



Danish Energy  
Agency

# 2021

Data, tables, statistics and maps

Energy in Denmark 2021

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## Energy in Denmark, 2021

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### Design

Danish Energy Agency

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Internet

### Printing

Quotations may be made from this publication with appropriate acknowledgement of source.

### Internet

Available at [www.ens.dk](http://www.ens.dk)

### Sources

Danish Energy Agency – Energy statistics 2021

Statistics Denmark

Danish Meteorological Institute

Danmarks Nationalbank

### Danish Energy Agency

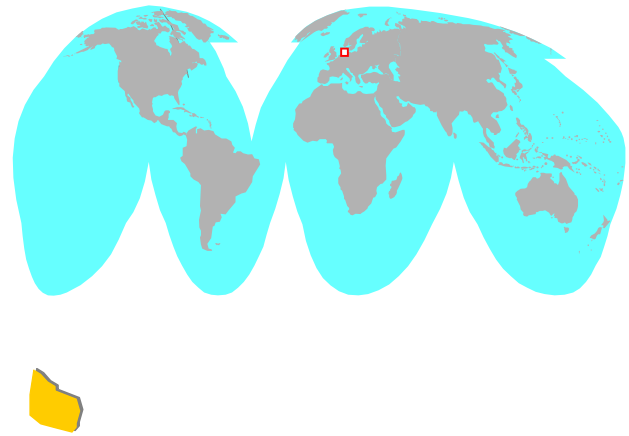
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February 2023

## GENERAL INFORMATION ON DENMARK



### Geography (2021)

Area, km <sup>2</sup>	42 947
Coastline, km	8 750
Number of islands	394
Forest area, %	14.9

### Climate (2021)

Average temperature:	
January	0.8° C
July	18.3° C
Sunshine, hours	1 640
Precipitation, mm	741

### Population (2021)

Population (Jan. 2021)	5 840 763
By age:	
0-19 years, %	22.8
20-59 years, %	52.2
60- years, %	25.0
Population density, per km <sup>2</sup>	136.0

### Currency (2021)

1 Krone (DKK)	=	100 øre
1 USD	=	6.29 DKK
1 EURO	=	7.44 DKK
1 GBP	=	8.65 DKK

### Economics (2021)

GDP, billion DKK	2 504
Exports, billion DKK	1 315
Imports, billion DKK	1 494

### Constitution and Government (2021)

Denmark is a constitutional monarchy  
 Monarch is Queen Margrethe II  
 In 2021 the government consists of:  
 The Social Democratic Party

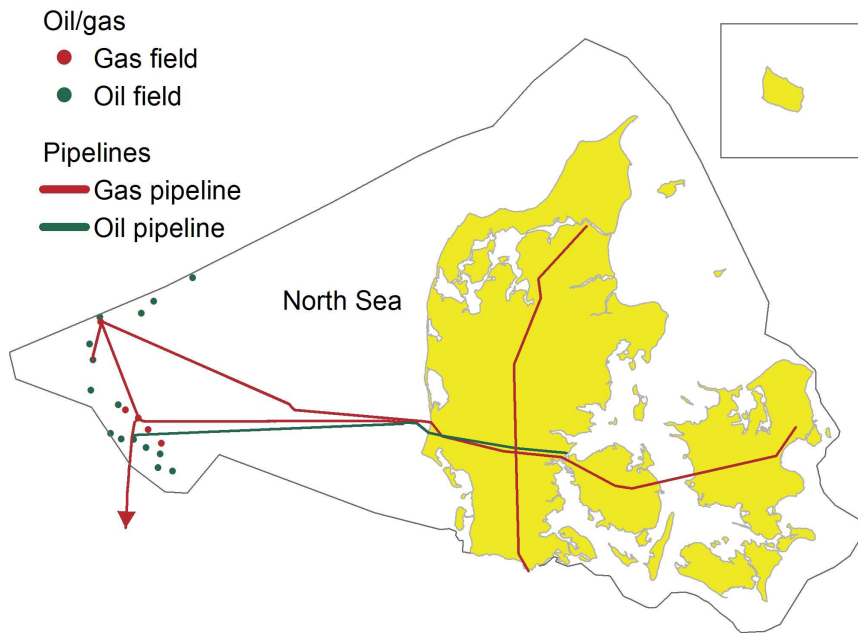
### Labour Market (2021)

Labour force, '000	3047
Employed, '000	2 892
Employed in industry, %	17.7
Employed in agriculture and fishing, %	2.2
Employed in commercial and public services, %	80.1

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

# ENERGY PRODUCTION

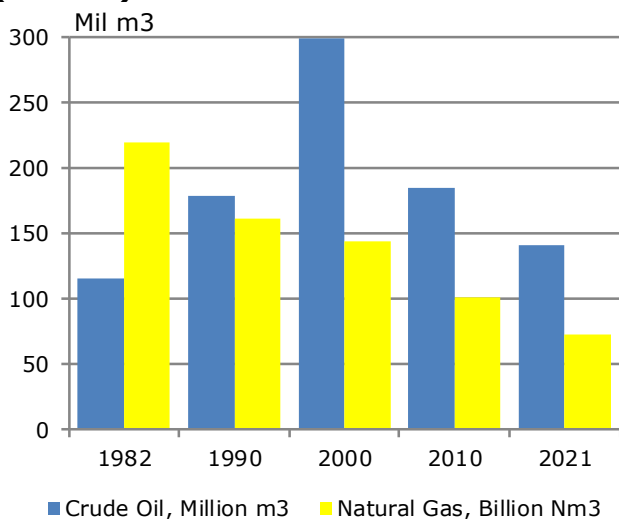
## Danish oil and gas fields and pipelines



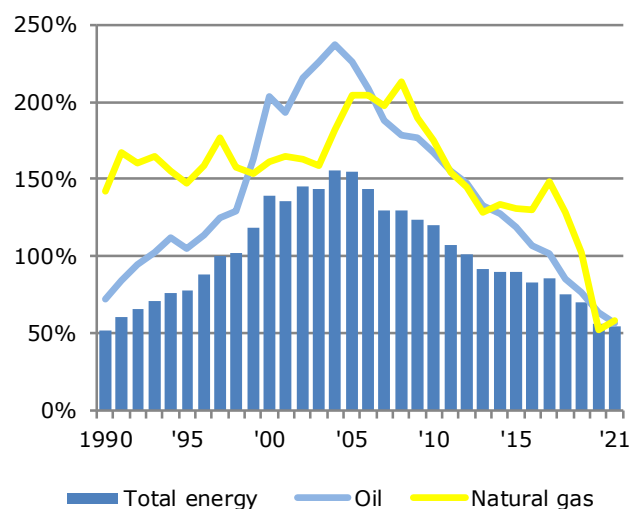
In 2021, there were twenty oil and gas fields of varying size (fifteen oil and five gas fields). Seven fields are situated in the northern part of the Central Graben, while all the other fields are situated in the southern region of the Central Graben. Denmark is the third largest oil producer in Western Europe trailing only UK and Norway. The offshore Tyra gas field in the North Sea is shut down for redevelopment from September 2019 to winter 2023/2024.

Energy production [PJ]	1980	1990	2000	2010	2021
<b>Total production</b>	<b>40</b>	<b>424</b>	<b>1 165</b>	<b>979</b>	<b>399</b>
Crude oil	13	256	765	523	139
Natural gas	0	116	310	307	53
Waste, non-renewable	5	7	14	17	16
Renewable energy	23	45	76	131	191

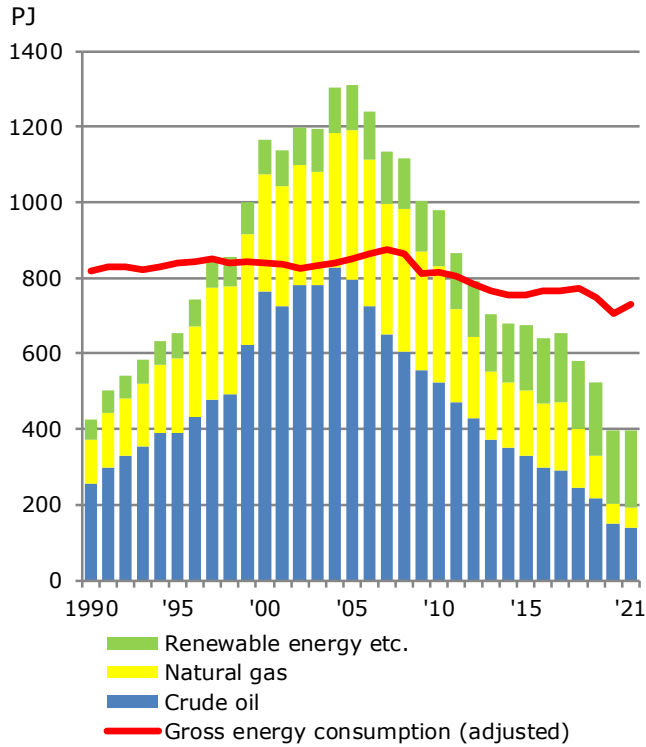
## Oil and gas reserves and resources (Ultimo)



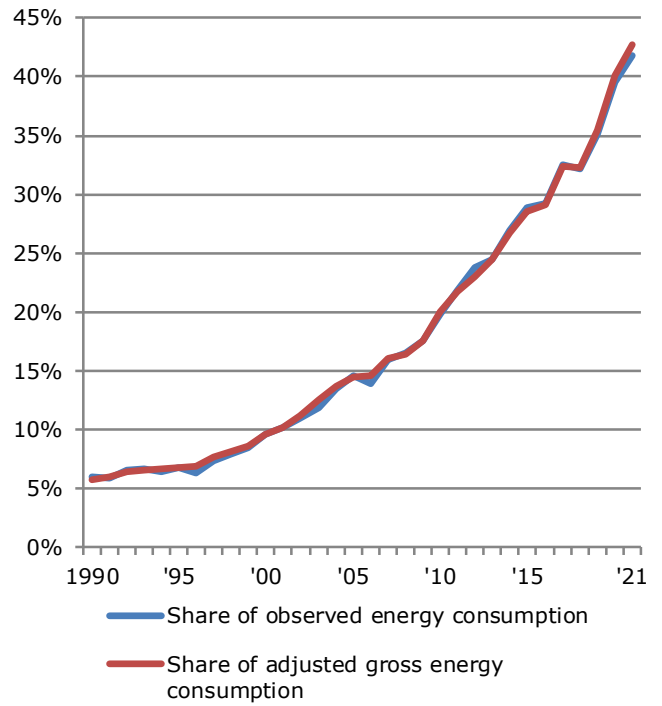
## Degree of self-sufficiency



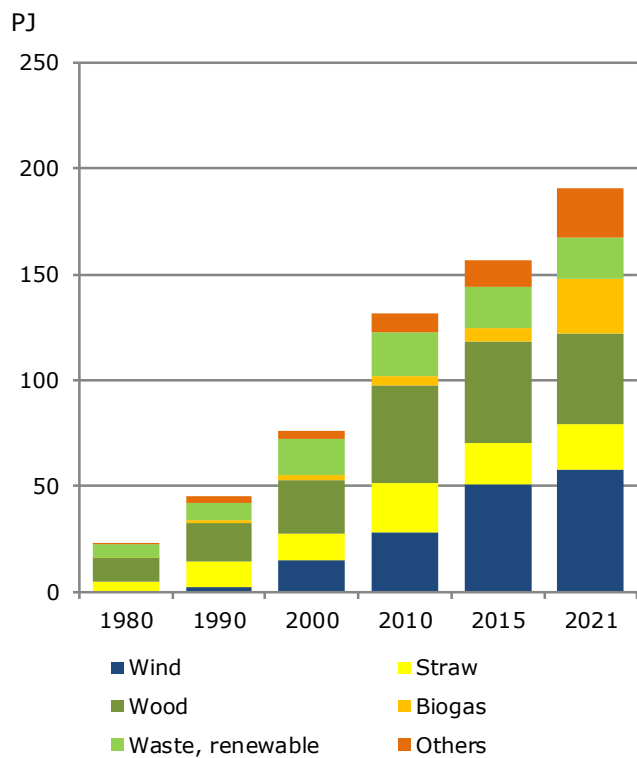
### Energy production and energy consumption



