



Statistics Finland 

ENERGY IN FINLAND

2017

Area

Situated in northern Europe with an area of 338,432 km² of which 72% forest, 10% water, 8% cultivated land.

Population

5.5 million, with average density of 18 persons per square kilometre. More than two-thirds of the population reside in the southern third of the country.

Average temperatures in 2016

Town	Latitude	January	July
Helsinki	60°	-8.8°C	17.8°C
Sodankylä	67°	-18.1°C	16.8°C

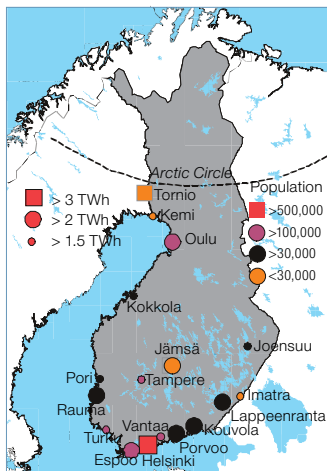
Economy

In 2016* GDP totalled € 214.1 bil., i.e. € 38,959/capita. In 2014* services were 70.7%, secondary production 26.5% and primary production 2.8% of the GDP.

Structure of industry, Value added gross in production in 2015

	bil. €	%
Total industry	37.2	100
Mining and quarrying	0.6	1
Forest industry	4.3	12
Chemical industry	4.9	13
Metal industry	16.5	44
Basic metals and metal prod.	3.8	10
Electrical and electronics ind.	5.8	16
Other metal industry	6.9	18
Other manufacturing ind.	5.0	13
Energy supply	4.2	11
Water supply and waste management	1.7	5

Municipalities with high electricity consumption 2015



Productive forestland is the most valuable natural resource of Finland. The indigenous energy resources in the country are hydro power, wood and peat. Finland also has some rich deposits of metallic ores from which copper, zinc, and nickel are extracted.

Total energy consumption in 2016*

1,348 PJ (32.2 Mtoe)
245.0 GJ/capita (5.9 toe/capita)

Electricity consumption in 2016*

85.1 TWh
15,479 kWh/capita

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The data in this pocketbook are based on the Preliminary Energy Statistics 2016 figures.

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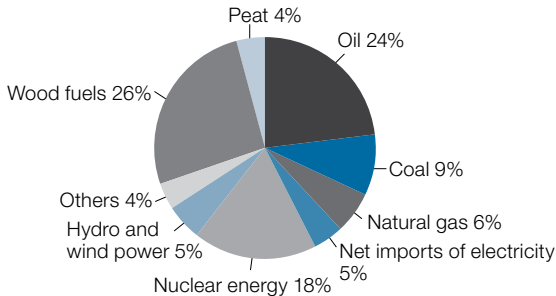
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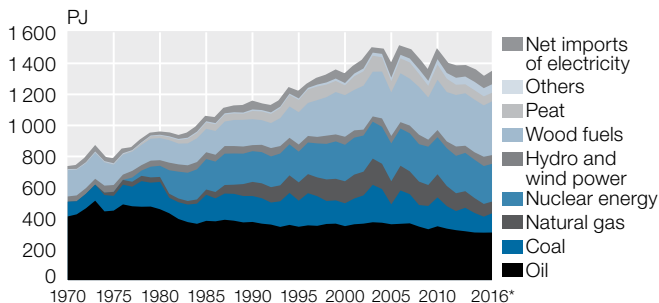
4 Total energy consumption

Total energy consumption by energy source 2016*

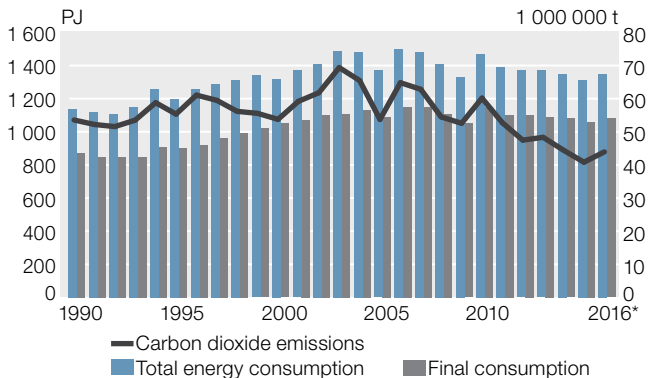


Total energy consumption in 2016* was 1 348 PJ.

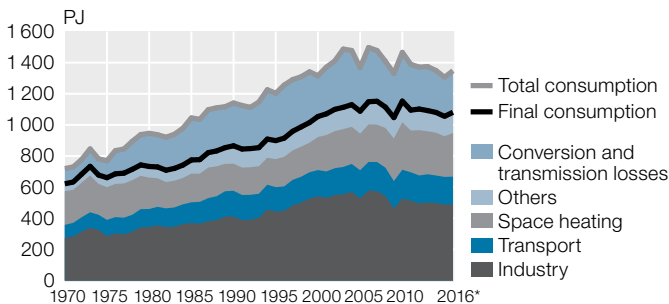
Total energy consumption by energy source 1970–2016*



Energy consumption and carbon dioxide emissions 1990–2016*



Total energy consumption and final energy consumption by sector 1970–2016*



6 Total energy consumption

Total Energy Consumption by Energy Source, PJ

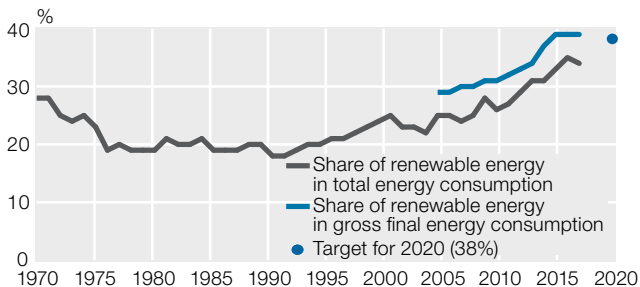
	Oil	Coal	Natural gas	Nuclear energy	Hydro power	Wind power
1975	451.0	94.8	26.5	–	43.5	–
1980	460.3	176.2	32.2	72.3	36.4	–
1985	385.3	167.8	34.1	196.1	44.0	–
1990	377.8	167.4	90.8	197.8	38.7	0.0
1991	367.5	164.4	95.7	200.8	47.0	0.0
1992	361.2	141.9	99.3	198.2	53.8	0.0
1993	345.9	164.8	102.6	205.1	48.0	0.0
1994	359.2	205.5	113.3	199.9	42.0	0.0
1995	347.1	167.6	117.6	197.8	46.0	0.0
1996	356.4	206.8	123.1	203.8	42.1	0.0
1997	353.3	190.8	121.1	218.7	42.5	0.1
1998	364.7	148.0	138.7	228.8	53.2	0.1
1999	366.7	149.9	138.9	240.7	45.2	0.2
2000	350.7	146.7	141.9	235.4	52.0	0.3
2001	363.3	165.8	153.9	238.4	46.9	0.3
2002	367.3	182.3	152.9	233.4	38.2	0.2
2003	375.9	241.4	169.2	238.1	34.0	0.3
2004	372.7	217.4	163.0	238.0	53.5	0.4
2005	363.1	127.7	149.1	243.9	48.3	0.6
2006	366.4	214.6	159.4	240.0	40.7	0.5
2007	368.7	188.1	147.5	245.5	50.4	0.7
2008	347.8	139.3	150.8	240.5	60.9	0.9
2009	330.8	150.1	134.6	246.6	45.3	1.0
2010	350.4	186.3	148.7	238.8	45.9	1.1
2011	334.5	145.2	130.0	242.9	44.2	1.7
2012	325.4	122.7	115.0	240.7	60.0	1.8
2013	317.7	151.3	106.9	247.3	45.6	2.8
2014	310.1	126.2	95.6	247.0	47.7	4.0
2015	309.4	102.6	82.4	243.6	59.7	8.4
2016*	310.4	126.4	75.3	243.1	56.2	11.1
Share						
2016*	23%	9%	6%	18%	4%	0.8%
Annual Change						
15/16*	0%	23%	–9%	0	–6%	32%

