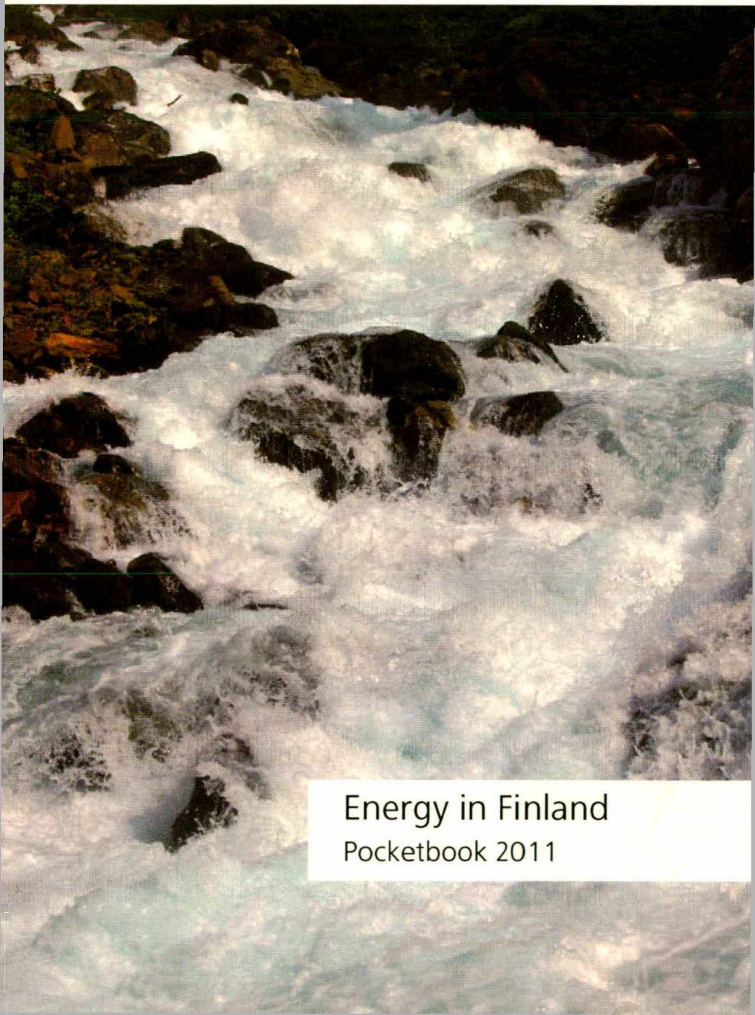
Statistics Finland Tilastokeskus
Tilastoarkisto



Energy in Finland

Pocketbook 2011

Finland in brief

Area

Situated in northern Europe with an area of 338,145 km^2 of which 78% forest, 10% water, 8% cultivated land.

Population

5.4 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 2010

Town	Latitude	January	July
Helsinki	60°	–4.4°C	+21.7°C
Sodankylä	67°	–13.4°C	+15.8°C

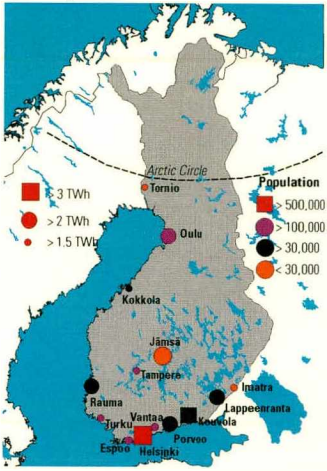
Economy

In 2010 GDP totalled € 180 bil., i.e. € 33,618/capita. In 2009 services were 69.1%, secondary production 28.2% and primary production 2.7% of the GDP.

Structure of industry, Value added gross in production in 2009

	bil. €	%
Total industry	31.6	**100**
Mining and quarrying	0.6	2
Wood and paper industry	3.5	11
Chemical industry	3.8	12
Metal industry	13.4	42
Machinery and equipment	5.0	16
Electrical equipment	4.9	16
Other metal industry	3.5	11
Other manufacturing ind.	6.3	20
Electricity, gas and water ind.	4.0	13

Municipalities with high electricity consumption 2009



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, iron, and nickel are extracted.