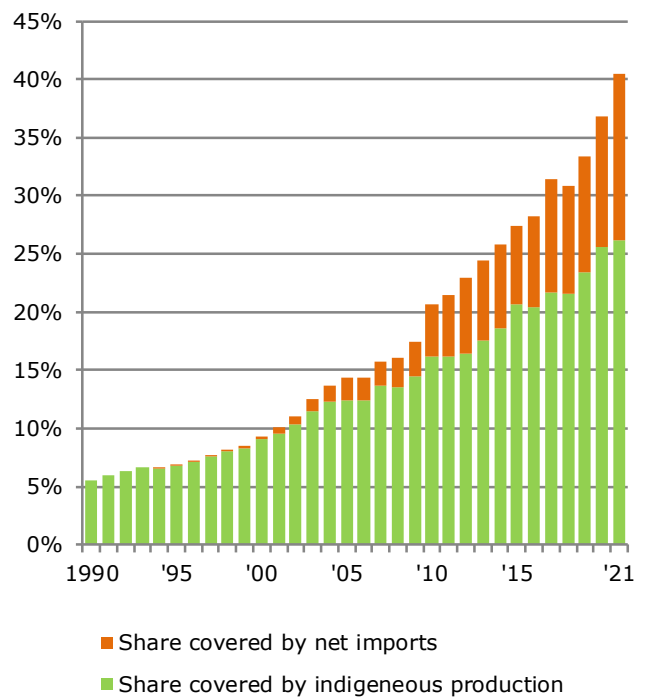
### Renewable energy – share of total energy consumption



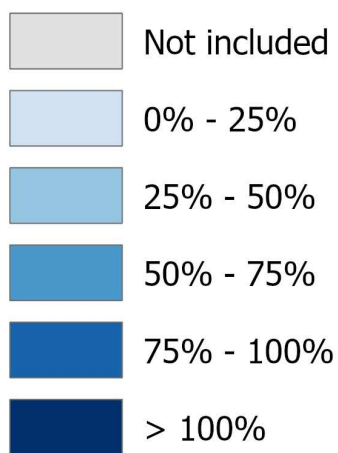
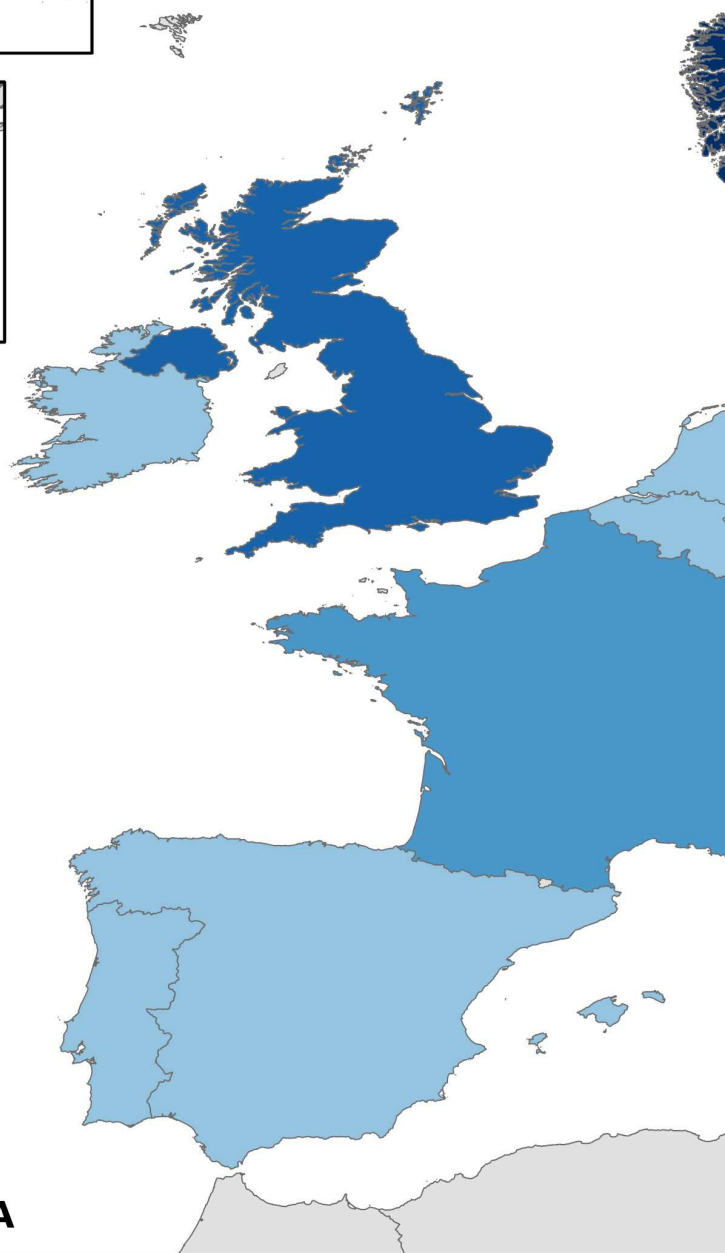
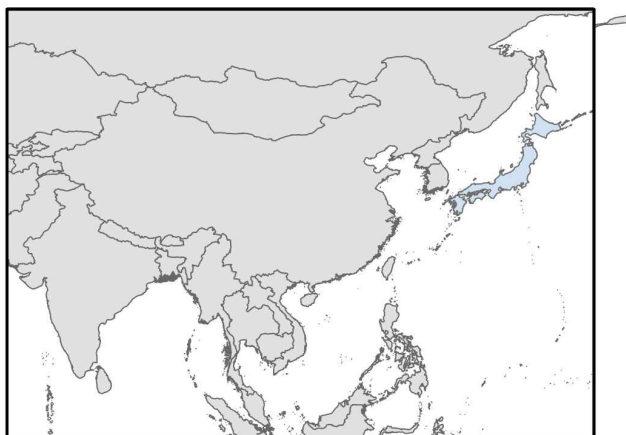
### Renewable energy production by type