Wood fuels	Peat	Others	Net imports of electricity	Total	
130.7	1.7	7.0	14.4	769.6	1975
142.1	17.1	5.0	4.4	945.9	1980
151.3	41.1	8.3	17.0	1 045.0	1985
167.2	53.3	9.8	38.7	1 141.4	1990
158.6	56.0	8.9	25.9	1 124.7	1991
161.2	58.7	9.6	29.6	1 113.5	1992
180.5	64.5	8.7	27.1	1 147.3	1993
201.8	73.7	8.9	21.9	1 226.2	1994
207.5	79.4	9.8	30.3	1 203.2	1995
212.8	87.5	9.9	13.2	1 255.6	1996
237.2	88.0	12.1	27.6	1 291.1	1997
247.6	80.7	13.8	33.5	1 309.2	1998
272.8	71.8	14.6	40.0	1 340.7	1999
267.9	63.3	15.4	42.8	1 316.3	2000
261.5	88.0	17.2	35.9	1 371.0	2001
282.7	93.4	17.9	42.9	1 411.3	2002
287.8	102.7	20.0	17.5	1 486.9	2003
302.0	91.8	21.7	17.5	1 478.0	2004
280.9	70.9	23.5	61.3	1 369.4	2005
315.1	95.5	23.1	41.0	1 496.5	2006
302.3	104.8	25.5	45.2	1 478.5	2007
308.0	84.1	30.2	46.0	1 408.4	2008
272.1	74.8	32.2	43.5	1 331.0	2009
323.7	97.8	35.3	37.8	1 465.7	2010
318.4	85.6	36.7	49.9	1 389.2	2011
332.1	66.4	44.6	62.8	1 371.3	2012
338.5	57.9	50.0	56.6	1 374.7	2013
339.4	60.9	53.7	64.7	1 349.2	2014
330.9	57.5	52.9	58.8	1 306.3	2015
347.8	54.8	54.9	68.2	1 348.4	2016*
					Share
26%	4%	4%	5%	100%	2016*
					Annual Change
5%	-5%	4%	16%	3%	15/16*

Renewable energy, PJ

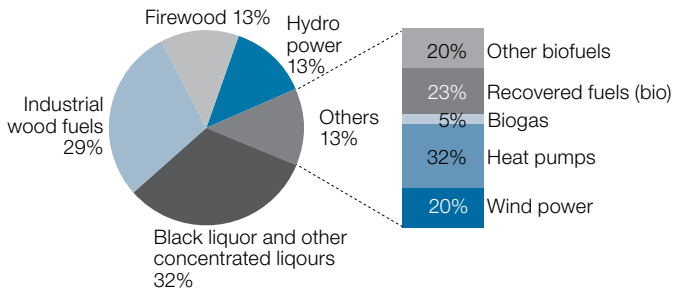
	Hydro power	Wind power	Wood fuels in industry and energy production	Black liquor and others	Small combustion of wood	Heat pumps	Others	Total	Share of total energy consumption, %
1970	33.9	–	20.2	57.7	92.2	204.0	28
1980	36.4	–	31.1	67.4	43.6	0.4	..	178.9	19
1990	38.7	0.0	36.5	86.1	44.7	1.2	0.3	207.4	18
2000	52.0	0.3	84.7	137.9	45.3	1.5	3.5	325.2	25
2005	48.3	0.6	95.0	132.1	53.8	2.3	7.4	339.5	25
2006	40.7	0.5	103.6	156.0	55.5	3.1	6.8	366.3	24
2007	50.4	0.7	93.2	153.1	56.0	3.8	8.1	365.2	25
2008	60.9	0.9	103.7	143.7	60.6	6.5	12.6	388.9	28
2009	45.3	1.0	97.7	110.2	64.3	8.9	16.4	343.8	26
2010	45.9	1.1	116.4	135.7	71.7	10.4	17.7	398.7	27
2011	44.2	1.7	122.4	135.1	60.9	12.0	20.0	396.4	29
2012	60.0	1.8	130.2	135.8	66.1	15.7	22.0	431.5	31
2013	45.6	2.8	136.3	140.7	61.5	16.1	25.2	428.2	31
2014	47.7	4.0	135.2	141.9	62.3	17.8	37.3	446.2	33
2015	59.7	8.4	130.5	142.1	58.4	17.3	38.3	454.6	35
2016*	56.2	11.1	139.3	145.8	62.6	17.2	25.8	458.1	34

Share of renewable energy in total energy consumption (1970–2016*) and gross final energy consumption (2004–2016*), and target for 2020



Share of renewable energy in gross final energy consumption in 2015 was 39 % and the preliminary estimate for 2016 is 39 % as well.

Renewable energy 2016*

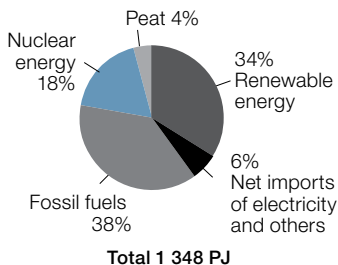


The divisions of the group Others are partly based on data for 2015.

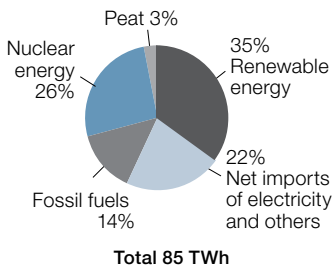
The total consumption of renewable energy in 2016* was 458 PJ which is 34% of total energy consumption.

Renewable energy 2016*

In total energy consumption



In electricity supply



Supply and total consumption of electricity, TWh

	Hydro power	Wind power	Nuclear power	Con- densing power ¹⁾	CHP indus- try	CHP district heat	Net imports	Total consump- tion
1970	9.4	–	–	5.9	4.9	1.0	0.5	21.8
1975	12.1	–	–	6.3	4.8	2.1	4.0	29.2
1980	10.1	–	6.6	11.1	6.6	4.2	1.2	39.9
1985	12.2	–	18.0	4.9	6.4	5.9	4.7	52.0
1990	10.8	0.0	18.1	6.6	7.7	8.5	10.7	62.3
1995	12.8	0.0	18.1	8.9	9.5	11.3	8.4	68.9
2000	14.5	0.1	21.6	6.9	10.8	13.4	11.9	79.2
2001	13.0	0.1	21.9	10.8	10.5	15.0	10.0	81.2
2002	10.6	0.1	21.4	12.4	11.4	15.7	11.9	83.6
2003	9.5	0.1	21.8	21.5	11.5	16.0	4.9	85.2
2004	14.9	0.1	21.8	17.4	11.8	16.2	4.9	87.1
2005	13.4	0.2	22.4	5.3	10.7	15.6	17.0	84.7
2006	11.3	0.2	22.0	17.6	12.0	15.5	11.4	90.0
2007	14.0	0.2	22.5	14.4	11.6	15.1	12.6	90.4
2008	16.9	0.3	22.0	8.8	11.2	15.3	12.8	87.3
2009	12.6	0.3	22.6	9.0	9.1	15.8	12.1	81.3
2010	12.7	0.3	21.9	14.2	10.4	17.7	10.5	87.7
2011	12.3	0.5	22.3	9.8	10.2	15.4	13.9	84.3
2012	16.7	0.5	22.1	5.2	8.9	14.4	17.4	85.2
2013	12.7	0.8	22.7	8.9	9.2	14.2	15.7	84.1
2014	13.2	1.1	22.6	6.4	8.7	13.4	18.0	83.4
2015	16.6	2.3	22.3	4.1	8.3	12.6	16.3	82.5
2016*	15.6	3.1	22.3	4.4	9.0	11.8	19.0	85.1
Share								
2016*	18%	4%	26%	5%	11%	14%	22%	100%

Annual Change

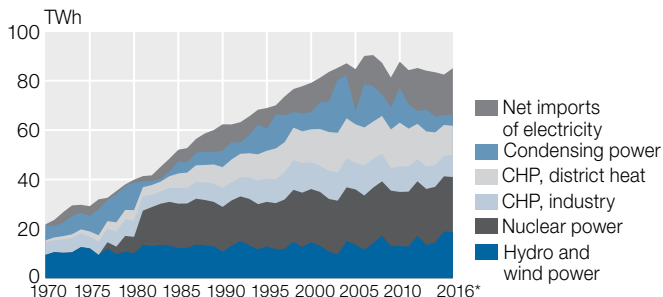
15/16*	–6%	32%	0%	8%	8%	–6%	16%	3%
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1) Wind Power also includes the production of solar power (14 GWh in 2016)

2) Condensing power includes conventional condensing power, peak gas turbine power and gas engines.