Total energy consumption in 2010*

1,445 PJ (34.5 Mtoe)
269.4 GJ/capita (6.4 toe/capita)

Electricity consumption in 2010*

87.5 TWh
16,308 kWh/capita

Contents

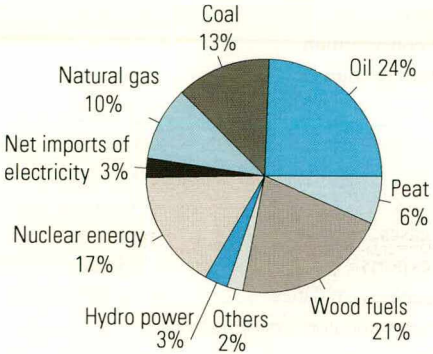
The data in this pocketbook are based on the Preliminary Energy Statistics 2010 figures.

Inquiries:
Kirsi-Marja Aalto
+358 9 1734 3442
energia@stat.fi
http://www.stat.fi/energia

Cover photograph: Rodeo

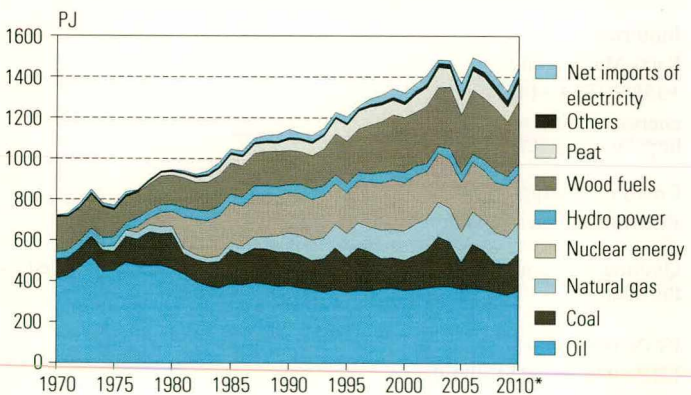
ISSN 1457–0491
ISBN 978-952-244-309-0
Edita Prima Oy, Helsinki 2011

Total energy consumption by energy source 2010*

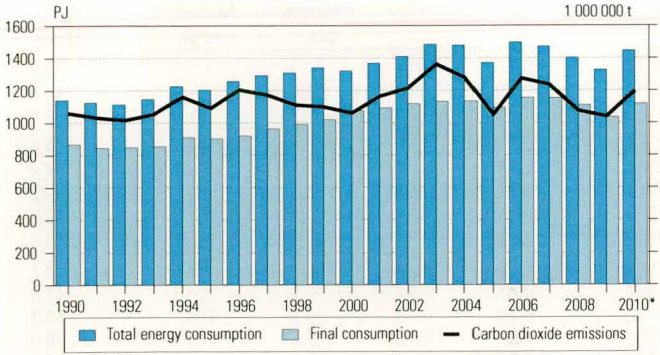


Total energy consumption in 2010* was 1 445 PJ.

Total energy consumption by energy source 1970–2010

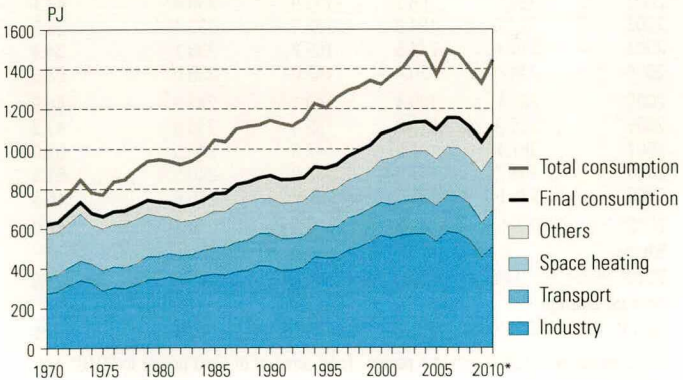


Final energy consumption 1990–2010



Final energy consumption in 2010* was 1 116 PJ.