### Consumption of renewable energy – share of total energy consumption

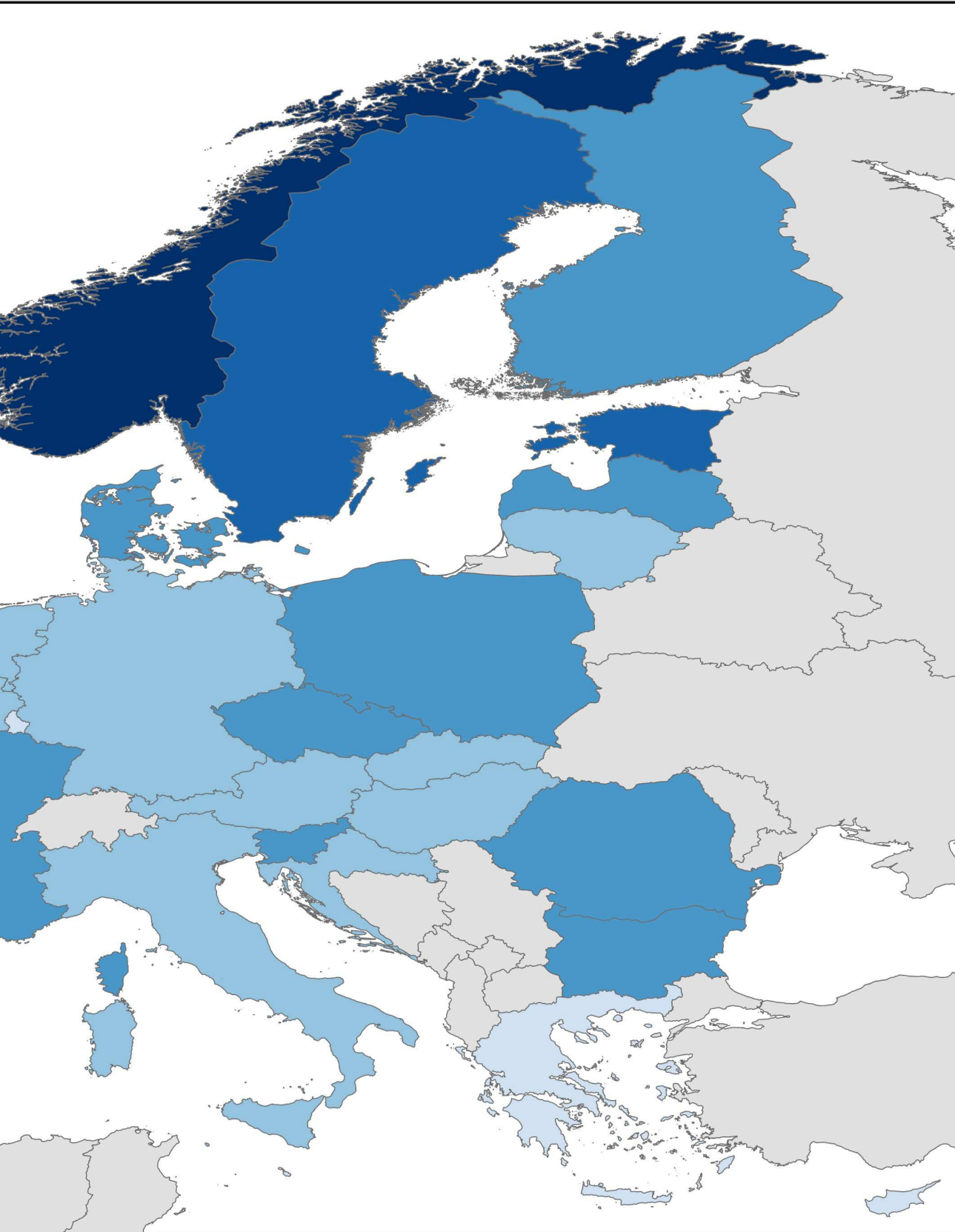


# Degree of Self-sufficiency



Source: Eurostat and IEA

# Energy - Total Energy, 2020

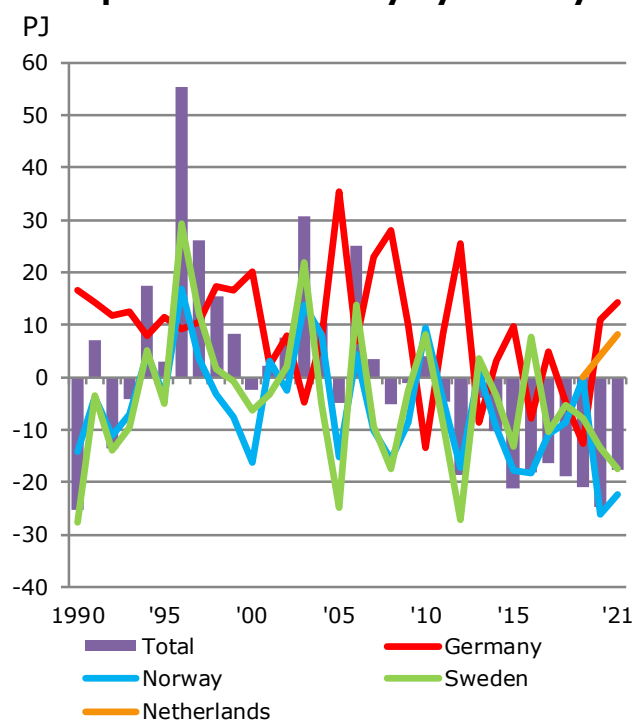


## IMPORTS AND EXPORTS OF ENERGY

### Imports and exports of energy products, 2021

	Imports	Exports
Crude oil [ 1000 tonnes]	3 652	854
Oil products [ 1000 tonnes]	4 737	7 067
Natural gas [ million Nm <sup>3</sup> ]	2 369	1 758
Coal [ 1000 tonnes]	774	583
Electricity [ GWh]	20 120	15 251

### Net exports of electricity by country



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

In 2021, Denmark had overall net imports of electricity of 17.5 PJ. This was the result of net imports of 22.3 PJ from Norway and 17.5 PJ net imports from Sweden, whilst the net exports to Germany was 14.3 PJ and 8 PJ to the Netherlands.



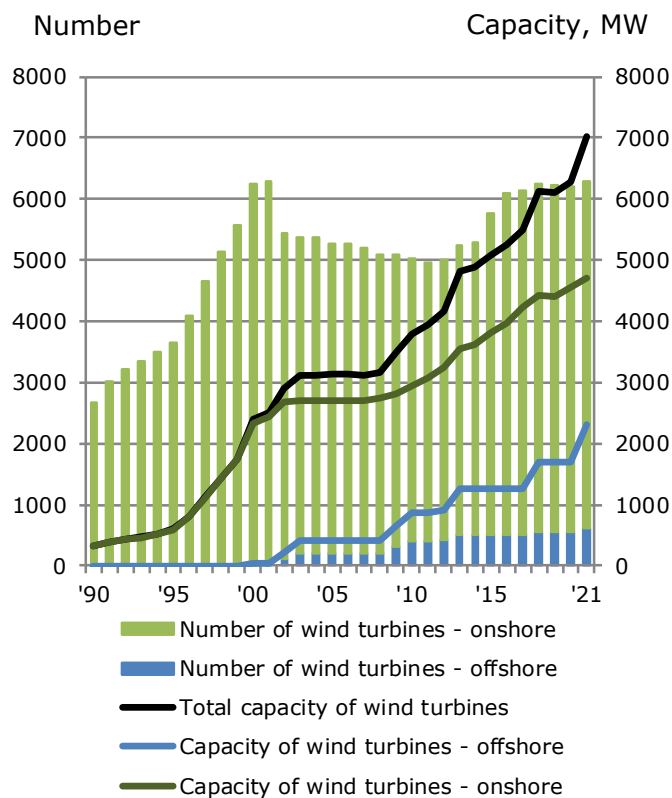
**Number of wind turbines by size**

	1990		2000			2021		
	Onshore turbines	Onshore turbines	Offshore turbines	Total	Onshore turbines	Offshore turbines	Total	
<b>Total</b>	<b>2 666</b>	<b>6 194</b>	<b>41</b>	<b>6 235</b>	<b>5 661</b>	<b>630</b>	<b>6 291</b>	
- 499 kW	2 656	3 652	11	3 663	2 165	-	2 165	
500 - 999 kW	8	2 283	10	2 293	2 371	10	2 381	
1000 - 1999 kW	2	251	-	251	316	-	316	
2000 - kW	0	8	20	28	809	620	1 429	

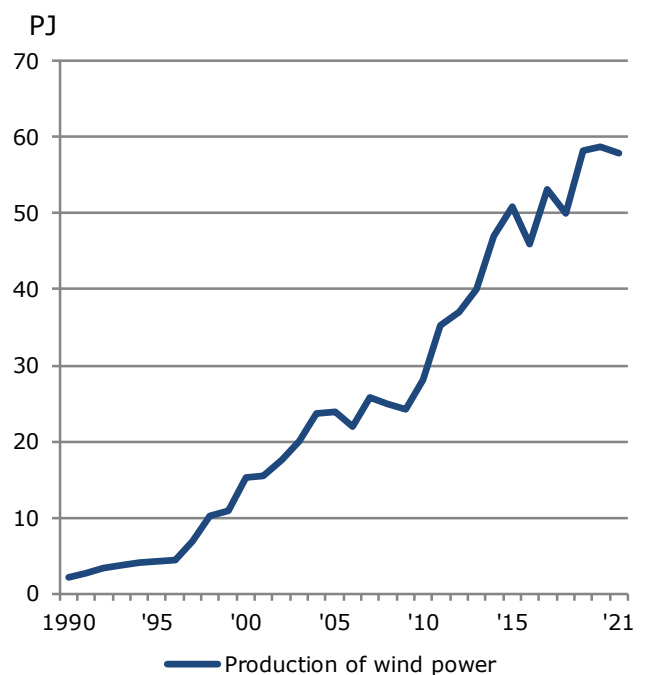
**Total capacity of wind turbines by size [MW]**

	1990		2000			2021		
	Onshore turbines	Onshore turbines	Offshore turbines	Total	Onshore turbines	Offshore turbines	Total	
<b>Total</b>	<b>326</b>	<b>2 340</b>	<b>50</b>	<b>2 390</b>	<b>4 715</b>	<b>2 306</b>	<b>7 021</b>	
- 499 kW	317	533	5	538	165	-	165	
500 - 999 kW	6	1 512	5	1 517	1 616	5	1 621	
1000 - 1999 kW	3	279	0	279	391	-	391	
2000 - kW	-	16	40	56	2 543	2 301	4 844	

**Number of wind turbines and size of capacity**



**Production of wind power**



## ELECTRICITY AND HEAT

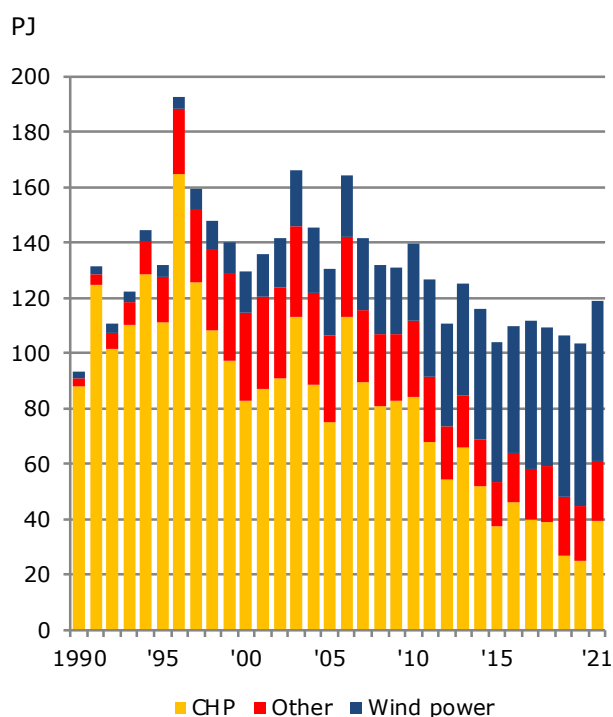
### Electricity production by fuel

[PJ]	1994	2000	2010	2021
<b>Total gross production</b>	<b>145</b>	<b>130</b>	<b>140</b>	<b>119</b>
Oil	10	16	3	1
Natural gas	8	32	28	4
Coal	120	60	61	16
Wind	4	15	28	58
Other	3	7	19	40

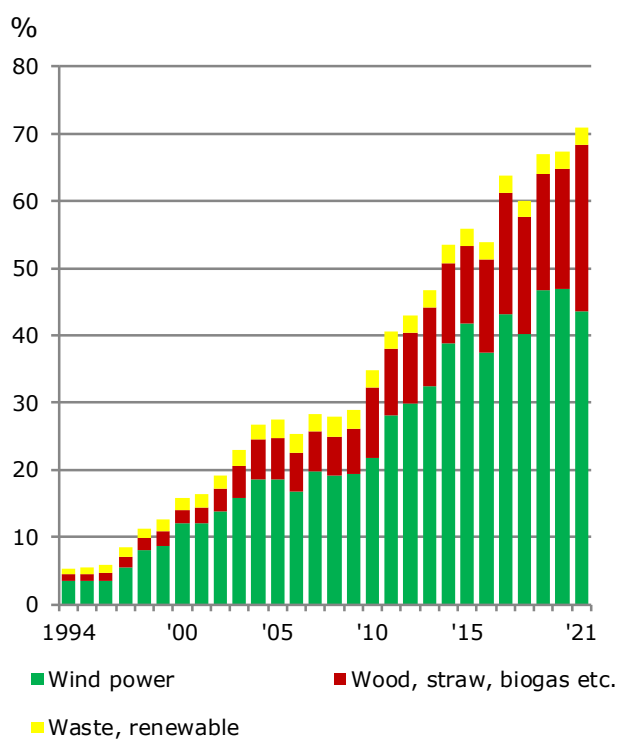
### Electricity capacity (ultimo)

[MW]	1994	2000	2010	2021
<b>Total electricity capacity</b>	<b>10 768</b>	<b>12 598</b>	<b>13 450</b>	<b>16 231</b>
Large-scale units	9 126	8 160	7 175	5 228
Small-scale units	773	1 462	1 819	1 706
Autoproducers	339	574	638	566
Wind	521	2 390	3 802	7 021
Solar	0	1	7	1 704
Hydro	8	10	9	7

