	163	225

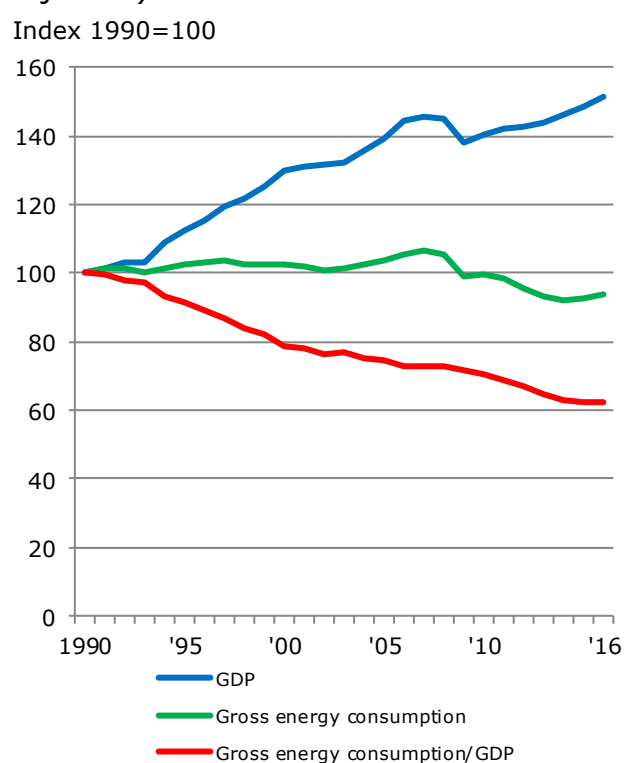
Final energy consumption by sector

Climate adjusted [PJ]	1980	1990	2000	2010	2016
Total final energy consumption	610	604	651	633	629
Non-energy use	16	13	13	11	10
Transport	143	170	201	210	214
Industry and agriculture	168	159	167	137	126
Commerce and public services	78	77	81	84	83
Households	204	185	189	192	196

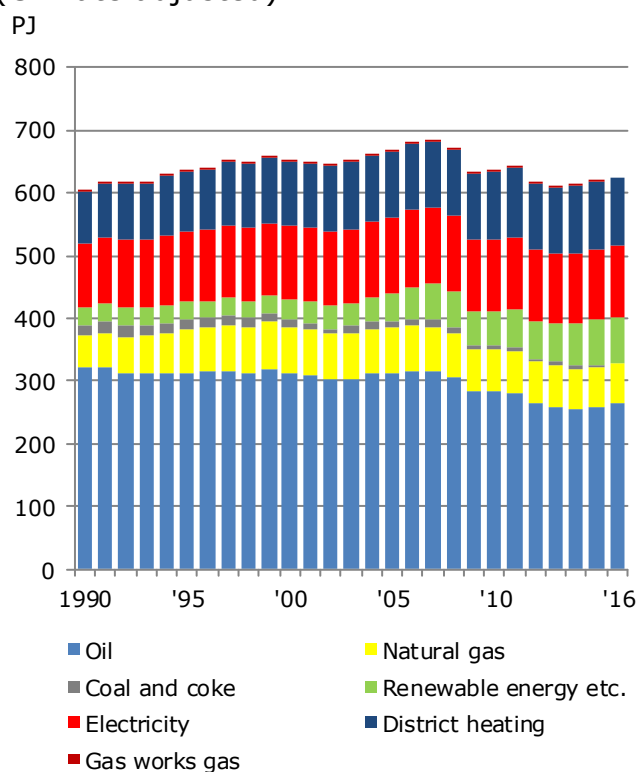
Gross energy consumption and final energy consumption (Adjusted)