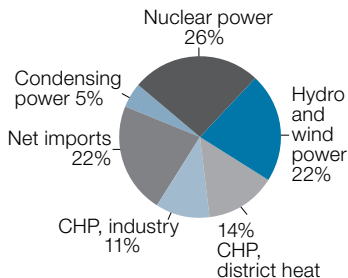
Sources: Statistics Finland, Finnish Energy Industries and VTT (wind power)

Electricity supply 1970–2016*

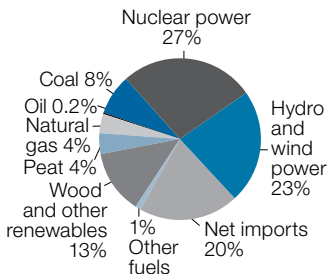


Electricity supply 2016*

By mode of production



By source



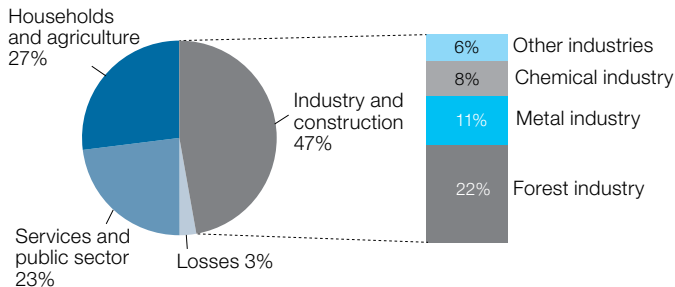
Total electricity supply in 2016* was 85.1 TWh

Electricity consumption by sector, TWh

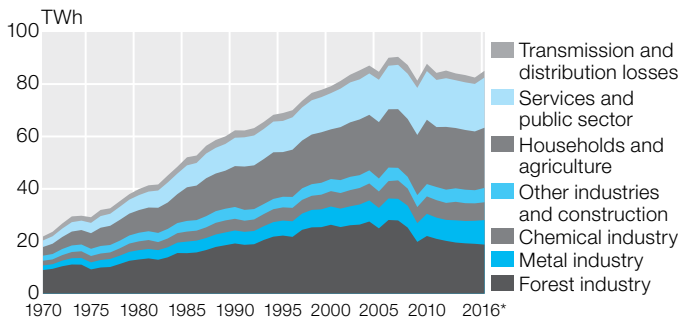
	Industry and construction					House-holds and agriculture	Services and public sector	Transm. and distrib. losses	Total
	Total	Forest industry	Metal industry	Chemical industry	Others				
1970	14.5	9.0	1.8	1.8	1.9	3.3	2.5	1.5	21.8
1975	17.1	9.2	2.7	2.4	2.7	6.0	3.9	2.2	29.2
1980	23.3	13.0	3.6	3.4	3.3	8.6	5.7	2.3	39.9
1985	27.8	15.4	4.4	3.8	4.1	12.8	8.4	3.1	52.0
1990	33.1	19.1	5.0	4.5	4.5	15.6	10.8	2.8	62.3
1995	37.0	22.2	5.7	5.0	4.1	17.1	11.9	3.0	68.9
2000	43.8	26.3	7.0	5.9	4.6	19.0	13.8	2.6	79.2
2001	43.3	25.4	7.0	5.9	4.9	20.2	14.7	2.9	81.2
2002	44.6	26.1	7.2	6.2	5.1	20.8	15.2	2.9	83.6
2003	45.2	26.4	7.7	6.3	4.9	21.3	15.3	3.4	85.2
2004	47.1	27.5	8.0	6.5	5.0	21.2	15.8	3.0	87.1
2005	44.0	24.9	7.8	6.3	4.9	21.5	16.2	3.0	84.7
2006	48.1	28.1	8.2	6.6	5.2	22.2	16.6	3.1	90.0
2007	48.0	27.9	8.3	7.0	4.8	22.4	16.9	3.0	90.4
2008	44.6	25.2	8.4	6.5	4.5	22.1	17.3	3.3	87.3
2009	37.6	19.8	7.2	6.1	4.6	23.0	18.0	2.8	81.3
2010	41.8	22.0	8.5	6.7	4.7	24.6	18.6	2.8	87.7
2011	40.7	20.9	8.1	6.7	5.0	22.9	18.0	2.7	84.3
2012	39.7	20.1	8.0	6.5	5.1	24.0	18.6	2.9	85.2
2013	40.2	19.5	8.5	7.1	5.2	23.0	18.2	2.6	84.1
2014	39.7	19.2	8.5	6.8	5.2	22.8	18.2	2.8	83.4
2015	39.5	19.0	8.8	6.7	5.0	22.4	18.1	2.4	82.5
2016*	40.4	18.7	9.4	6.8	5.5	23.0	19.2	2.6	85.1
Share									
2016*	47%	22%	11%	8%	6%	27%	23%	3%	100%
Annual Change									
15/16*	2%	-2%	6%	2%	9%	2%	6%	4%	3%

Sources: Finnish Energy Industries and Statistics Finland

Electricity consumption by sector 2016*



Electricity consumption by sector 1970–2016*



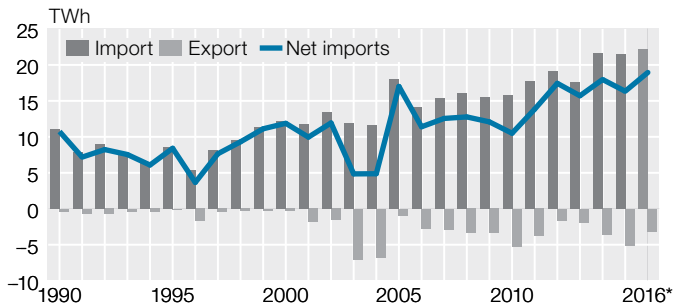
Energy sources in electricity generation, PJ

	Hydro power	Nuclear energy	Hard coal	Oil	Natural gas	Peat	Other fuels	Net imports of electr.	Total	CO ₂ emissions (Mt)
1970	33.9	–	41.8	32.1	–	..	17.9	1.9	127.6	
1980	36.4	72.3	102.7	26.8	12.6	..	29.2	4.4	284.4	14
1990	38.7	197.8	61.3	9.7	24.8	17.2	29.1	38.7	417.3	11
2000	52.3	235.4	55.4	3.3	43.2	21.5	50.3	42.8	504.2	12
2005	48.9	243.9	37.6	3.2	47.1	25.4	60.8	61.3	528.2	11
2006	41.3	240.0	119.8	3.3	58.3	43.0	68.8	41.0	615.4	21
2007	51.0	245.5	97.1	3.0	45.2	46.3	62.4	45.2	595.8	19
2008	61.8	240.5	54.1	3.8	47.4	31.5	66.5	46.0	551.7	13
2009	46.3	246.6	74.3	3.3	40.9	24.5	50.9	43.5	530.2	13
2010	46.9	238.8	103.2	2.8	46.9	38.5	66.1	37.8	581.0	18
2011	46.0	243.0	72.7	2.3	41.7	33.9	58.3	49.9	547.9	13
2012	61.8	240.7	41.8	2.2	27.8	19.3	64.7	62.8	521.2	9
2013	48.4	247.3	72.3	1.7	27.8	17.5	70.0	56.6	541.7	11
2014	51.7	247.0	49.6	1.7	22.4	18.6	67.6	64.7	523.3	9
2015	68.1	243.6	28.7	1.4	20.7	15.8	65.0	58.8	502.1	7
2016*	67.3	243.1	43.6	1.3	15.4	16.3	63.0	68.2	518.3	7

Wind power and solar power are included in hydro power.