### Electricity production by type



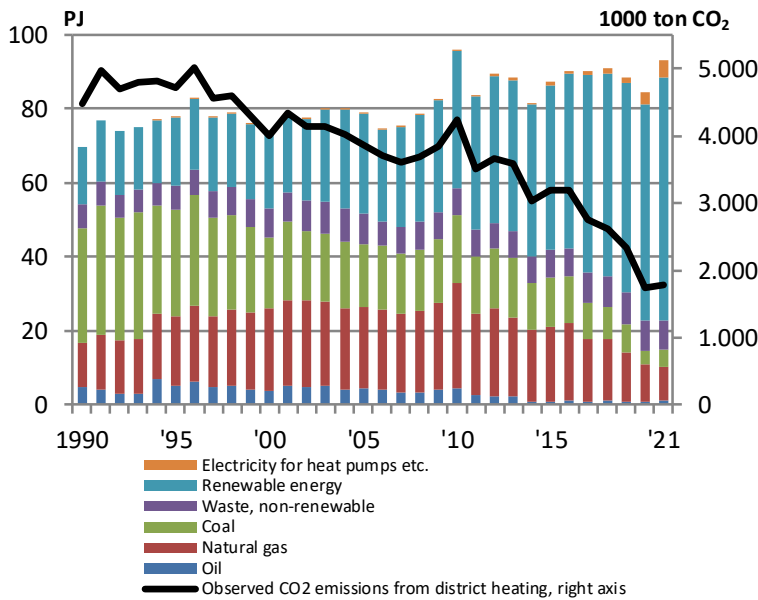
### Electricity generated by renewables: Share of domestic electricity supply



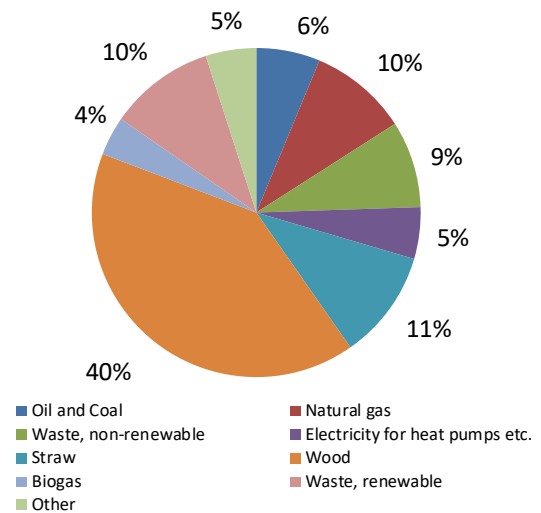
**District heating by fuel**

[PJ]	1994	2000	2010	2021
<b>Total gross production</b>	<b>113</b>	<b>120</b>	<b>150</b>	<b>141</b>
Oil	6	4	5	1
Natural gas	25	42	45	11
Coal	56	39	36	9
Surplus heat	3	4	3	5
Electricity	0	0	0	5
Waste, non-renewable	6	9	11	13
<b>Renewable energy</b>	<b>17</b>	<b>22</b>	<b>51</b>	<b>97</b>
- Straw	4	6	12	12
- Wood	4	5	24	59
- Waste, renewable	7	11	13	16
- Other	1	1	3	10

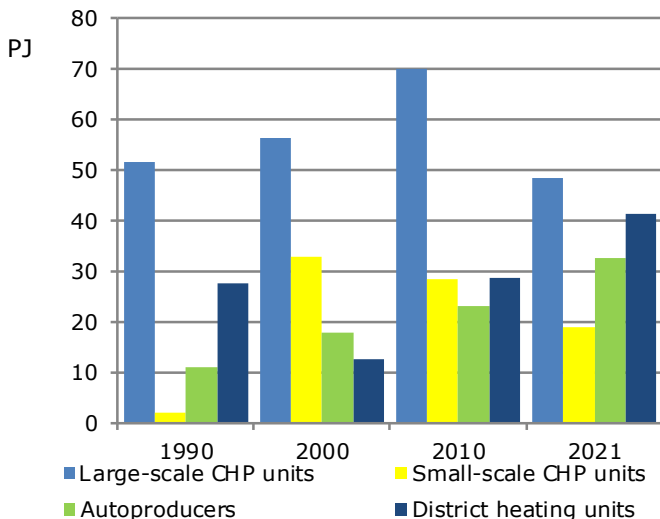
**District heating CO2 emissions and consumption by fuel**



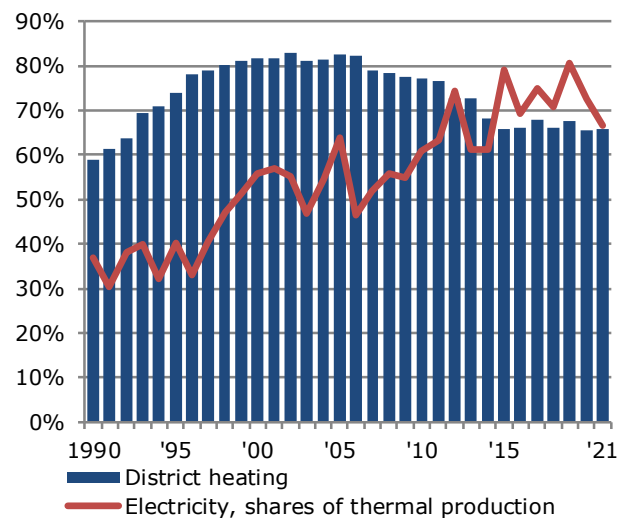
**District heating fuel consumption, 2021 (Share of direct energy contents)**



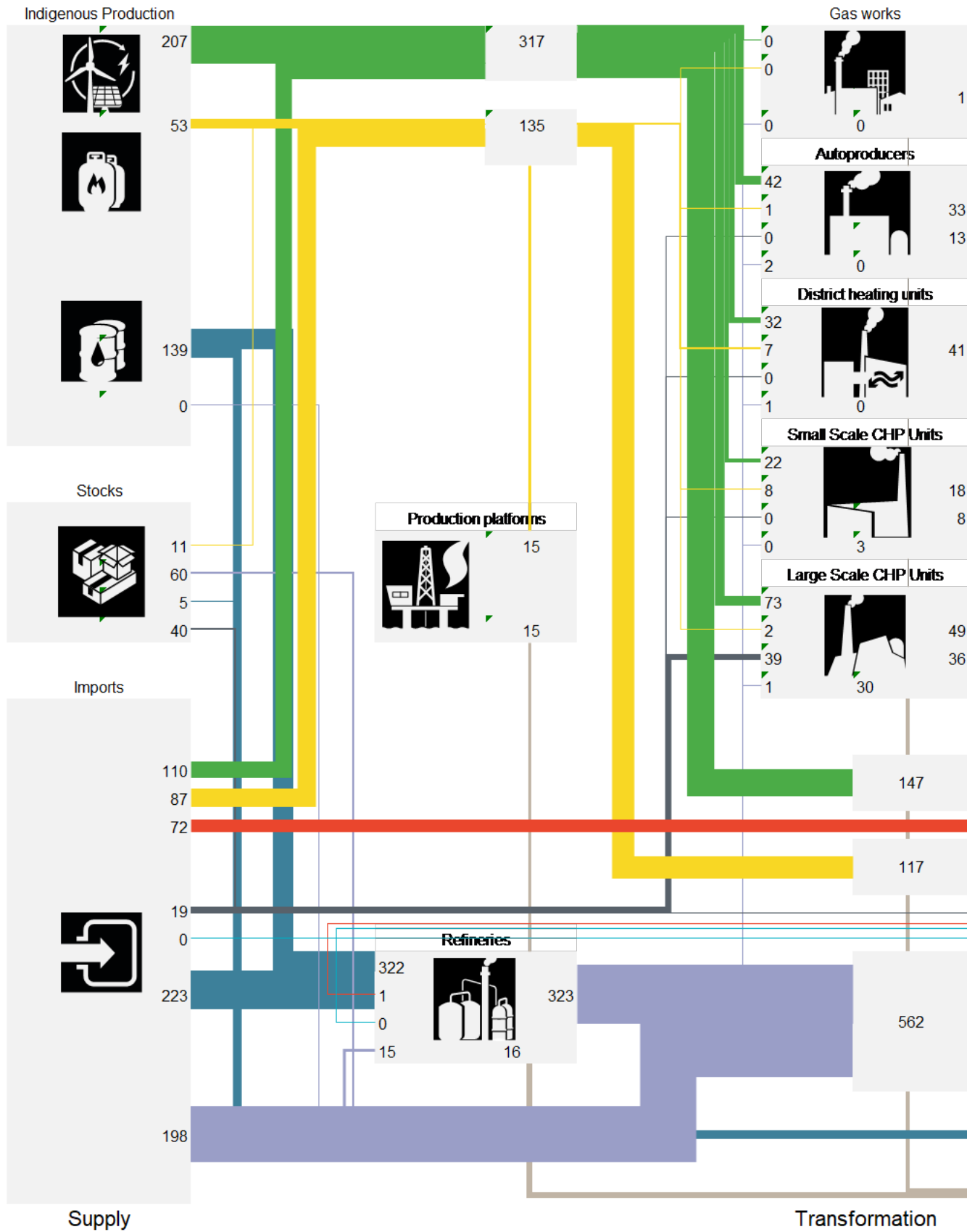
**District heating production by type of producer**