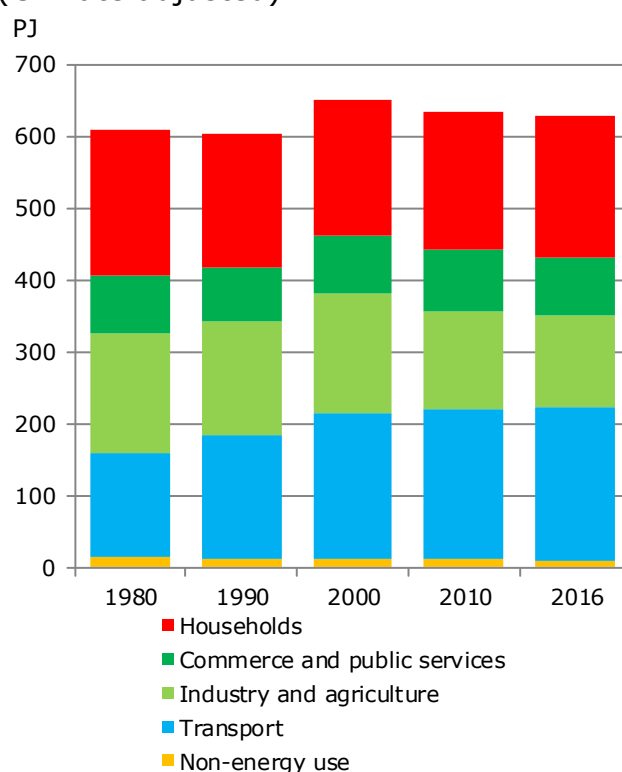
GDP, gross energy consumption and energy intensity (Adjusted)



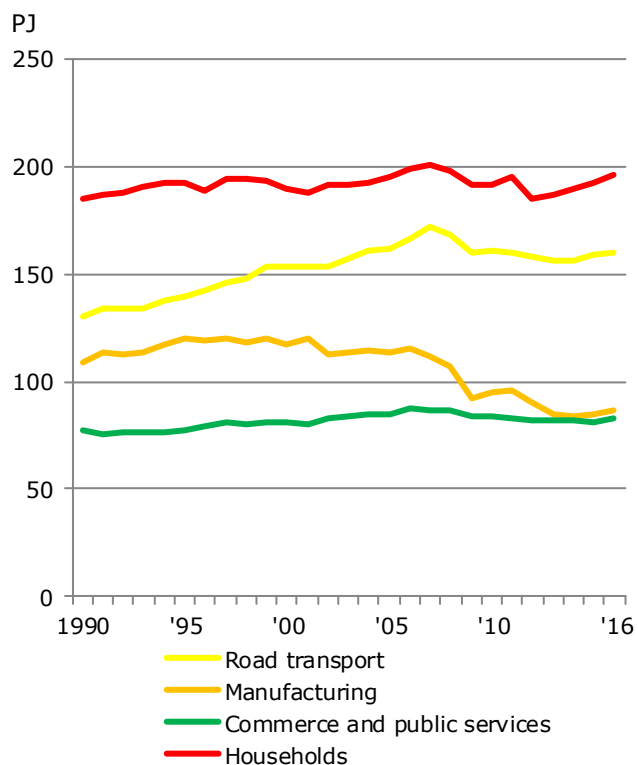
Final energy consumption by fuel (Climate adjusted)



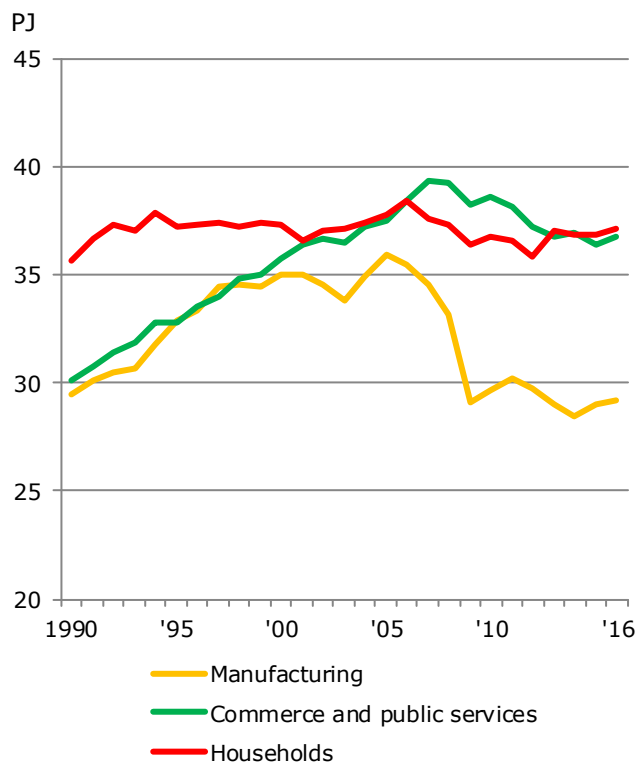
Final energy consumption by sector (Climate adjusted)