Sources: Statistics Finland, Finnish Energy Industries and Technical Research Centre of Finland VTT (wind power)

Imports and exports of electricity 1990–2016*



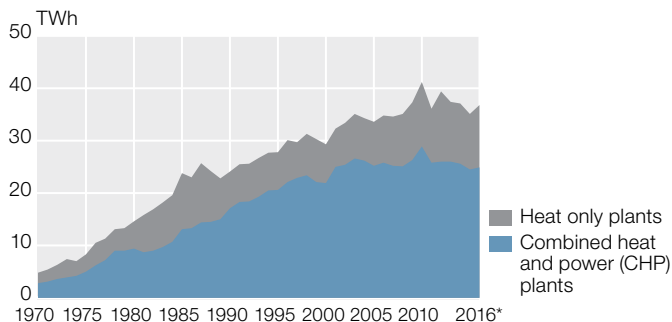
Source: Finnish Energy Industries

Production and consumption of district heat, TWh

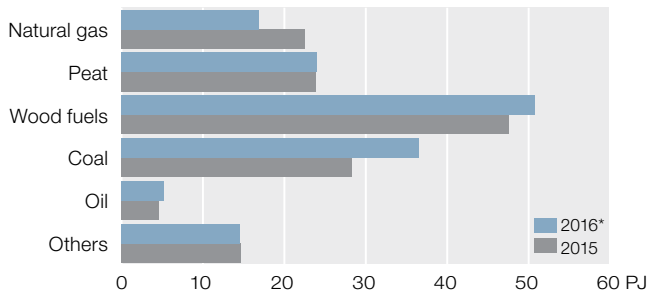
	Net production of district heat			Net-network and measuring losses	Consumption of district heat			
	Heat only plants	CHP plants	Total		Residential buildings	Industrial buildings	Other consumers	Total
1970	2.0	2.8	4.8	0.3	..	0.6	..	4.5
1975	3.3	5.0	8.2	0.6	4.7	0.9	2.0	7.7
1980	5.2	9.4	14.6	1.3	7.8	1.4	4.1	13.3
1985	10.7	13.1	23.8	2.2	12.6	2.1	7.0	21.7
1990	7.0	17.1	24.1	1.9	12.5	2.0	7.7	22.3
1995	7.2	20.6	27.8	2.4	14.3	2.7	8.4	25.4
1996	8.0	22.1	30.0	2.5	15.3	2.9	9.4	27.6
1997	6.8	22.9	29.7	2.6	15.1	2.9	9.1	27.1
1998	7.9	23.4	31.3	2.7	15.6	3.0	9.9	28.5
1999	8.2	22.1	30.4	2.6	15.4	3.0	9.5	27.8
2000	7.4	21.9	29.2	3.0	14.9	2.6	8.8	26.3
2001	7.3	25.0	32.3	3.1	16.2	2.9	10.1	29.2
2002	8.0	25.4	33.4	3.4	16.6	3.0	10.4	30.0
2003	8.5	26.6	35.0	3.8	17.6	3.0	10.6	31.2
2004	8.1	26.2	34.3	4.0	17.0	2.9	10.3	30.3
2005	8.4	25.2	33.6	3.8	16.6	3.0	10.2	29.8
2006	9.0	25.8	34.7	4.1	17.1	3.1	10.5	30.7
2007	9.4	25.2	34.6	3.8	17.3	3.1	10.4	30.8
2008	10.0	25.1	35.1	4.4	17.2	3.0	10.6	30.7
2009	11.0	26.3	37.4	3.7	18.2	3.4	12.1	33.7
2010	12.3	28.9	41.2	4.1	20.2	3.7	13.2	37.2
2011	10.3	25.8	36.0	3.5	17.6	3.3	11.6	32.5
2012	13.4	26.0	39.4	3.9	19.3	3.6	12.5	35.4
2013	11.4	26.0	37.4	3.7	18.6	3.3	11.9	33.8
2014	11.5	25.6	37.1	3.8	18.3	3.3	11.8	33.4
2015	10.6	24.5	35.1	3.6	18.0	3.1	10.4	31.5
2016*	11.9	24.9	36.7	3.6	18.5	3.0	11.6	33.1

Sources: Statistics Finland, Finnish Energy Industries/District heating and since 1995 also Association of Finnish Local and Regional Authorities.

Production of district heat 1970–2016*

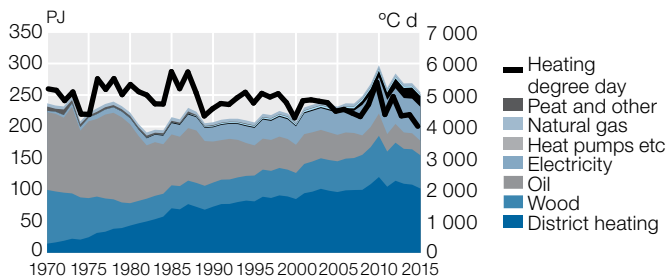


Fuel consumption in production of district heat 2015–2016*

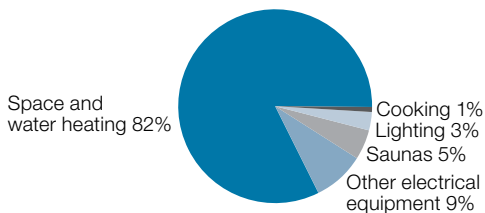


Sources: Statistics Finland, Finnish Energy Industries

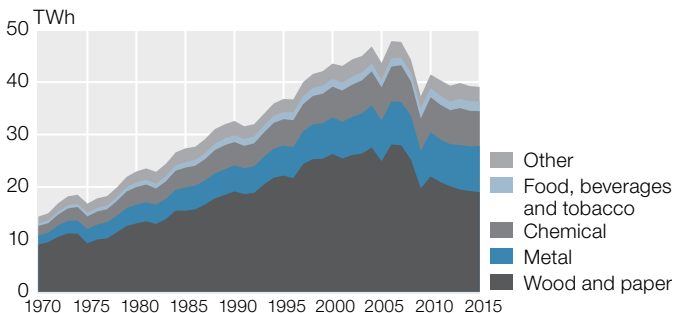
Consumption of energy for heating residential, commercial and public buildings 1970–2015



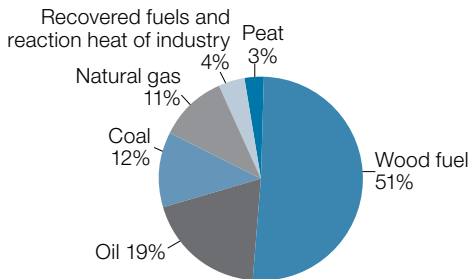
Energy consumption in households 2015



Electricity consumption by branch of industry 1970–2015



Fuel consumption in industry 2015

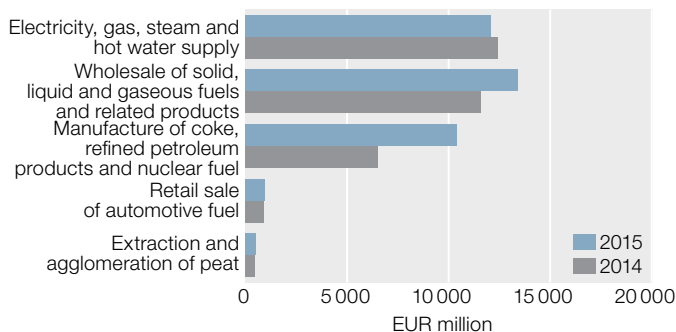


Total fuel consumption in industry in 2015 was 366 PJ.