Total energy consumption and final energy consumption by sector 1970–2010



Total energy consumption by energy source, PJ

	Oil	Coal	Natural gas	Nuclear energy	Hydro power
1970	412.9	94.8	–	–	33.9
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
1986	382.1	147.7	41.3	196.3	44.2
1987	391.6	168.5	54.6	202.2	49.2
1988	385.9	172.7	58.8	201.2	47.6
1989	375.0	170.1	77.0	196.5	46.4
1990	377.8	167.4	90.8	197.8	38.7
1991	367.5	164.4	95.7	200.8	47.0
1992	361.2	141.9	99.3	198.2	53.9
1993	345.9	164.8	102.6	205.1	48.0
1994	359.2	205.5	113.3	199.9	42.0
1995	347.1	168.8	117.6	197.8	46.1
1996	356.4	208.8	123.1	203.8	42.2
1997	353.3	192.0	121.1	218.7	42.5
1998	364.7	148.0	138.7	228.8	53.3
1999	366.7	149.9	138.9	240.7	45.3
2000	355.8	148.9	141.9	235.4	52.3
2001	361.1	168.1	153.9	238.4	47.1
2002	367.7	184.6	152.9	233.4	38.5
2003	375.4	244.5	169.2	238.1	34.4
2004	374.8	220.4	163.0	238.0	53.9
2005	363.1	130.4	149.1	243.9	48.9
2006	365.9	216.8	159.4	240.0	41.3
2007	361.4	191.5	147.5	245.5	51.0
2008	348.2	141.9	150.8	240.5	61.8
2009	335.5	152.0	134.6	246.6	46.3
2010*	353.9	186.3	148.6	238.7	47.0
Share					
2010*	24%	13%	10%	17%	3%
Annual change					
09/10*	5%	23%	10%	–3%	2%

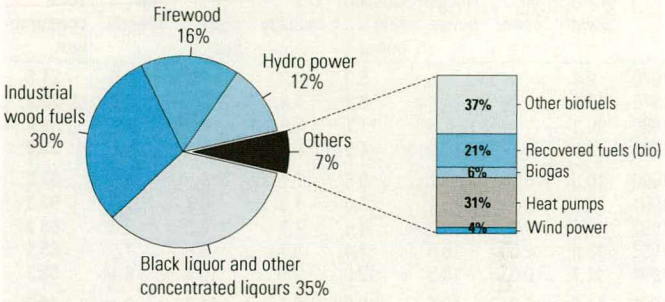
Wind power is included in hydro power. Total amount of wind power in 2010* was 1.05 PJ.

Wood fuels	Peat	Others	Net imports of electricity	**Total**	
170.1	0.9	6.0	1.9	**720.5**	1970
130.7	1.7	7.2	14.4	**769.8**	1975
142.1	17.1	5.9	4.4	**946.8**	1980
151.3	41.1	9.0	17.0	**1 045.8**	1985
152.5	43.3	9.0	20.9	**1 037.3**	1986
158.4	45.4	8.9	20.1	**1 099.0**	1987
167.7	41.5	9.5	26.6	**1 111.4**	1988
172.0	39.5	9.5	31.9	**1 118.0**	1989
167.2	53.3	9.7	38.7	**1 141.3**	1990
158.6	56.0	8.8	25.9	**1 124.7**	1991
161.2	58.7	9.5	29.6	**1 113.4**	1992
180.5	64.5	8.7	27.1	**1 147.2**	1993
201.8	73.7	8.9	21.9	**1 226.1**	1994
207.5	79.4	9.8	30.3	**1 204.4**	1995
212.8	87.5	9.9	13.2	**1 256.8**	1996
237.2	88.0	12.1	27.6	**1 292.3**	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
267.7	61.9	15.3	42.8	**1 322.0**	2000
261.3	85.9	17.1	35.9	**1 368.8**	2001
281.9	89.7	17.8	42.9	**1 409.4**	2002
287.7	99.2	19.8	17.5	**1 485.8**	2003
301.9	88.8	21.7	17.5	**1 480.1**	2004
280.8	68.8	23.4	61.3	**1 369.8**	2005
315.0	93.6	23.1	41.0	**1 496.2**	2006
302.2	102.3	25.4	45.2	**1 471.9**	2007
302.1	81.5	28.9	46.0	**1 401.7**	2008
267.5	71.7	30.1	43.5	**1 327.7**	2009
307.6	93.5	31.2	37.8	**1 444.7**	2010*
					Share
21%	6%	2%	3%	**100%**	2010*
					Annual change
15%	30%	4%	–13%	9%	09/10*