Final energy consumption (Climate adjusted)



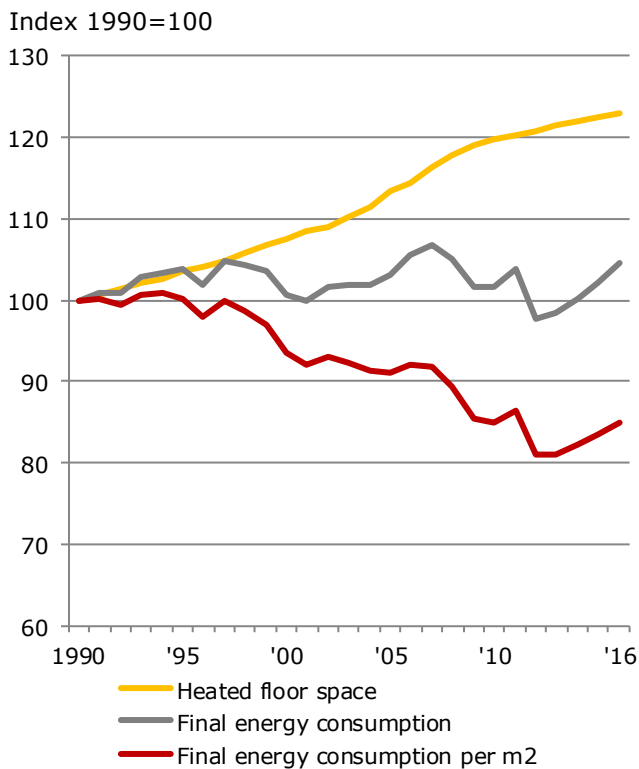
Electricity consumption (Climate adjusted)



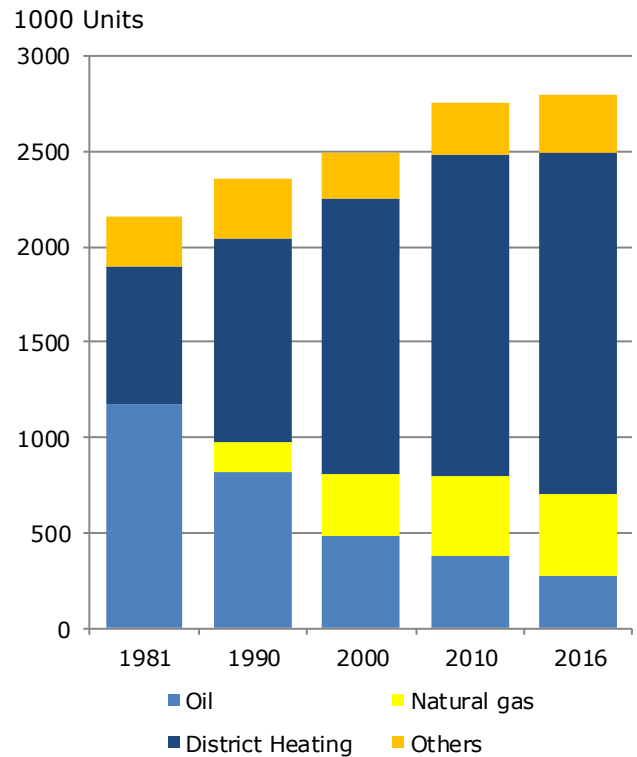
ENERGY CONSUMPTION

Energy consumption for space heating in households

(Climate adjusted)