Enterprises in energy sector in 2015

	Number of enterprises	Turnover, EUR mil.	Employees	Staff expenses, EUR mil.
Extraction and agglomeration of peat	450	472	1 498	64
Manufacture of coke, refined petroleum products and nuclear fuel	17	6 534	2 534	241
Electricity, gas, steam and hot water supply	896	12 412	12 075	825
Wholesale of solid, liquid and gaseous fuels and related products	139	11 592	993	80
Retail sale of automotive fuel	691	891	3 611	114

Turnover of enterprises in energy sector 2014–2015



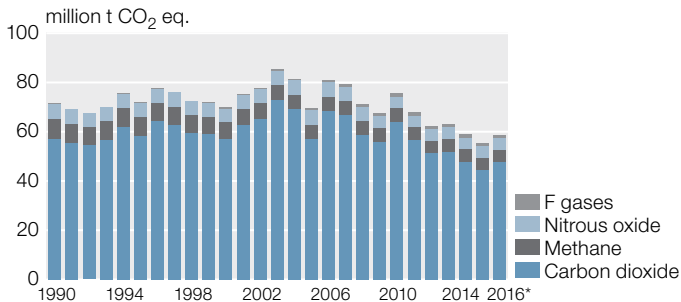
Source: Statistics Finland, Financial statements of enterprises.

Greenhouse gas emissions 1990–2016*

The gases included in the Kyoto Protocol

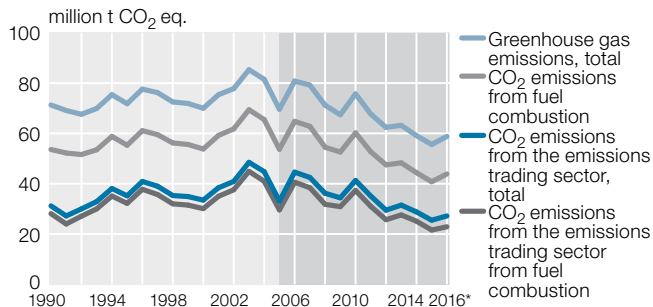
	1990	1995	2000	2005	2010	2013	2014	2015	2016*
	million tonnes of CO ₂ equivalent								
Energy	53.6	55.3	53.8	53.7	60.2	48.3	44.4	40.8	43.9
Industrial processes and product use	5.4	4.9	5.8	6.5	6.3	6.0	5.9	6.1	6.3
Agriculture	7.5	6.8	6.5	6.5	6.6	6.5	6.5	6.5	6.5
Waste	4.7	4.6	3.9	2.8	2.6	2.3	2.2	2.1	2.0
Indirect CO ₂ emissions from energy and industrial processes and product use	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total emission without land use, land use change and forestry	71.3	71.8	70.0	69.6	75.7	63.2	59.1	55.6	58.8
Land use, land use change and forestry	-12.7	-12.4	-21.7	-27.1	-27.3	-26.3	-28.3	-26.0	-23.9

Greenhouse gas emissions by gases 1990–2016*



Source: Statistics Finland, Greenhouse Gas Inventory

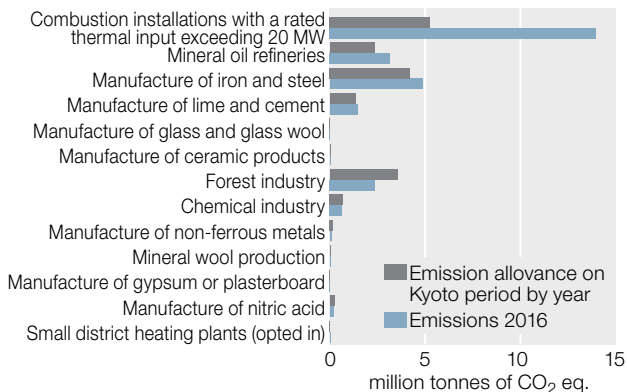
Finland's greenhouse gas emissions 1990–2016*



The EU's emissions trading started in 2005.

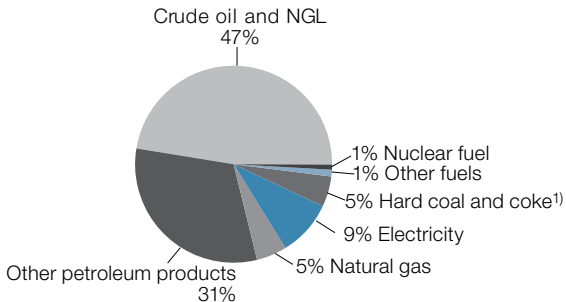
Source: Statistics Finland, Greenhouse Gas Inventory

National allowances under EU ETS and verified CO₂ emissions for 2016 by branch in Finland



Source: European Commission

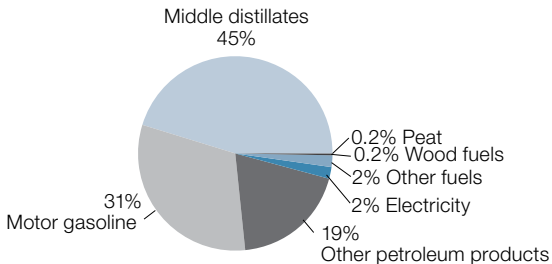
Value of energy imports 2016*



1) includes coking coal

Total imports of energy products were 7 289 million euros in 2016*. That was 13.3% of total imports to Finland.

Value of energy exports 2016*



Total exports of energy products were 3 951 million euros in 2016*. That was 7.6% of total exports from Finland.

Source: Finnish Customs/Foreign Trade Statistics

Energy imports 2016*

	Unit	Russia	Sweden	Norway	Other countries	Total Amount	Total Value mil. €
Coal and coal products	1000 t	2 506	0	–	1 733	4 239	374
Natural gas	mil. m ³	2 360	–	–	0	2 360	382
Oil and petroleum products ¹⁾	1000 t	13 686	1 913	908	1 975	18 482	5 740
Peat	1000 t	24	20	0	2	46	1
Wood fuels ²⁾	1000 t	175	5	10	42	231	12
Nuclear fuel	tU	39	–	–	16	54	89
Electricity	GWh	6	15	0	1	22	690
Value	€ mil.	4 577	1 335	308	1 069		7 289

1) Includes natural gas condensate

2) Includes wood pellets and other wood fuels

Source: Finnish Customs/ Foreign Trade Statistics

Energy exports 2016*

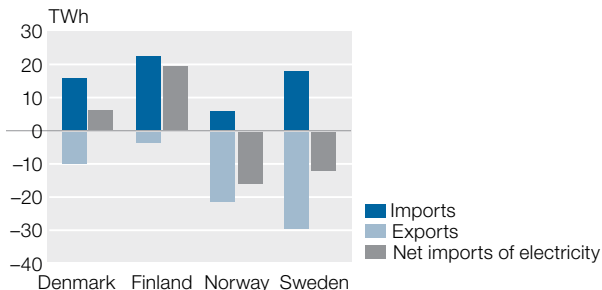
	Unit	Sweden	Netherlands	United States	Other countries	Total Amount	Total Value mil. €
Coke ¹⁾	1000 t	4	–	–	87	91	13
Petroleum products	1000 t	2 376	1 186	697	4 840	9 109	3 833
Peat	1000 t	2	3	1	42	48	7
Wood fuels ²⁾	1000 t	79	–	–	45	124	9
Electricity	TWh	0	–	–	3	3	89
Value	€ mil.	1 045	553	438	1 916		3 951