Renewable energy, PJ

	Hydro power	Wood fuels in industry and energy production	Black liquor and others	Small scale combustion of wood	Recovered fuels (bio fraction)	Heat pumps	Others	**Total**	Share of total energy consumption
1970	33.9	20.2	57.7	92.2	..	..	..	**204.0**	28%
1975	43.5	14.8	48.3	67.6	..	..	..	**174.3**	23%
1980	36.4	31.1	67.4	43.6	..	0.4	..	**178.9**	19%
1985	44.0	31.6	75.5	44.1	..	1.3	..	**196.5**	19%
1986	44.2	31.1	77.2	44.2	..	1.2	..	**197.9**	19%
1987	49.2	32.4	81.6	44.4	..	1.3	..	**208.9**	19%
1988	47.6	35.0	88.1	44.5	..	1.2	0.0	**216.5**	19%
1989	46.4	36.3	91.1	44.6	..	1.0	0.0	**219.5**	20%
1990	38.7	36.5	86.1	44.7	0.3	1.1	0.0	**207.4**	18%
1991	47.0	32.9	80.9	44.8	0.3	1.2	0.0	**207.2**	18%
1992	53.8	32.8	83.5	44.9	0.4	1.2	0.0	**216.6**	19%
1993	48.0	40.4	95.1	45.0	0.3	1.3	0.0	**230.1**	20%
1994	42.0	52.4	104.4	45.0	0.3	1.3	0.0	**245.4**	20%
1995	46.0	53.9	109.0	44.7	0.3	1.4	0.7	**256.0**	21%
1996	42.1	56.2	109.6	46.9	0.3	1.5	0.7	**257.5**	20%
1997	42.5	61.6	128.5	47.0	0.5	1.5	0.9	**282.5**	22%
1998	53.2	64.7	135.4	47.6	1.1	1.6	0.9	**304.5**	23%
1999	45.2	83.6	142.6	46.6	1.8	1.7	1.1	**322.5**	24%
2000	52.0	84.5	137.9	45.3	2.3	1.5	1.4	**324.9**	25%
2001	46.9	83.5	126.7	51.0	3.0	1.6	1.2	**314.0**	23%
2002	38.2	89.2	140.1	52.6	2.8	1.6	1.5	**326.1**	23%
2003	34.0	93.3	141.2	53.2	3.5	1.7	2.2	**329.2**	22%
2004	53.5	100.5	148.2	53.5	3.8	1.9	2.6	**364.0**	25%
2005	48.3	95.0	132.1	53.7	4.7	2.3	3.2	**339.4**	25%
2006	40.7	103.6	156.0	55.4	4.2	3.1	3.2	**366.1**	24%
2007	50.4	93.2	153.1	55.9	5.0	3.8	3.6	**365.0**	25%
2008	60.9	103.7	143.7	54.7	5.9	5.4	7.8	**382.1**	27%
2009	45.3	97.7	110.2	59.6	5.6	7.2	12.1	**337.7**	25%
2010*	46.0	113.8	131.2	62.6	5.6	8.2	12.5	**379.9**	26%

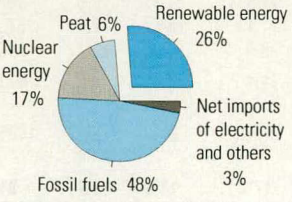
Renewable energy 2010*



The total consumption of renewable energy in 2010* was 380 PJ which is 26% of total energy consumption.