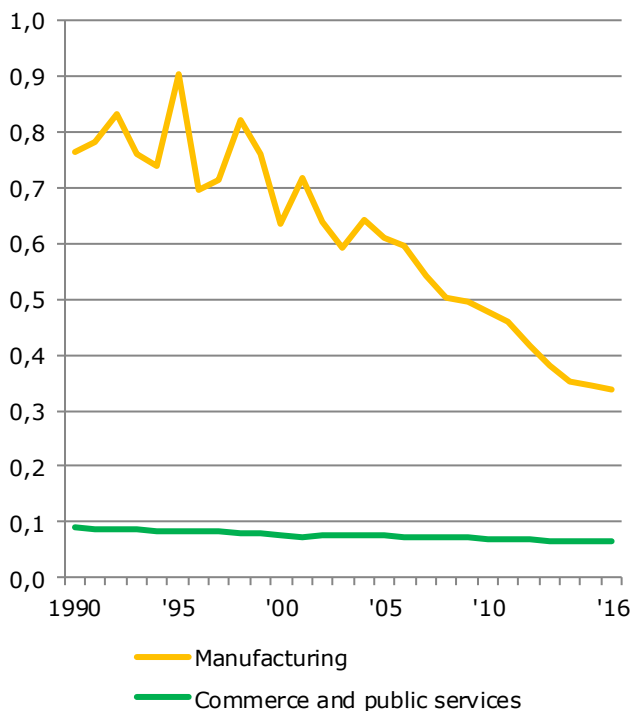
Heating installations in households



Energy intensities

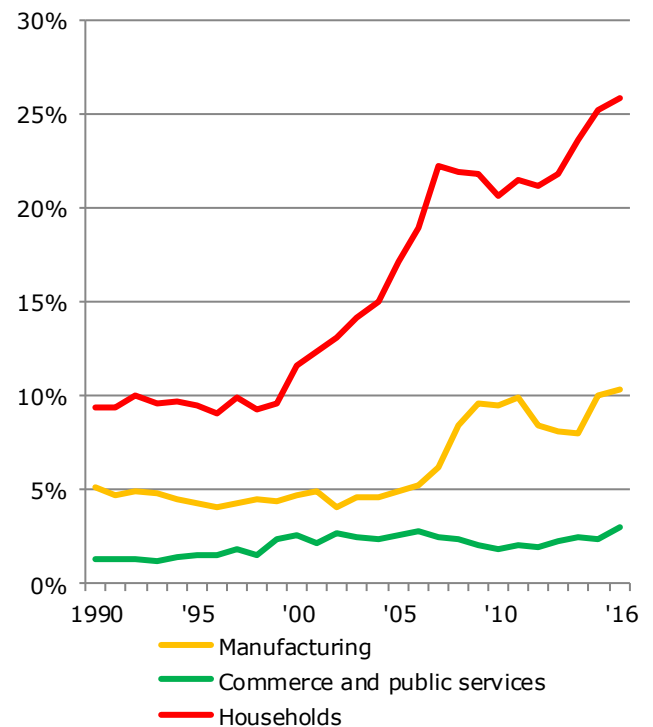
(Climate adjusted)

TJ per DKK million gross value added (2010-prices)