1) Includes coke tar

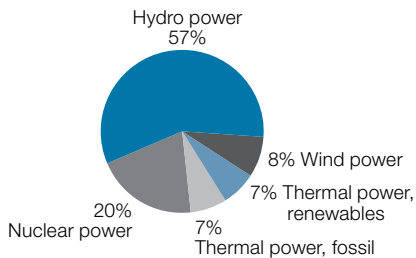
2) Includes wood pellets and other wood fuels

Source: Finnish Customs/ Foreign Trade Statistics

Imports and exports of electricity in Nordic countries 2016



Total electricity generation in Nordic Countries 2016



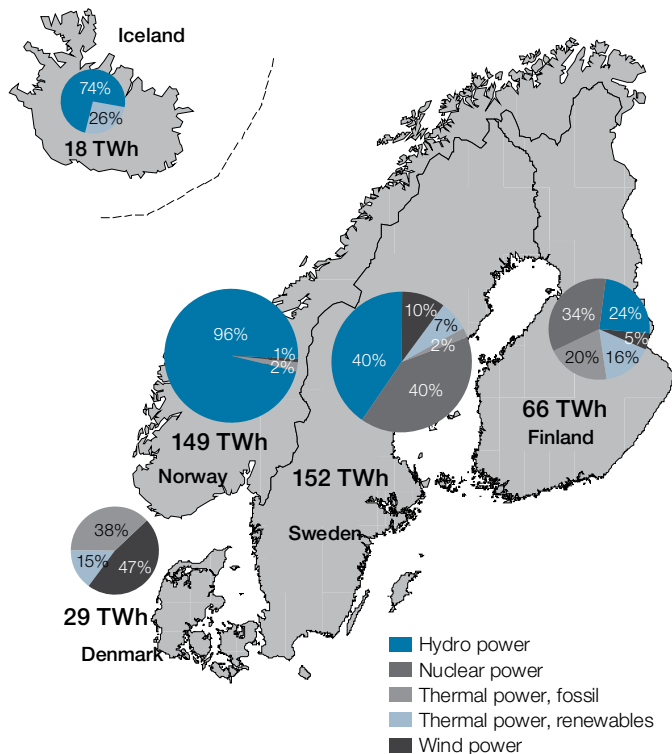
Total generation 413 TWh

Electricity consumption in Nordic Countries 2016, TWh

Sweden	140
Norway	133
Finland	85
Denmark	35
Iceland	18
Total	411

Source: Entso-e: Monthly Statistics 2016

Electricity generation in Nordic Countries 2016

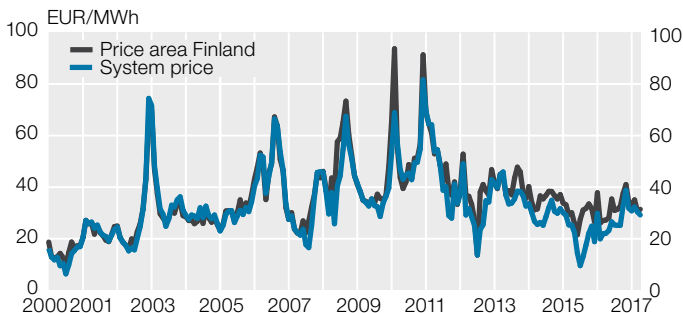


Source: Entso-e: Monthly Statistics 2016

Electricity spot prices of the nordic power exchange NordPool by price area, €/MWh

Year	Month	Oslo	Stockholm	Helsinki	Copenhagen	Tallinn	System
2016	1	30,28	30,98	37,83	30,84	37,63	29,85
	2	19,19	19,45	26,09	19,33	28,28	19,94
	3	21,42	21,61	27,09	21,98	29,41	21,92
	4	21,89	22,07	27,25	22,17	29,73	22,12
	5	22,59	23,66	28,06	24,47	28,26	23,21
	6	24,08	33,73	35,41	33,77	36,22	26,53
	7	23,42	28,95	30,97	29,04	30,97	25,32
	8	21,60	30,49	31,38	30,43	31,38	25,18
	9	23,69	29,22	32,52	31,18	32,40	25,19
	10	32,83	36,18	37,54	36,65	37,54	32,78
	11	39,72	40,98	41,02	41,07	40,86	38,83
	12	33,01	33,14	34,00	31,52	34,01	31,79
2017	1	31,29	31,93	33,29	33,55	33,27	30,81

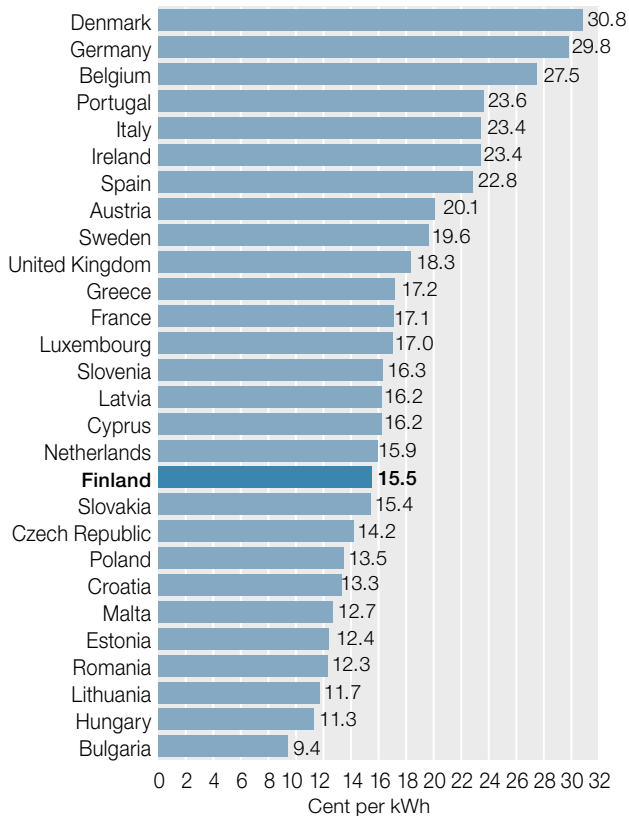
Development of spot prices on Nord Pool



The system price is the price calculated on the basis of all bids and offers at the Power Exchange, in which possible restrictions caused by the electricity transmission capacity are not taken into account.

Source: Nord Pool

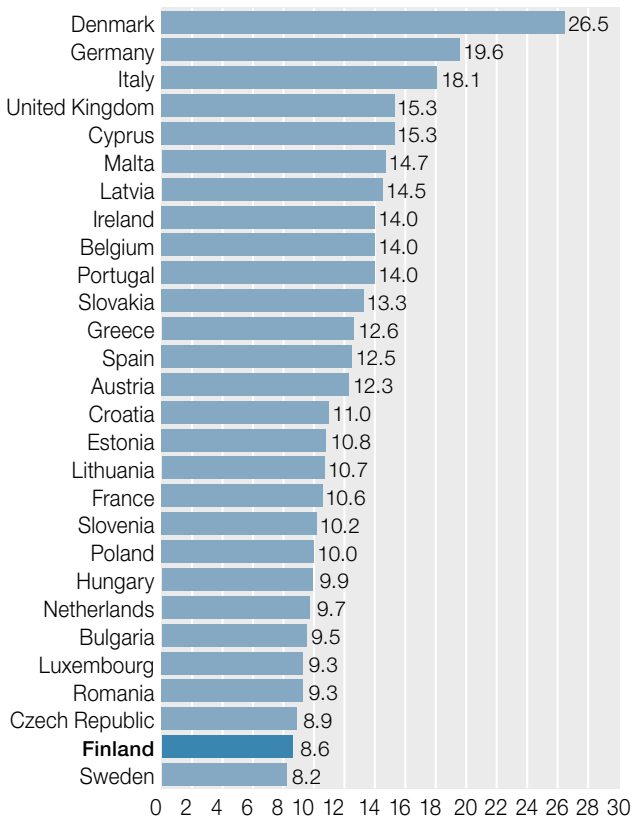
Electricity prices for households on the 2nd half of 2016



Households annual consumption of 2 500–5 000 kWh. Prices include taxes

Source: Eurostat

Electricity prices for industry on the 2nd half of 2016



Electricity prices to industrial consumers with annual consumption of 500–2 000 MWh. Prices include taxes.