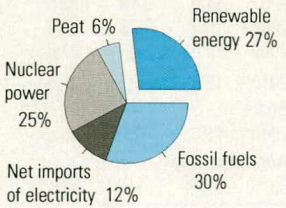
Renewable energy 2010*

In total energy consumption



Total 1 445 PJ

In electricity supply



Total 87 TWh

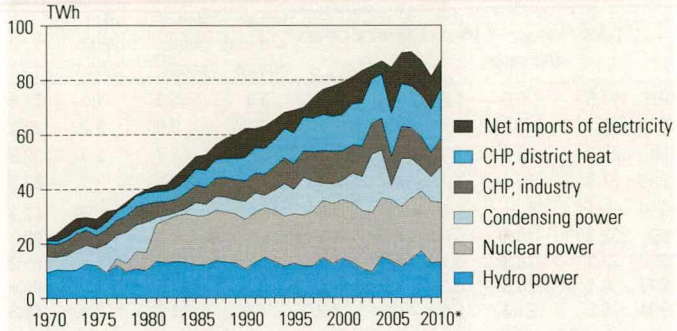
Supply and total consumption of electricity, TWh

	Hydro power	Wind power	Nuclear power	Condensing power [1]	CHP industry	CHP district heat	Net imports	**Total consumption**
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	0.00	18.1	6.6	7.7	8.5	10.7	**62.3**
1991	13.1	0.00	18.4	7.0	7.3	9.3	7.2	**62.3**
1992	15.0	0.00	18.2	4.6	7.7	9.5	8.2	**63.2**
1993	13.3	0.00	18.8	7.4	8.7	9.8	7.5	**65.5**
1994	11.7	0.01	18.3	12.0	9.5	10.7	6.1	**68.3**
1995	12.8	0.01	18.1	8.9	9.5	11.3	8.4	**68.9**
1996	11.7	0.01	18.7	13.8	9.7	12.5	3.7	**70.0**
1997	11.8	0.02	20.1	10.9	10.9	12.3	7.7	**73.6**
1998	14.8	0.02	21.0	6.3	12.0	13.2	9.3	**76.6**
1999	12.5	0.05	22.1	7.2	12.0	12.8	11.1	**77.8**
2000	14.5	0.08	21.6	6.9	10.8	13.4	11.9	**79.2**
2001	13.0	0.07	21.9	10.8	10.4	15.1	10.0	**81.2**
2002	10.6	0.06	21.4	12.4	11.3	15.8	11.9	**83.5**
2003	9.5	0.09	21.8	21.5	11.3	16.2	4.9	**85.2**
2004	14.9	0.12	21.8	17.4	11.7	16.3	4.9	**87.0**
2005	13.4	0.17	22.4	5.3	10.6	15.8	17.0	**84.7**
2006	11.3	0.15	22.0	17.6	11.9	15.7	11.4	**90.0**
2007	14.0	0.19	22.5	14.4	11.5	15.3	12.6	**90.4**
2008	16.9	0.26	22.0	8.8	11.1	15.4	12.8	**87.2**
2009	12.6	0.28	22.6	9.0	8.9	15.9	12.1	**81.3**
2010*	12.8	0.29	21.9	13.5	11.1	17.4	10.5	**87.5**
Share								
2010*	15%	0%	25%	15%	13%	20%	12%	**100%**
Annual change								
09/10	2%	7%	–3%	51%	17%	14%	–13%	**8%**

[1] Condensing power includes conventional condensing power, peak gas turbine power and gas engines.

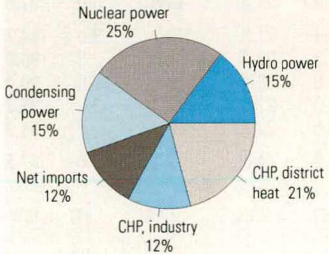
Sources: Finnish Energy Industries, Statistics Finland

Electricity supply 1970–2010

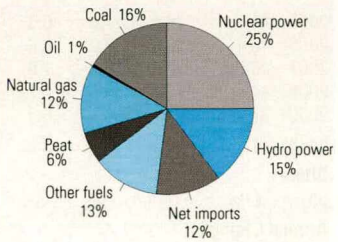


Electricity supply 2010*

By mode of production



By source



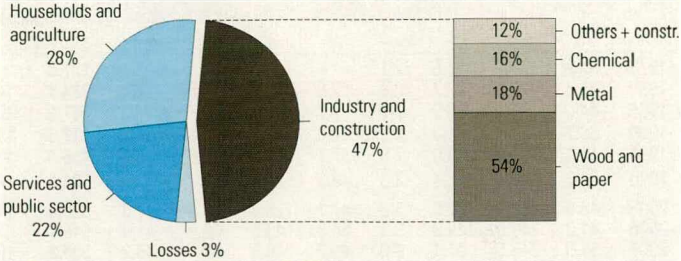
Total electricity supply in 2010* was 87.5 TWh (preliminary).