Shares of renewable energy in final energy consumption

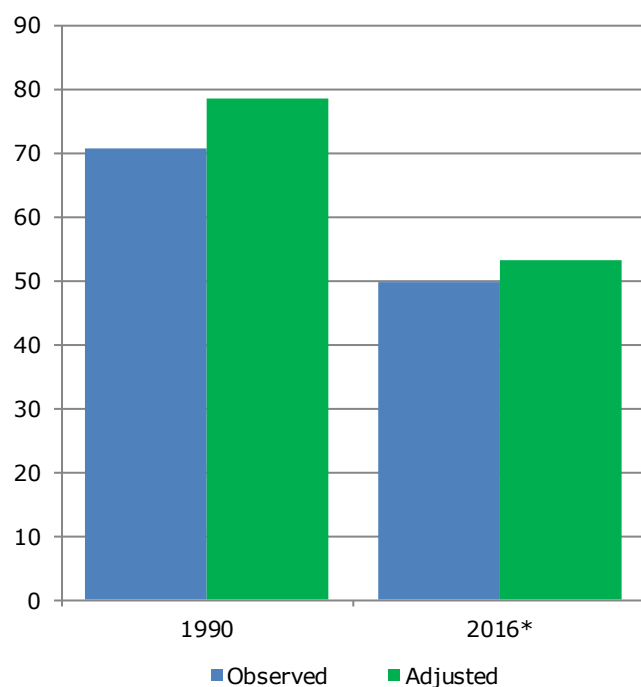
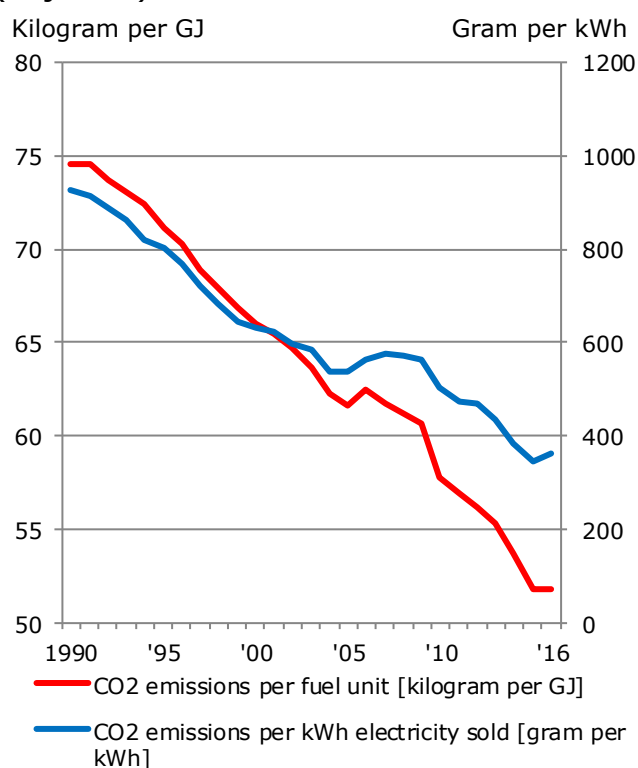
(Climate adjusted)



CO₂ emissions from energy consumption

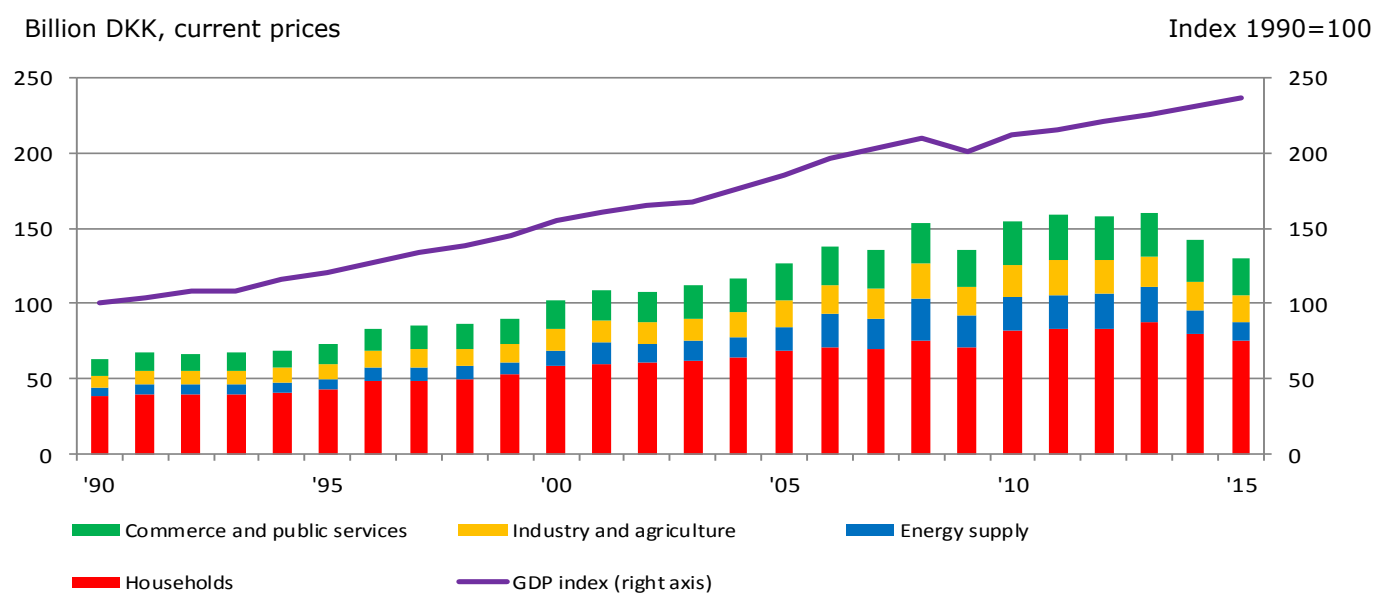
[Million tonnes]