Source: Eurostat

Total energy consumption in EU, PJ

	1985	1990	1995	2000	2005	2010	2014	2015
Germany	15 040	14 920	14 300	14 330	14 320	13 940	13 110	13 160
France	8 540	9 540	10 120	10 780	11 580	11 180	10 410	10 580
United Kingdom	8 530	8 820	9 310	9 650	9 800	8 900	7 940	7 990
Italy	5 590	6 430	6 770	7 290	7 960	7 450	6 320	6 540
Spain	3 170	3 770	4 270	5 180	6 040	5 450	4 890	5 080
Poland	..	4 330	4 140	3 710	3 860	4 220	3 950	4 000
Netherlands	2 550	2 790	3 160	3 280	3 540	3 620	3 220	3 240
Belgium	1 840	2 030	2 250	2 480	2 470	2 560	2 240	2 270
Sweden	1 960	1 990	2 150	2 050	2 130	2 130	2 020	1 900
Czech Republic	..	2 090	1 750	1 720	1 890	1 870	1 770	1 780
Finland	990	1 050	1 140	1 220	1 430	1 440	1 360	1 390
Austria	1 120	1 210	1 230	1 360	1 450	1 550	1 460	1 390
Romania	..	2 430	1 940	1 530	1 640	1 500	1 350	1 360
Greece	990	940	1 000	1 180	1 320	1 210	1 020	1 020
Portugal	..	1 210	1 100	1 060	1 160	1 060	960	1 010
Hungary	520	760	860	1 060	1 150	1 020	920	960
Bulgaria	..	1 160	950	780	830	740	740	780
Denmark	820	750	850	830	820	840	700	700
Slovakia	..	910	740	770	800	750	680	690
Ireland	370	430	460	600	640	630	570	590
Croatia	..	400	330	350	410	390	340	360
Lithuania	..	670	360	300	360	280	280	290
Slovenia	..	240	250	270	310	310	280	280
Estonia	..	420	230	210	240	260	280	260
Latvia	..	330	190	160	190	190	190	180
Luxembourg	130	150	140	150	200	190	180	170
Cyprus	..	70	80	100	110	110	90	100
Malta	..	20	30	30	40	40	40	30
EU 28	..	69 830	70 120	72 440	76 670	73 830	67 300	68 090

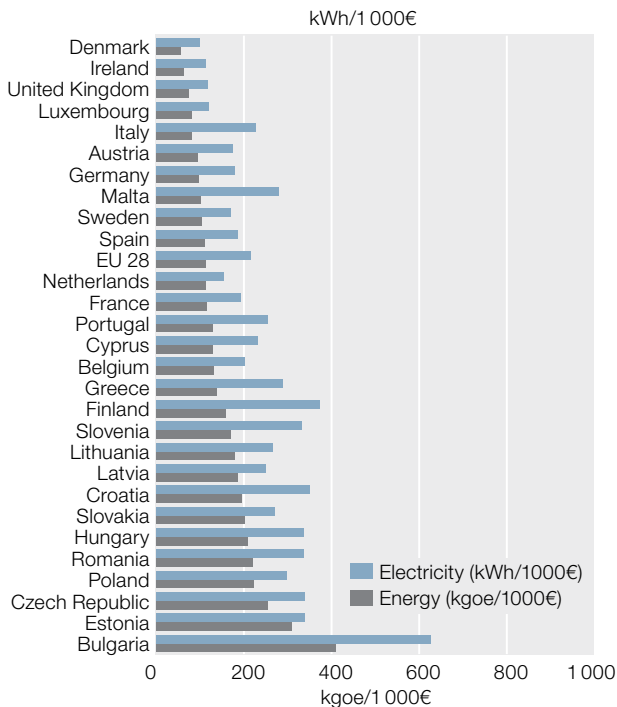
Source: Eurostat

Electricity consumption in EU, TWh

	1985	1990	1995	2000	2005	2010	2014	2015
Germany	425	455	451	483	522	532	513	515
France	253	302	343	384	422	444	413	422
United Kingdom	242	274	295	330	349	329	304	303
Italy	174	215	238	273	301	299	281	287
Spain	103	126	141	188	242	245	227	232
Poland	92	96	90	99	105	119	126	128
Sweden	114	120	125	129	131	131	122	125
Netherlands	61	74	82	96	104	107	103	104
Belgium	48	58	68	78	80	83	81	82
Finland	49	59	65	76	81	83	79	78
Austria	37	43	47	52	57	60	60	61
Czech Republic	43	48	48	49	55	57	56	57
Greece	24	28	34	43	51	53	50	51
Portugal	17	24	29	38	46	50	45	46
Romania	..	54	40	34	39	41	42	43
Hungary	30	32	28	29	32	34	36	37
Denmark	25	28	31	32	33	32	31	31
Bulgaria	..	35	29	24	26	27	28	28
Slovakia	21	25	22	22	23	24	24	27
Ireland	10	12	15	20	24	25	25	26
Croatia	0	13	10	12	14	16	15	15
Slovenia	..	9	9	11	13	12	12	13
Lithuania	..	12	6	6	8	8	9	9
Estonia	..	7	5	5	6	7	7	7
Latvia	..	8	4	4	6	6	7	6
Luxembourg	4	4	5	6	6	7	6	6
Cyprus	..	2	2	3	4	5	4	4
Malta	..	1	1	2	2	2	2	2
EU 28	1 772	2 165	2 263	2 529	2 785	2 842	2 707	2 745

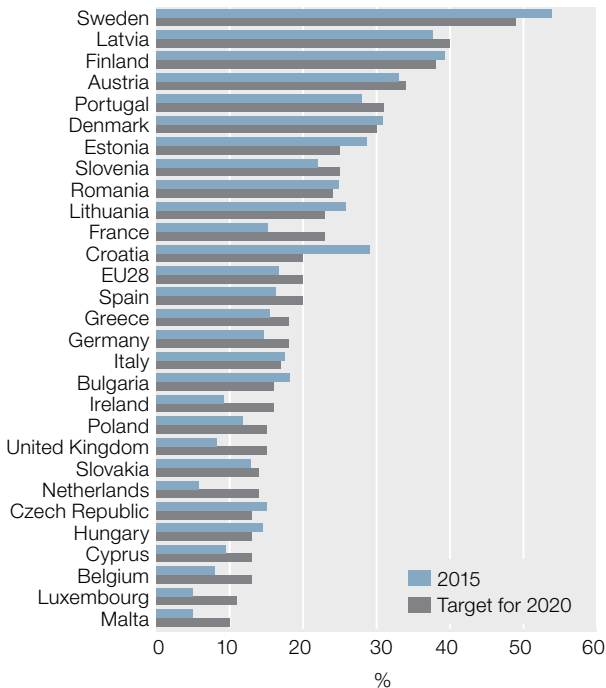
Source: Eurostat

Consumption of energy and electricity per GDP-unit in EU countries 2015



Source: Eurostat

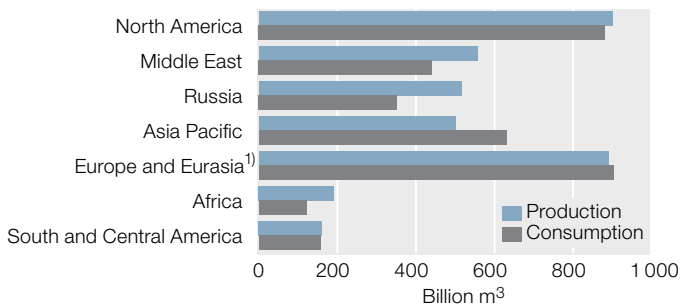
Share of renewable energy in gross final energy consumption in 2015, and the target for 2020



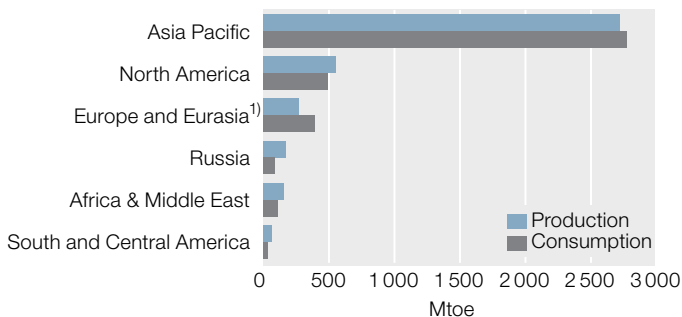
This indicator is calculated on the basis of data covered by Regulation (EC) No 1099/2008 on energy statistics. Reporting countries provide additional information on renewable source not covered by the Regulation. This indicator may be considered an estimate of the indicator described in Directive 2009/28/EC because statistical systems in some countries are not yet fully developed to meet all the requirements of this Directive.