Electricity consumption by sector, TWh

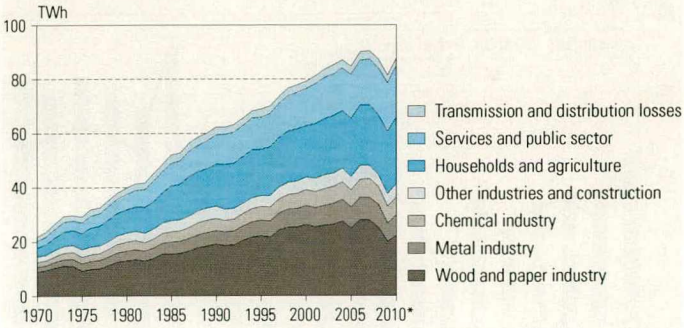
	Industry and construction					Households and agriculture	Services and public sector	Transm. and distrib. losses	Total
	Total	Wood and paper	Metal	Chemical	Others				
1970	14.5	9.0	1.8	1.8	1.9	3.3	2.5	1.5	**21.8**
1975	17.1	9.2	2.7	2.4	2.7	6.0	3.9	2.2	**29.2**
1980	23.3	13.0	3.6	3.4	3.3	8.6	5.7	2.3	**39.9**
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**
1991	32.0	18.6	5.0	4.2	4.1	16.5	11.2	2.6	**62.3**
1992	32.3	18.9	5.1	4.4	4.0	16.7	11.4	2.8	**63.2**
1993	34.2	20.5	5.3	4.6	3.8	17.2	11.5	2.7	**65.5**
1994	36.2	21.8	5.5	4.9	3.9	17.8	11.7	2.6	**68.3**
1995	37.0	22.2	5.7	5.0	4.1	17.1	11.9	3.0	**68.9**
1996	36.9	21.7	6.0	5.1	4.2	18.0	12.4	2.7	**70.0**
1997	40.2	24.4	6.2	5.2	4.4	18.2	12.6	2.5	**73.6**
1998	41.8	25.3	6.7	5.4	4.4	19.0	13.1	2.8	**76.6**
1999	42.3	25.4	6.8	5.6	4.5	19.3	13.4	2.8	**77.8**
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	**83.5**
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	**87.0**
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	8.5	6.7	4.3	22.1	17.3	3.3	**87.2**
2009	37.2	20.0	6.7	6.3	4.6	22.9	18.0	2.8	**81.3**
2010*	41.3	22.2	7.5	6.6	4.9	24.5	19.1	2.6	**87.5**
Share									
2010*	47%	25%	9%	8%	6%	28%	22%	3%	**100%**
Annual Change									
09/10*	10%	11%	12%	5%	7%	7%	6%	–5%	8%