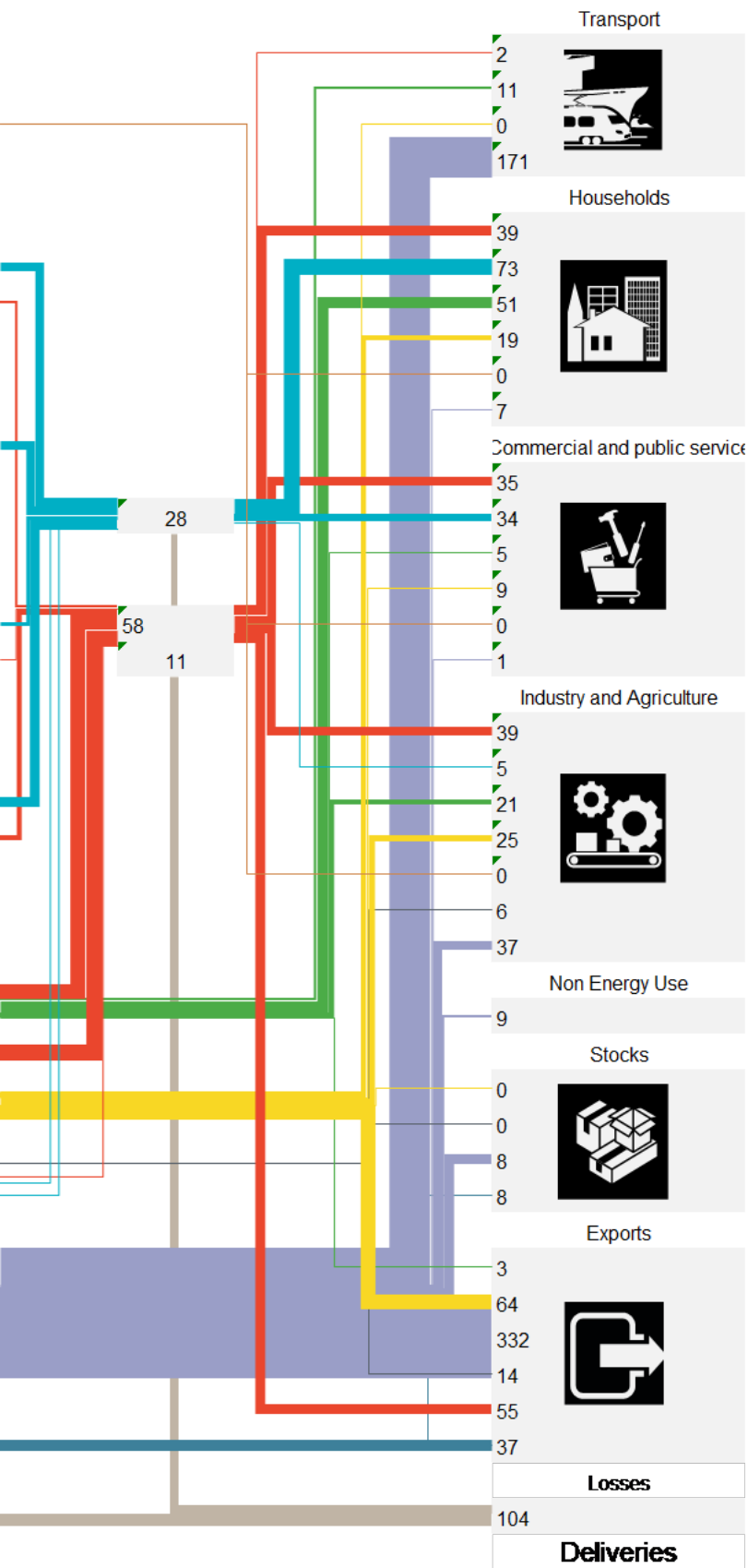


**CHP shares of electricity and district heat production**



# DANISH ENERGY FLOWS





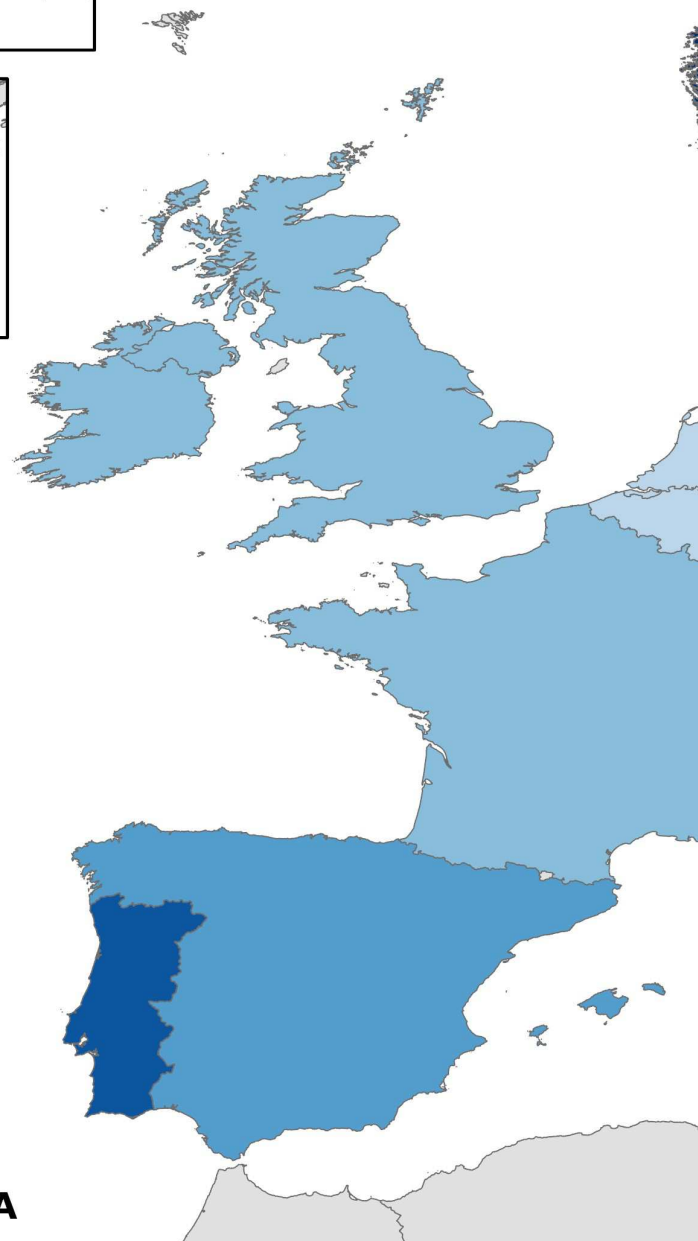
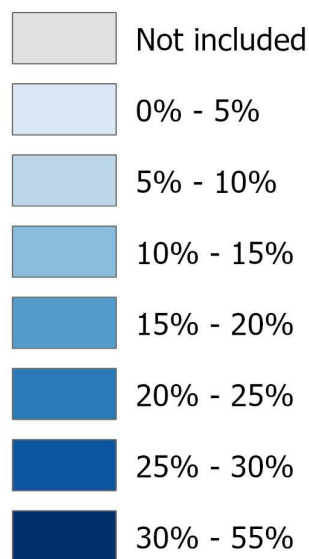
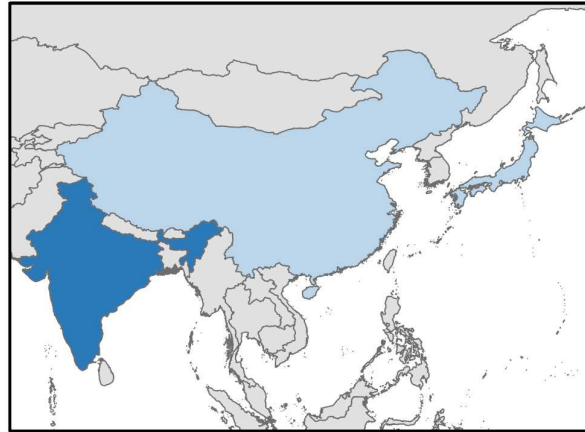
# Danish Energy Flows 2021

Coal and Coke

Unit:  
Peta Joule (PJ)