Source: Eurostat

Gas production and consumption by region in 2015



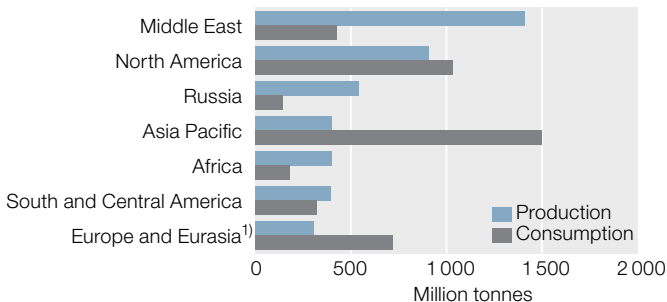
Coal production and consumption by region in 2015



1) excludes Russia

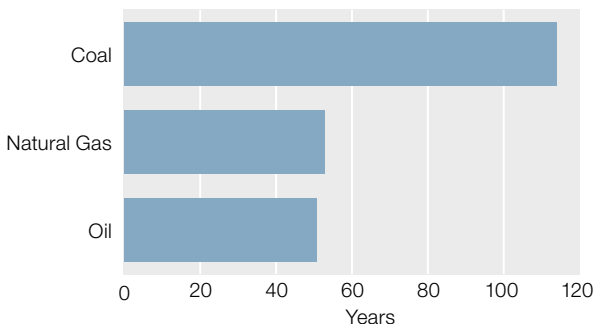
Source: BP Statistical Review of World Energy June 2016

Oil production and consumption by region in 2015



1) excludes Russia

World oil, natural gas and coal reserve sufficiency



Total reserves at the end of 2015: oil 239 billion tonnes, natural gas 187 trillion m³, coal 892 billion tonnes.

Source: BP Statistical Review of World Energy June 2016

Electricity network information

	1990	2000	2013	2014	2015
Transformer substations, number					
High voltage substations	715	591	940	946	944
Distribution substations	114 019	124 851	134 395	133 512	136 417
Lengths of low voltage lines (0.4 kV–1 kV), km					
Overhead lines	162 076	158 576	145 268	141 971	139 243
Cables (inc. sea cable)	45 705	63 327	92 843	97 924	102 746
Cabling rate	22 %	29 %	39 %	41 %	42 %
Lengths of medium voltage lines (over 1 kV–70 kV), km					
Overhead lines	122 329	121 754	119 807	117 927	115 967
Cables (inc. sea cable)	10 586	12 116	20 406	23 161	27 144
Cabling rate	8 %	9 %	15 %	16 %	1900 %
Lengths of high voltage lines (110 kV–400 kV), km					
110 kV	14 000	15 050	16 017	16 136	16 231
220 kV	2 471	2 510	2 331	2 225	2 092
400 kV	3 164	3 926	5 083	5 191	5 191

Source: Energy Authority

Energy statistics by Statistics Finland

Energy table service

The Energy table service provides information on the energy industry as an extensive compilation of Excel tables and statistical graphs. The service is in Finnish, English or Swedish, and is updated annually. The Energy online service is available at http://pxweb2.stat.fi/Sahkoiset_julkaisut/energia2015/.

Energy in Finland

Statistical pocketbook on energy statistics.

Homepage of the Energy topic www.stat.fi/energia (www.tilastokeskus.fi/energia)

The updated statistics, latest tables and figures on

- consumption of hard coal
- energy consumption in households
- energy prices
- energy supply and consumption
- energy in manufacturing
- production of electricity and heat

Net heat contents and densities of energy sources

Fuels	Unit	Net heat content		Density t/m ³
		GJ	MWh	
Crude oil	t	41.8	11.6	0.86
Heavy fuel oil	t	40.4	11.2	0.99
Light fuel oil	t	43.0	11.9	0.84
Diesel fuel	t	42.9	11.9	0.83
Kerosenes	t	43.3	12.0	0.79
Other kerosines	t	43.1	12.0	0.83
Naphtha	t	44.3	12.3	0.70
Motor gasolines	t	41.9	11.6	0.75
Aviation gasolines	t	43.7	12.1	0.71
LPG	t	46.3	12.9	0.52
Refinery gases	t	50.0	13.9	
Hard coal	t	25.0	6.9	
Coke	t	29.3	8.1	
Natural gas	1 000 m ³ (0°C)	36.5	10.1	
Blast furnace gas	1 000 m ³	3.8	1.1	
Coke oven gas	1 000 m ³	16.7	4.6	
Black liquor	t (dry matter)	11.5	3.2	
Wood pellets	t	15–18		
Bark	t	5–11		
Sawdust	t	6–10		
Forest residue chips	t	6–11		
Whole tree chips	t	7–11		
Chips	loose m ³	3.3	0.9	
Milled peat	t	10.1	2.8	0.32
Sod peat	t	12.3	3.4	0.38

Conversion factors between energy units

	toe	MWh	GJ	Gcal
toe	1	11.63	41.868	10
MWh	0.086	1	3.6	0.86
GJ	0.02388	0.2778	1	0.2388
Gcal	0.1	1.163	4.1868	1

Example: 1 toe (tonne of oil equivalent) = 11.63 MWh

Prefix

k	= kilo	= 1 000	= 10^3
M	= mega	= 1 000 000	= 10^6
G	= giga	= 1 000 000 000	= 10^9
T	= tera	= 1 000 000 000 000	= 10^{12}
P	= peta	= 1 000 000 000 000 000	= 10^{15}

Carbon dioxide factors for some fuels

	g CO ₂ / MJ	
Motor gasolines	69.6	Default bio share 7%
Diesel fuel	61.1	Default bio share 17%
Light fuel oil	73.5	
Heavy fuel oil	79.2	
Kerosenes	73.2	
LPG	64.9	
Other oils	71,3–79,2	
Hard coal	93.3	
Coke	107.0	
Natural gas	55.3	
Milled peat	107	
Bark, wood fuel	109.6	
Industrial wood residue	109.6	
Black liquor	109.6	

Source: Statistics Finland/Fuel classification 2016
www.tilastokeskus.fi/polttaineluokitus

Note

Hydro power, wind power and imported electricity have been made commensurate with fuels according to directly obtained electricity (at the efficiency ratio of 100 per cent) and nuclear power at the efficiency ratio of 33 per cent.

Calculation method for heating energy

Net heating energy for buildings was calculated by subtracting boiler losses from fuels according to the following default efficiencies:

Small combustion of wood	55%
Peat	60%
Coal	60%
Heavy fuel oil	83%
Light fuel oil	78%
Natural gas	90%
District heating	100%
Electric heating	100%

Source: Technical Research Centre of Finland (VTT) and Tampere University of Technology

Explanation of symbols

..	Data not available
–	Magnitude zero
0	Magnitude less than half of unit employed
*	Preliminary
-----	Break in the time series



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