	1980	1990	2000	2010	2016
Observed CO₂ emissions	64.2	53.0	53.6	49.4	36.7
Energy sector	0.9	1.4	2.3	2.3	2.1
Transformation sector	30.0	25.1	24.2	21.9	11.7
Final energy consumption	33.2	26.5	27.0	25.1	22.8
Adjusted CO₂ emissions	62.4	61.0	55.3	47.0	39.9
Energy sector	0.9	1.4	2.3	2.3	2.1
Transformation sector	28.7	32.2	25.5	20.1	14.9
Final energy consumption	32.8	27.3	27.5	24.6	22.9

Total emissions from greenhouse gasesMillion tonnes CO₂ equivalent**CO₂ emissions per fuel unit and per kWh of electricity (Adjusted)**

*) Preliminary emission inventory

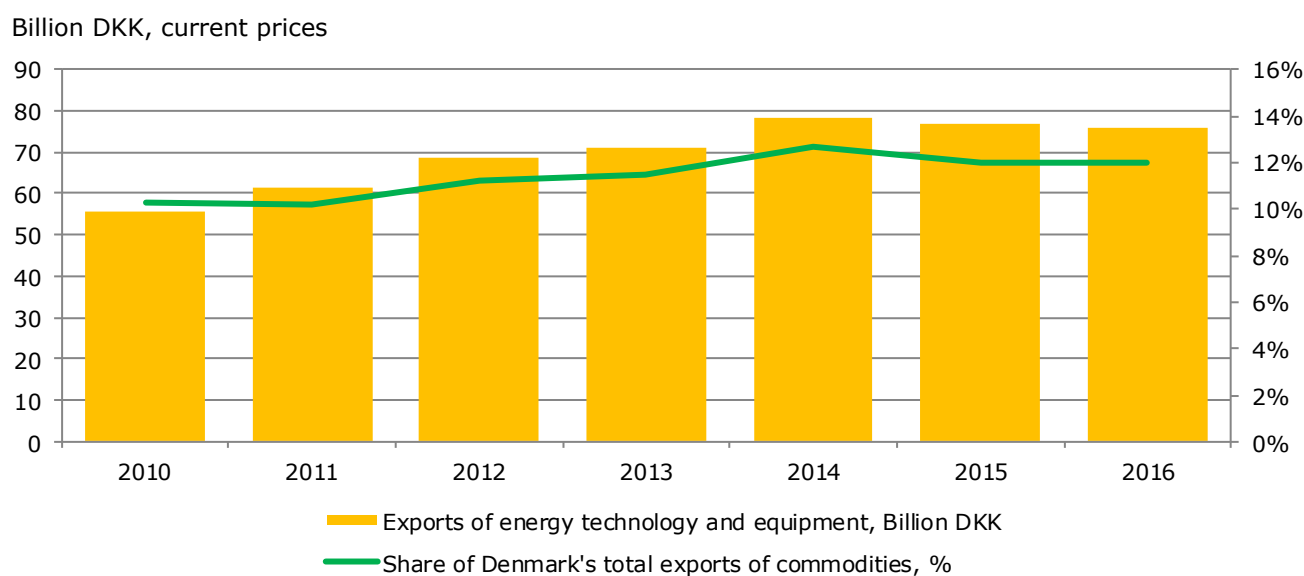
Energy expenses by industry and households