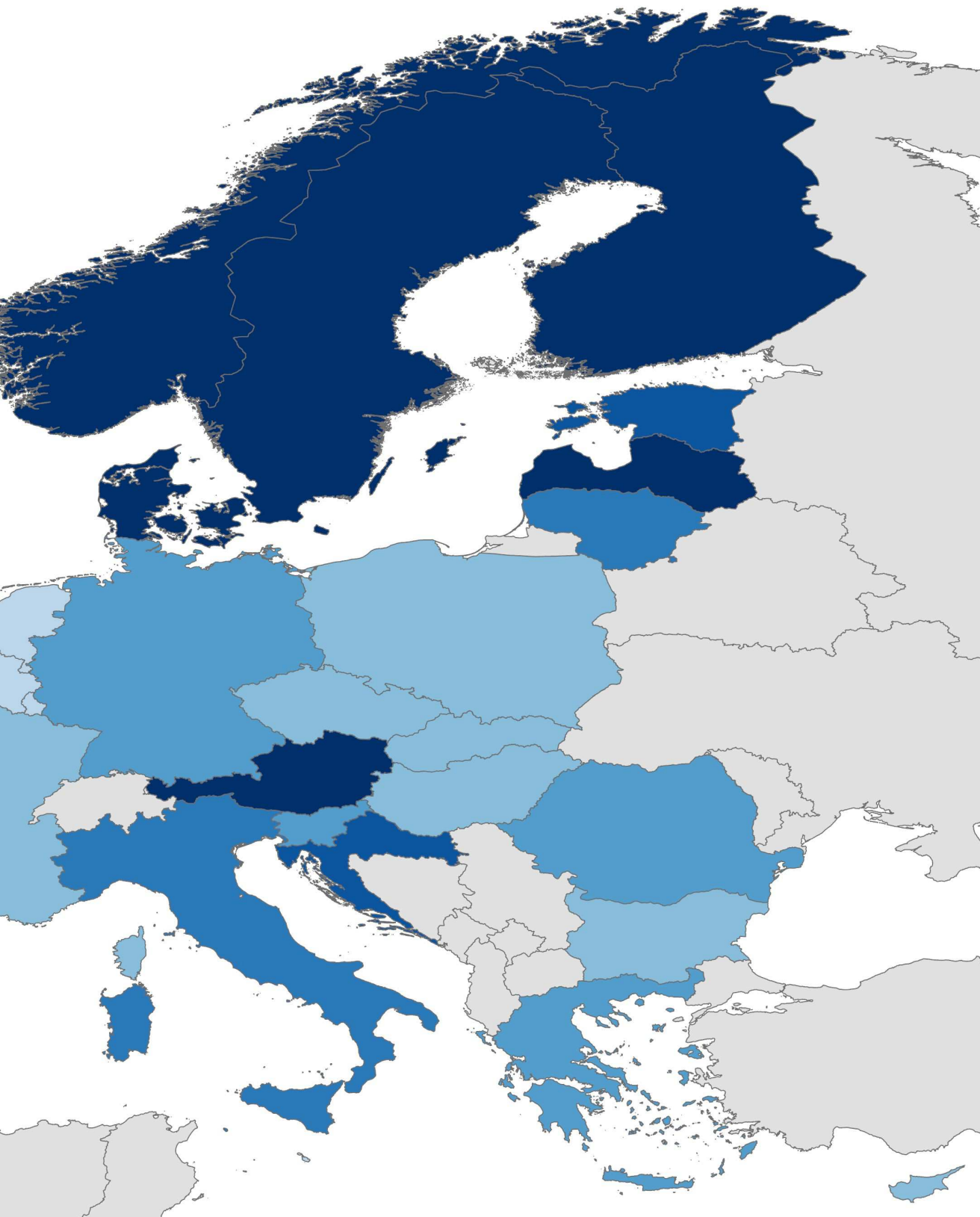


# Renewable Share of Total Energy



Source: Eurostat and IEA

# Energy, 2020 y Consumption (TPES)

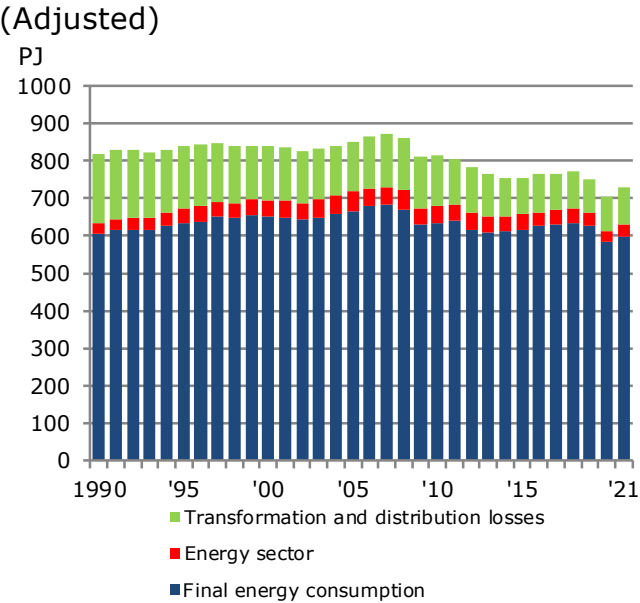


# ENERGY CONSUMPTION

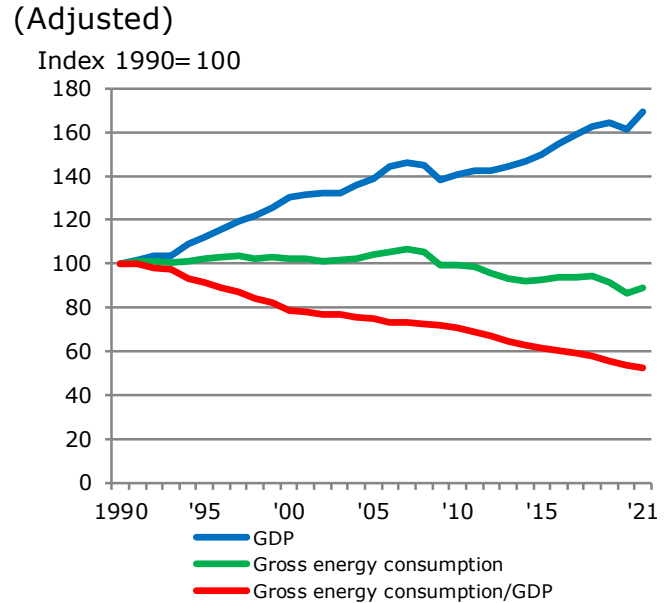
## Gross energy consumption by fuel

Climate adjusted [PJ]	1980	1990	2000	2010	2021
<b>Total gross energy consumption</b>	<b>814</b>	<b>819</b>	<b>839</b>	<b>814</b>	<b>729</b>
Oil	546	355	376	312	245
Natural gas	0	82	192	176	91
Coal and coke	241	327	175	147	63
Waste, non-renewable	5	8	14	16	19
Renewable energy	22	48	81	163	311

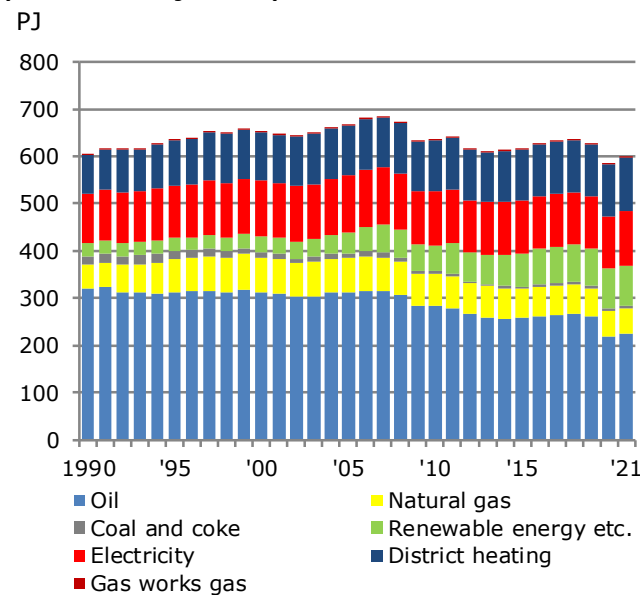
## Gross energy consumption and final energy consumption (Adjusted)



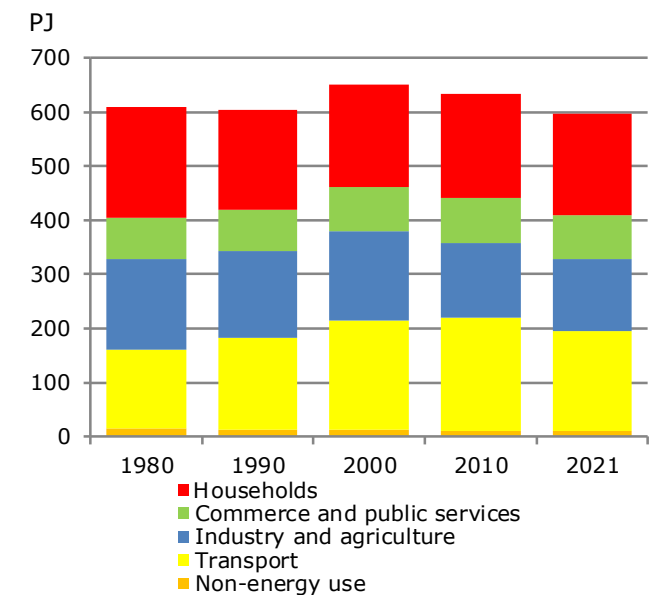
## GDP, gross energy consumption and energy intensity (Adjusted)



## Final energy consumption by fuel (Climate adjusted)



## Final energy consumption by sector (Climate adjusted)

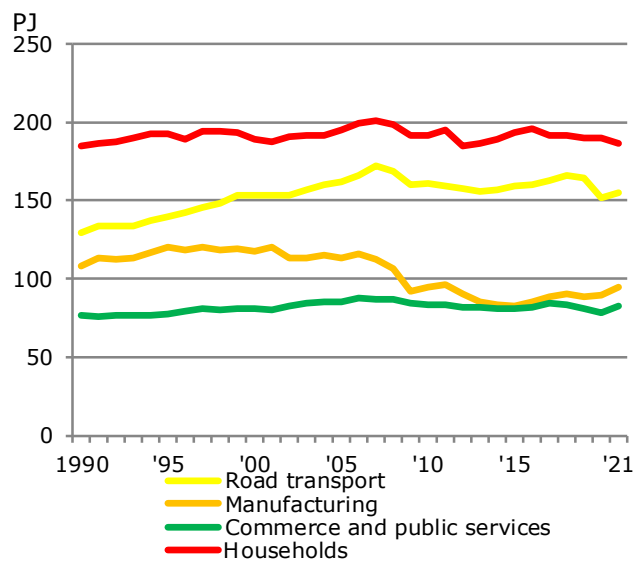




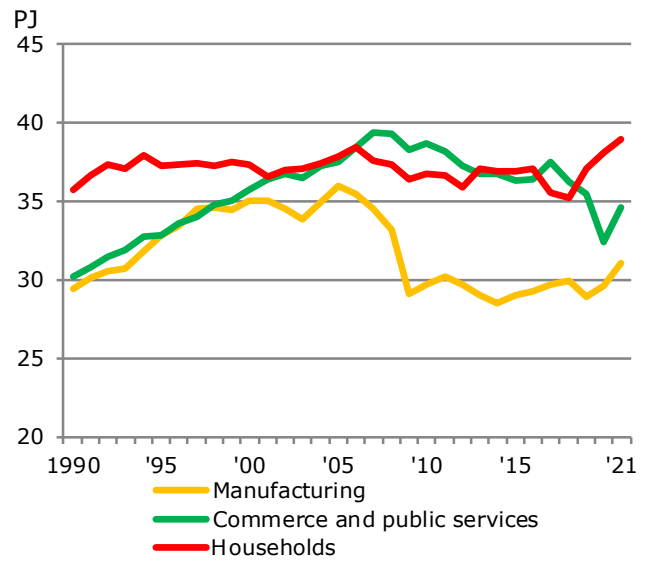
**Final energy consumption by sector**

Climate adjusted [PJ]	1980	1990	2000	2010	2021
<b>Total final energy consumption</b>	<b>610</b>	<b>604</b>	<b>651</b>	<b>633</b>	<b>597</b>
Non-energy use	16	13	13	11	9
Transport	143	170	201	210	185
Industry and agriculture	168	159	167	137	133
Commerce and public services	78	77	81	84	83
Households	204	185	189	192	186

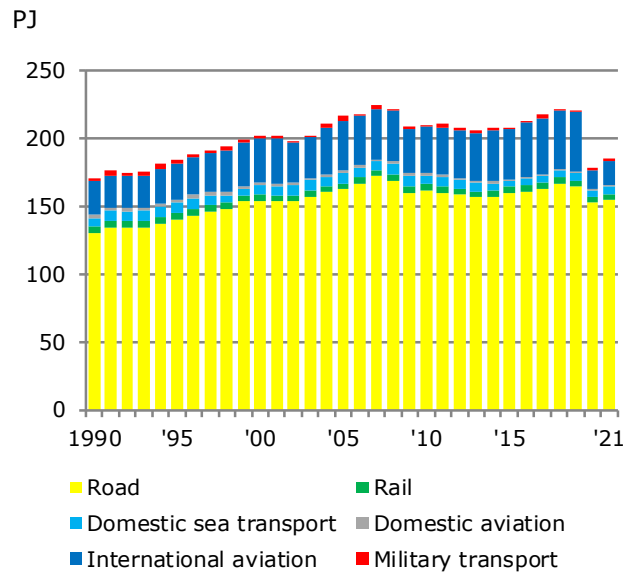
**Final energy consumption by sector**  
(Climate adjusted)



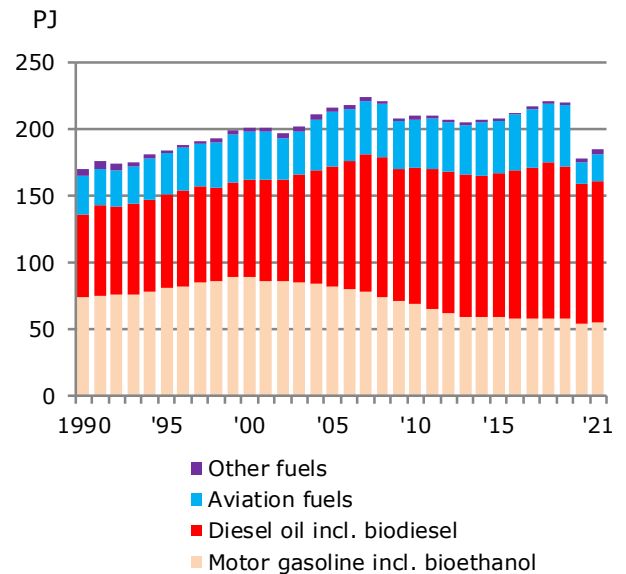
**Electricity consumption by sector**  
(Climate adjusted)



**Energy consumption for transport by transport type**



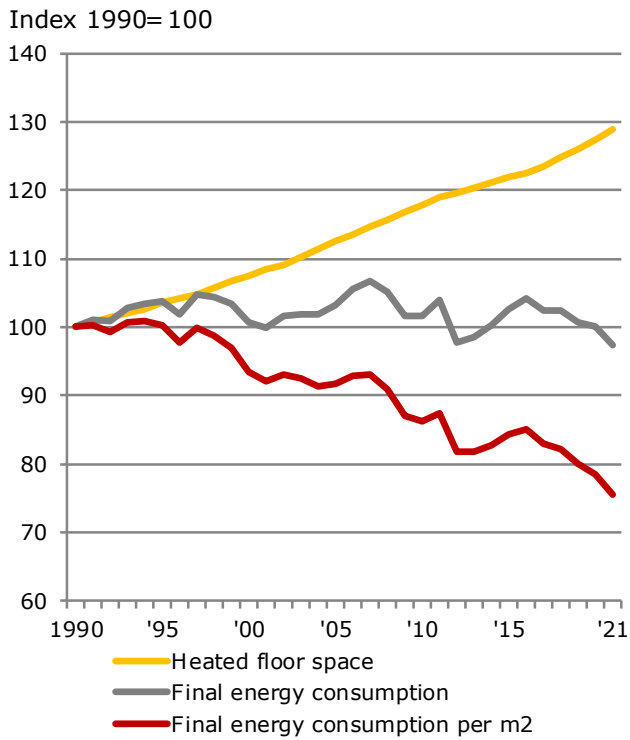
**Energy consumption for transport by fuel type**