Sources: Finnish Energy Industries, Statistics Finland

Electricity consumption by sector 2010*



Electricity consumption by sector 1970–2010

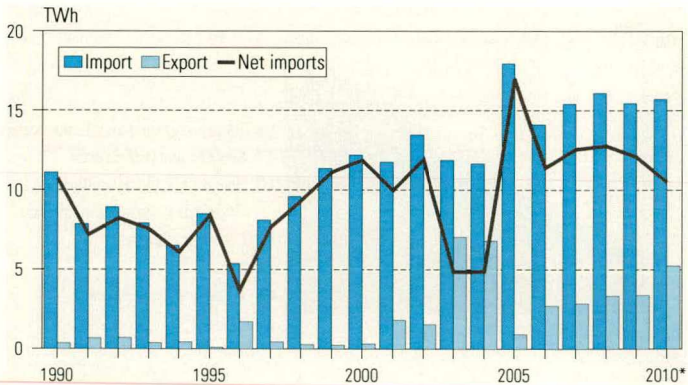


Energy sources in electricity generation, PJ

	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
1985	44.0	196.1	60.9	7.7	9.7	8.9	22.7	17.0	**367.2**	13
1990	38.7	197.8	61.3	9.7	24.8	17.2	29.1	38.7	**417.3**	11
1995	46.1	197.8	65.0	7.5	37.1	36.3	36.6	30.3	**456.6**	13
2000	52.3	235.4	55.4	3.3	43.2	21.5	50.3	42.8	**504.2**	14
2005	48.9	243.9	37.6	3.2	47.1	25.4	60.9	61.3	**528.3**	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	40.8	24.3	50.5	43.5	**529.6**	13
2010*	47.0	238.7	79.1	3.1	41.2	24.9	47.7	37.8	**519.5**	17

Source: Finnish Energy Industries and Statistics Finland

Imports and exports of electricity 1990–2010



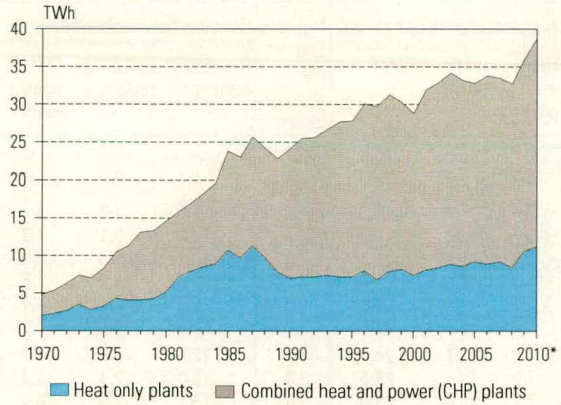
Source: Finnish Energy Industries

Production and consumption of district heat, TWh

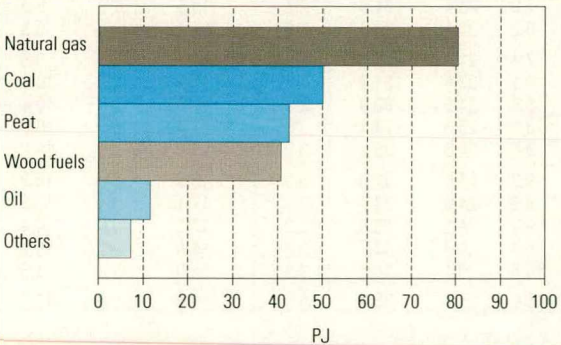
	Net production of district heat			Network and measuring losses	Consumption of district heat			
	Heat only plants	CHP plants	**Total**		Residential buildings	Industrial buildings	Other consumers	**Total**
1970	2.0	2.8	**4.8**	0.3	..	0.6	..	**4.5**
1975	3.3	5.0	**8.2**	0.6	4.7	0.9	2.0	**7.7**
1980	5.2	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**
1986	9.7	13.3	**23.0**	2.0	12.1	1.9	6.9	**21.0**
1987	11.3	14.4	**25.7**	2.1	13.5	2.2	7.8	**23.6**
1988	9.7	14.5	**24.2**	2.0	12.8	2.1	7.4	**22.2**
1989	7.8	15.0	**22.8**	2.0	11.9	1.9	7.0	**20.9**
1990	7.0	17.1	**24.1**	1.9	12.5	2.0	7.7	**22.3**
1991	7.2	18.3	**25.5**	2.0	13.0	2.1	8.4	**23.5**
1992	7.2	18.4	**25.6**	2.0	13.1	2.1	8.4	**23.6**
1993	7.4	19.3	**26.7**	2.0	13.9	2.3	8.5	**24.6**
1994	7.2	20.5	**27.6**	2.3	14.0	2.4	8.9	**25.3**
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	21.4	**28.8**	2.5	14.9	2.6	8.8	**26.3**
2001	8.1	23.8	**31.9**	2.7	16.2	2.9	10.1	**29.1**
2002	8.4	24.5	**32.9**	2.9	16.6	3.0	10.4	**30.0**
2003	8.9	25.3	**34.1**	3.0	17.4	3.0	10.9	**31.2**
2004	8.6	24.6	**33.2**	3.0	16.1	2.9	11.2	**30.3**
2005	9.2	23.6	**32.8**	3.0	16.6	3.0	10.2	**29.8**
2006	8.9	24.9	**33.7**	3.1	17.1	3.1	10.5	**30.7**
2007	9.2	24.3	**33.5**	2.9	17.2	3.0	10.4	**30.6**
2008	8.4	24.3	**32.7**	3.0	16.6	2.9	10.2	**29.7**
2009	10.6	25.4	**36.1**	3.3	18.0	3.3	11.5	**32.8**
2010*	10.6	25.4	**36.1**	3.3	19.4	3.6	12.7	**32.8**