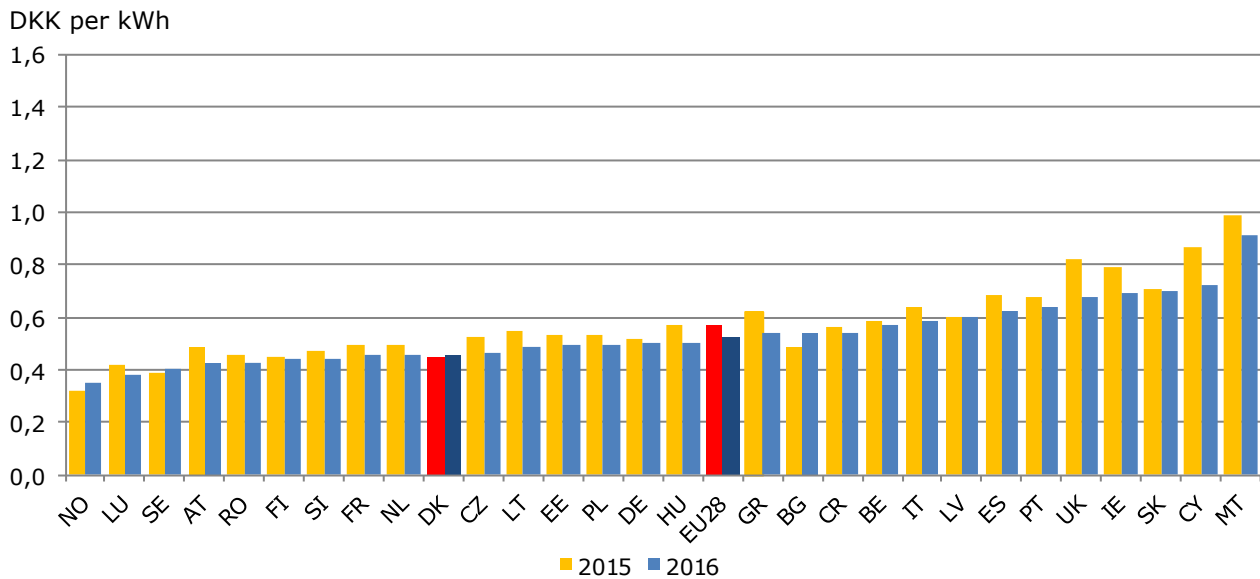
Economic key figures

[Billion DKK, current prices]	2015	2016
Total energy expenditures	130.2	●
Revenues from energy, CO ₂ and sulphur taxation	37.7	38.2
Expenditures to public service obligations on electricity	8.3	7.5
Value of crude oil and natural gas production	24.8	●

Exports of energy technology and equipment



Electricity prices for industrial consumers (Annual consumption 2-20 GWh)