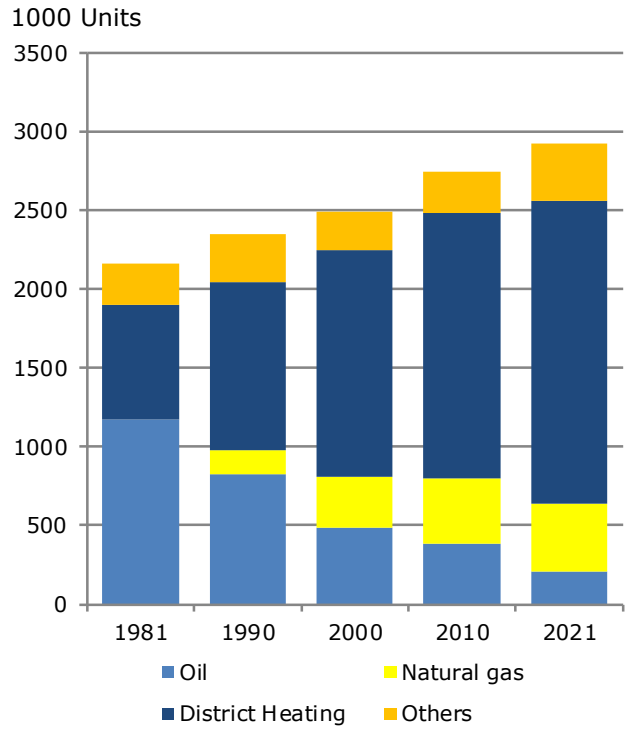
# ENERGY CONSUMPTION

## Energy consumption for space heating in households

(Climate adjusted)



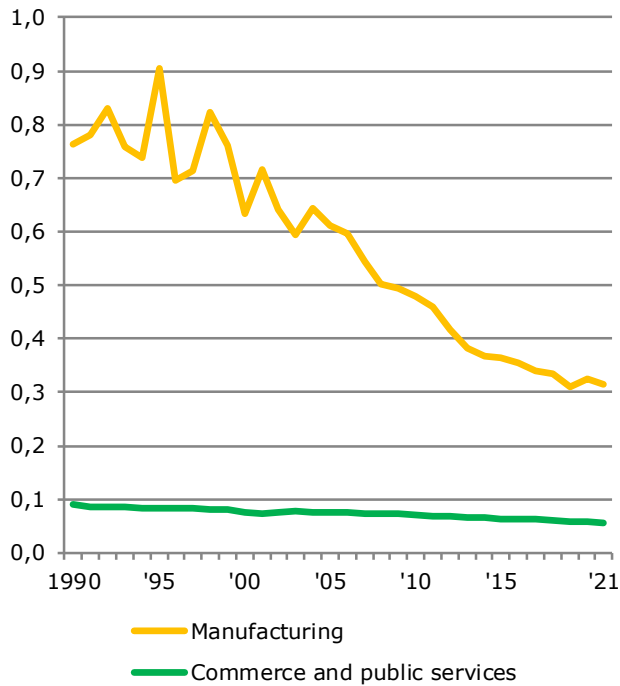
## Heating installations in households



## Energy intensities

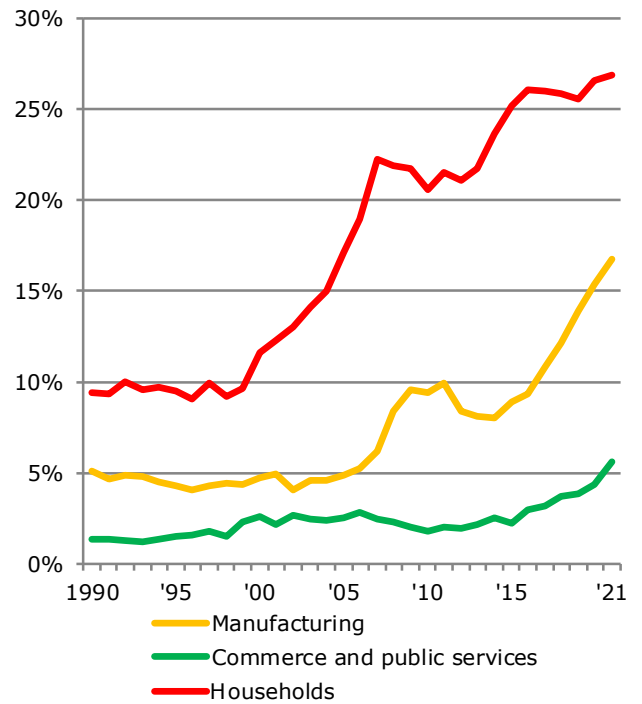
(Climate adjusted)

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



## Shares of direct use of renewable energy in final energy consumption

(Climate adjusted)

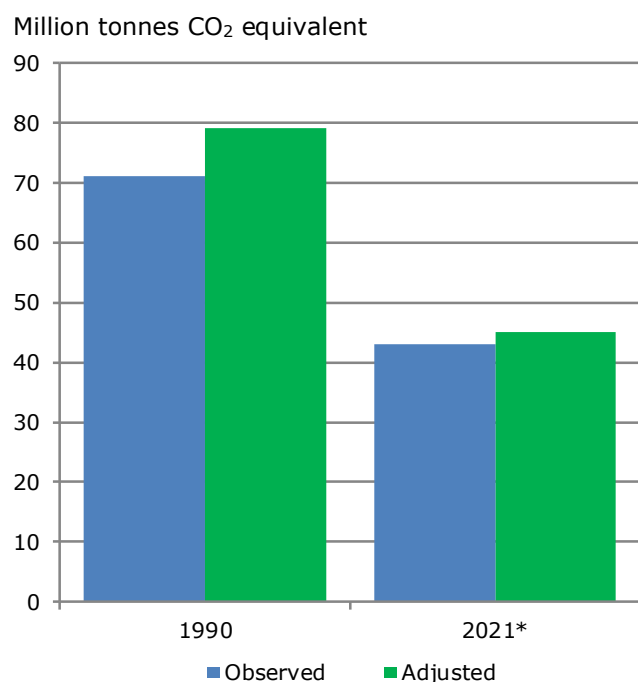


\*Transformed energy is not included as renewable

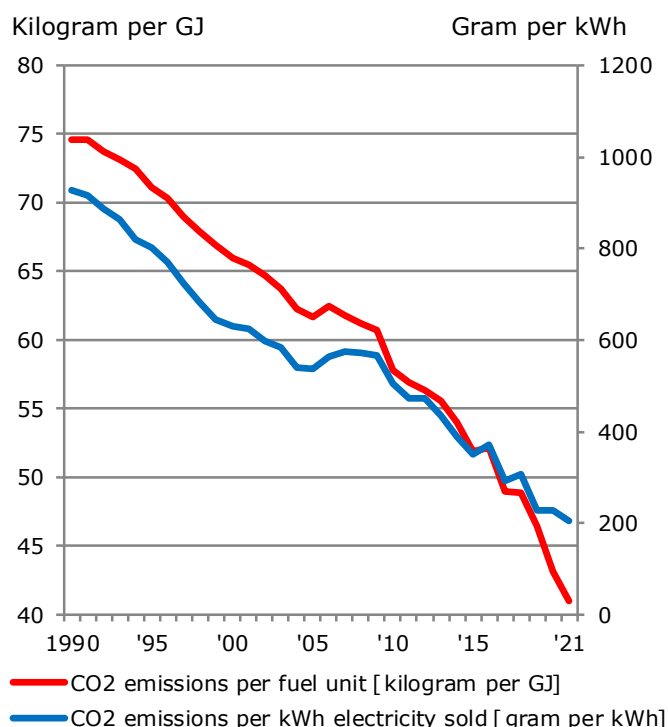
### CO<sub>2</sub> emissions from energy consumption

[ Million tonnes]	1980	1990	2000	2010	2021
<b>Observed CO<sub>2</sub> emissions</b>	<b>64.6</b>	<b>53.1</b>	<b>53.6</b>	<b>49.4</b>	<b>27.9</b>
Energy sector	0.9	1.4	2.3	2.3	1.7
Transformation sector	30.1	25.1	24.2	22.0	6.5
Final energy consumption	33.3	26.6	27.1	25.1	19.6
<b>Adjusted CO<sub>2</sub> emissions</b>	<b>62.6</b>	<b>61.0</b>	<b>55.3</b>	<b>47.1</b>	<b>29.9</b>
Energy sector	0.9	1.4	2.3	2.3	1.7
Transformation sector	28.8	32.3	25.5	20.1	8.6
Final energy consumption	32.9	27.4	27.5	24.6	19.6

### Total emissions from green-house gases



### CO<sub>2</sub> emissions per fuel unit and per kWh of electricity (Adjusted)



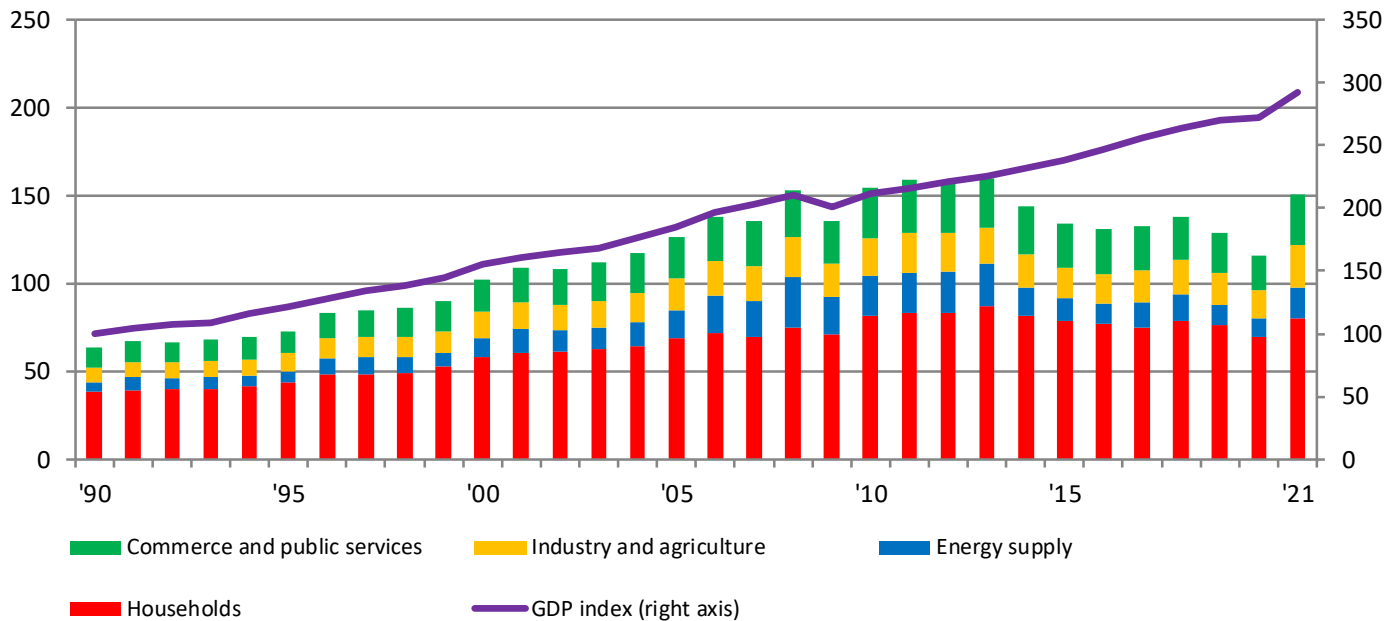
\*) Preliminary emission inventory

## ENERGY ECONOMY AND PRICES

### Energy expenses by industry and households

Billion DKK, current prices

Index 1990= 100



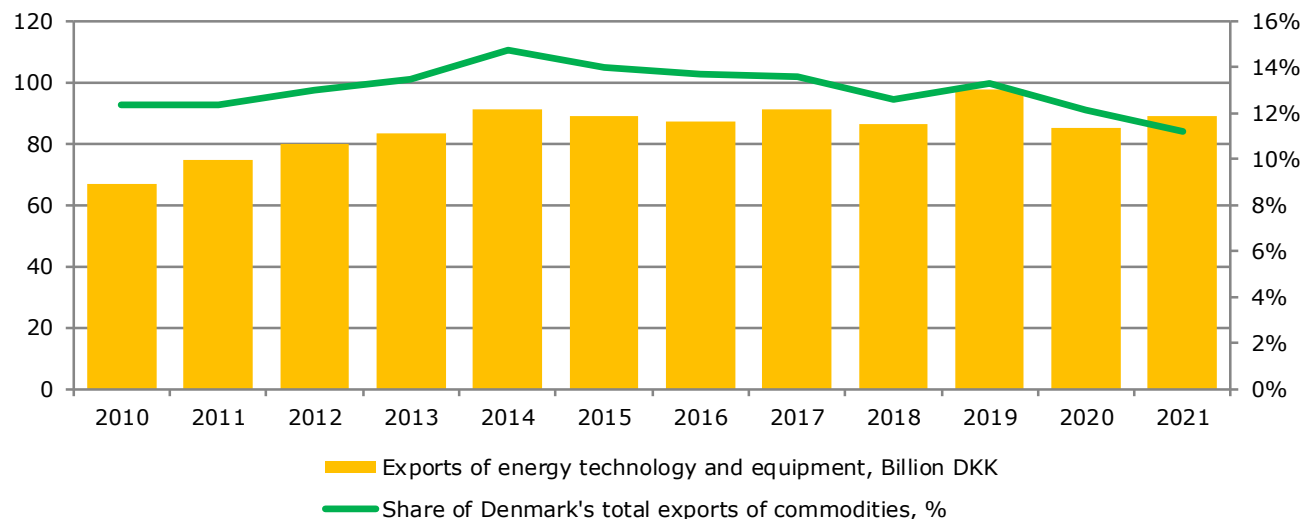
Source: Statistics Denmark

### Economic key figures

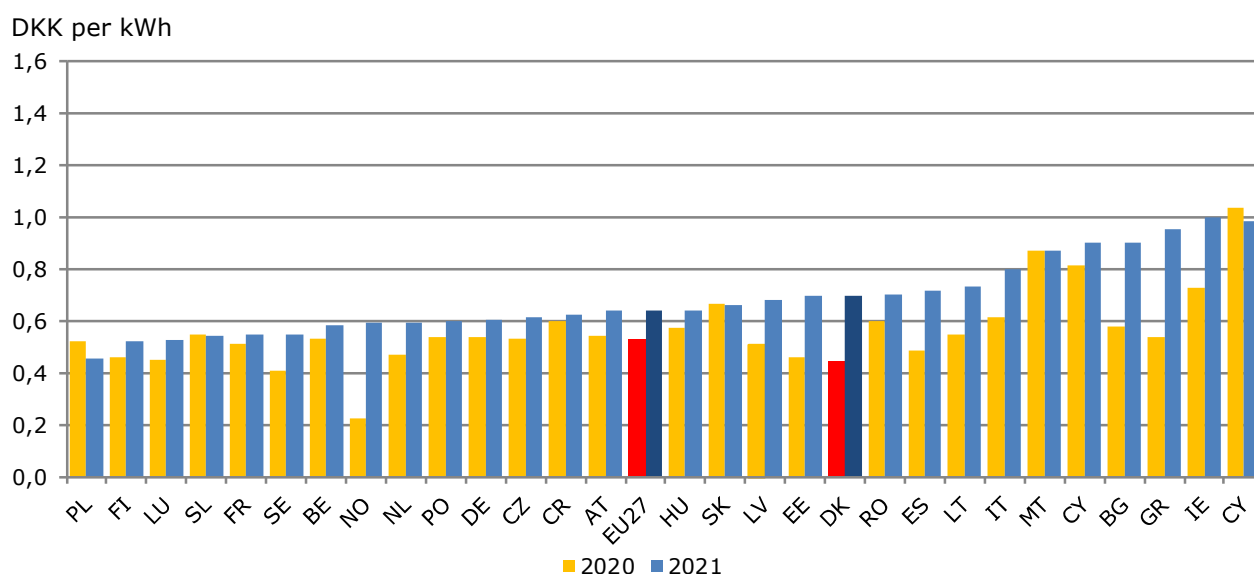
[ Billion DKK, current prices]	2019	2020	2021
Total energy expenditures	128.8	115.8	150.9
Revenues from energy, CO <sub>2</sub> and sulphur taxation	38.2	36.7	39.1
Value of crude oil and natural gas production	18.6	8.4	11.5

### Exports of energy technology and equipment

Billion DKK, current prices



**Electricity prices (excl. taxes) for industrial consumers  
(Annual consumption 2-20 GWh)**

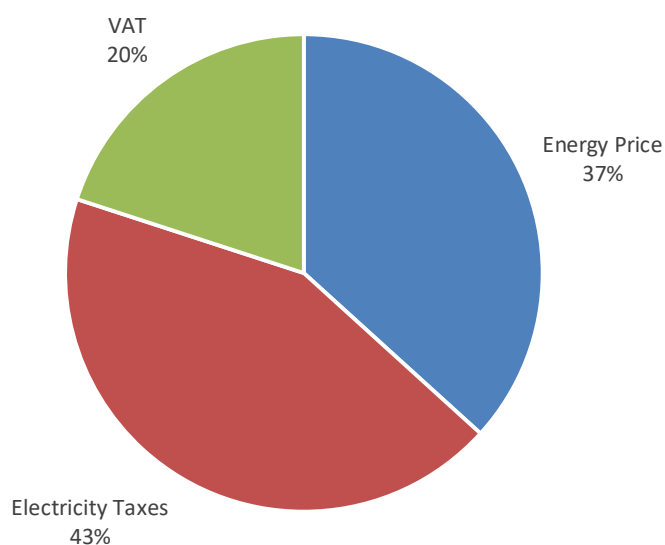


Source: Eurostat

**Energy prices for households, 2021**

	DKK	Euro
Gasoline regular [ per litre]	13.02	1.75
Heating gas oil [ per litre]	12.18	1.64
Natural gas [ per Nm <sup>3</sup> ]	9.68	1.30
Electricity [ per kWh]	2.36	0.32

**Decomposition of the electricity price for households, 2021 (%)**



## INTERNATIONAL COMPARISONS 2020

	Degree of self-sufficiency [%]	Renewable energy and waste: Share of gross energy consumption [%]	Gross energy consumption per capita [GJ]	Energy intensity [TOE per million EUR GDP (2010 prices)]
Estonia	98	29	141	240
Sweden	77	51	183	108
Romania	69	19	70	190
Latvia	62	41	96	198
Bulgaria	61	14	107	405
Denmark	60	39	114	59
Czech Republic	58	13	157	217
Finland	57	37	243	162
Poland	56	13	114	212
Slovenia	55	19	126	155
France	55	13	139	108
Croatia	45	26	86	175
EU27	43	18	125	117
Slovakia	41	13	126	198
Hungary	40	11	112	211
Austria	38	33	152	102
Netherlands	38	9	173	120
Germany	34	16	143	100
Portugal	32	30	87	126
Spain	32	17	99	112
Belgium	26	10	187	148
Ireland	26	13	116	44
Greece	24	16	80	127
Lithuania	27	22	114	199
Italy	27	21	99	97
Cyprus	10	12	108	120
Luxembourg	8	10	265	76
Malta	5	8	62	281
Norge	734	55	222	78
UK	76	14	96	-
USA	106	8	258	-
Japan	11	7	128	-

Source: Eurostat and IEA.

## DANISH KEY FIGURES

	1980	1990	2000	2010	2021
Gross energy consumption per capita [GJ]	159	159	157	147	125
Final energy consumption per capita [GJ]	119	118	122	114	102
Energy intensity, gross energy consumption [TJ per million GDP]	0.776	0.636	0.500	0.450	0.334
Energy intensity, final energy consumption [TJ per million GDP]	0.582	0.469	0.388	0.350	0.274
Degree of self-sufficiency [%]	5	52	139	120	55
Dependency of oil [%]	67	43	45	38	34
Renewable energy: Share of gross energy consumption [%]	2,7	5.8	9.6	20.0	42.7
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	16231
Wind turbine capacity: Share of total electricity capacity [%]	-	3.6	19.0	28.3	43.3
Net electricity exports: Share of domestic supply [%]	5.1	-22.5	-1.9	3.2	-13.2
CHP production: Share of thermal electricity production [%]	18	37	56	61	67
CHP production: Share of district heating production [%]	39	59	82	77	66
Renewable energy: Share of total domestic electricity supply [%]	0.1	2.6	15.9	34.8	70.9
CO <sub>2</sub> emissions per capita [tonnes]	12.2	11.9	10.4	8.5	5.1
CO <sub>2</sub> emissions per kWh sold [gram per kWh]	1027	929	632	505	207
CO <sub>2</sub> emissions per consumed unit of district heating [kilogram per GJ]	96	62	43	33	15
CO <sub>2</sub> emissions per GDP [kilogram per DKK]	60	47	33	26	14

*Note: Data on energy consumption and CO<sub>2</sub> emissions are adjusted.*

# Do you need more data?

[www.ens.dk/facts\\_figures](http://www.ens.dk/facts_figures)

Please find:

## Energy in Denmark 2021

- Publications as pdf
- Figures in PowerPoint
- Time series and tables
- Denmark's energy flows 2021

## Data

- Monthly energy statistics
- Wind turbine data

## Maps

- Electricity generation and transmission
- Heat supply

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