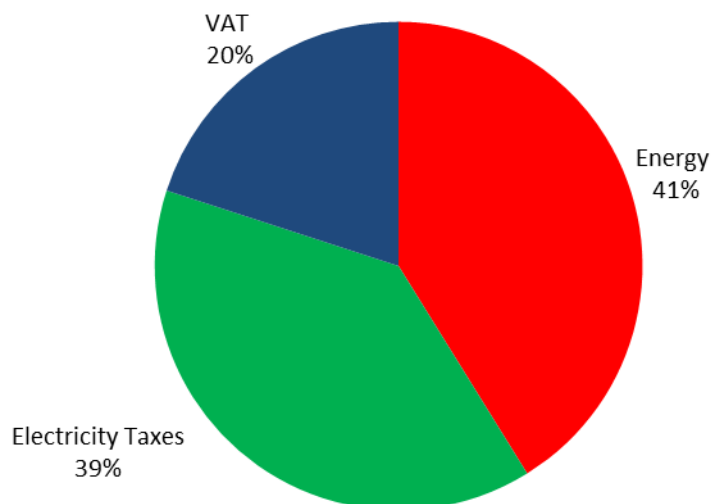


Source: Eurostat

Energy prices for households, 2016

	DKK	Euro
Gasoline regular [per litre]	10.97	1.47
Heating gas oil [per litre]	8.93	1.20
Natural gas [per Nm ³]	6.59	0.88
Electricity [per kWh]	2.30	0.31

Decomposition of the electricity price for households, 2016 (%)



INTERNATIONAL COMPARISONS 2015

	Degree of self- suffi- ciency [%]	Renewable energy and waste: Share of gross energy consumption [%]	Gross energy consumption per capita [GJ]	Energy intensity [TOE per million EUR GDP (2010 prices)]
Denmark	94	28	124	65
Estonia	89	14	199	355
Romania	82	18	68	227
Sweden	74	35	195	111
Poland	71	11	105	227
Czech Republic	68	10	169	249
Bulgaria	65	12	108	449
UK	62	8	123	94
Netherlands	61	5	192	118
France	54	9	159	121
Latvia	53	42	92	207
Finland	53	29	254	178
Slovenia	52	17	134	178
Croatia	52	22	84	193
EU28	47	13	134	120
Hungary	44	9	107	234
Slovakia	38	10	127	215
Germany	38	12	162	112
Austria	36	32	162	107
Greece	35	11	94	133
Spain	28	14	109	114
Italy	23	16	108	100
Portugal	23	23	93	134
Lithuania	23	21	99	205
Belgium	19	7	202	141
Ireland	13	8	128	59
Cyprus	5	6	112	129
Luxembourg	4	5	311	89
Malta	2	3	74	91
Norway	692	45	243	85
USA	92	7	285	
Japan	7	5	142	65

Source: Eurostat and IEA.

	1980	1990	2000	2010	2016
Gross energy consumption per capita [GJ]	159	160	157	147	135
Final energy consumption per capita [GJ]	119	118	122	114	110
Energy intensity, gross energy consumption [TJ per million GDP]	0.776	0.636	0.500	0.450	0.395
Energy intensity, final energy consumption [TJ per million GDP]	0.582	0.469	0.388	0.350	0.323
Degree of self-sufficiency [%]	5	52	139	120	83
Dependency of oil [%]	67	43	45	38	36
Renewable energy: Share of gross energy consumption [%]	2.7	5.8	9.6	20.0	29.1
Refinery capacity [million tonnes per year]	9.0	9.0	9.2	9.0	9.0
Electricity capacity [MW]	6 618	9 124	12 598	13 450	14 247
Wind turbine capacity: Share of total electricity capacity [%]	-	3.6	19.0	28.3	36.8
Net electricity exports: Share of domestic supply [%]	5.1	-22.5	-1.9	3.2	-14.8
CHP production: Share of thermal electricity production [%]	18	37	56	61	69
CHP production: Share of district heating production [%]	39	59	82	77	67
Renewable energy: Share of total domestic electricity supply [%]	0.1	2.6	15.9	34.8	53.9
CO ₂ emissions per capita [tonnes]	12.2	11.9	10.4	8.5	7.0
CO ₂ emissions per kWh sold [gram per kWh]	1 025	928	632	505	364
CO ₂ emissions per consumed unit of district heating [kilogram per GJ]	95	62	43	33	29
CO ₂ emissions per GDP [kilogram per DKK]	60	47	33	26	20

Note: Data on energy consumption and CO₂ emissions are adjusted.

Do you need more data?

www.ens.dk/facts_figures

Energy Statistics 2016

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

Data

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

Maps

- Key maps showing aspects of the Danish energy sector

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