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

Production of district heat 1970–2010

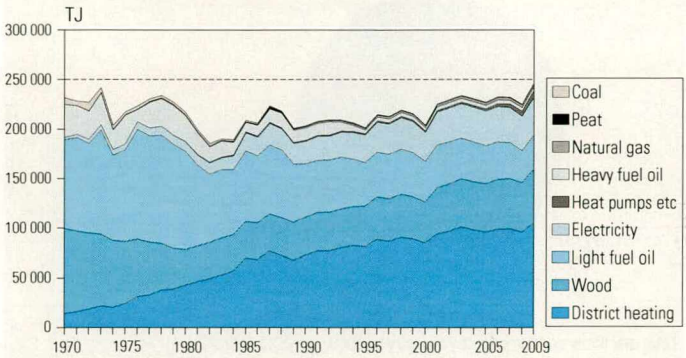


Fuel consumption in production of district heat and combined production of district heat and electricity 2010

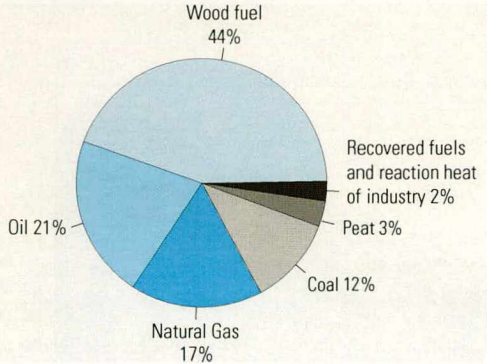


Source: Finnish Energy Industries

Consumption of energy for heating residential, commercial and public buildings 1970–2009

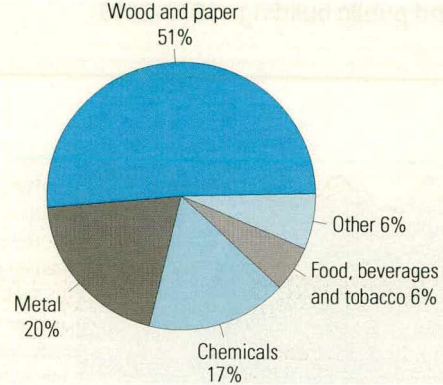


Fuel consumption in industry 2009



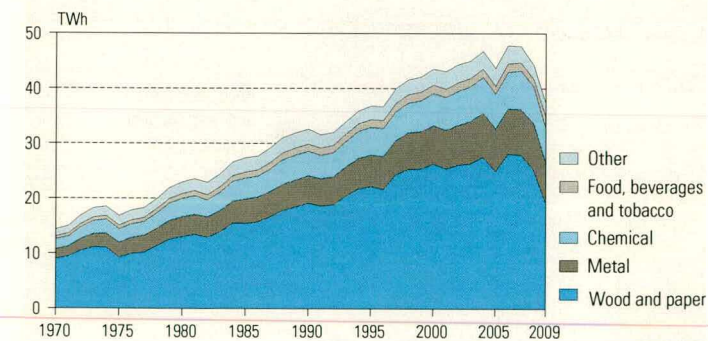
Total fuel consumption in industry in 2009 was 339 PJ.

Electricity consumption by branch of industry 2009



Total electricity consumption by industry in 2009 was 37.3 TWh.

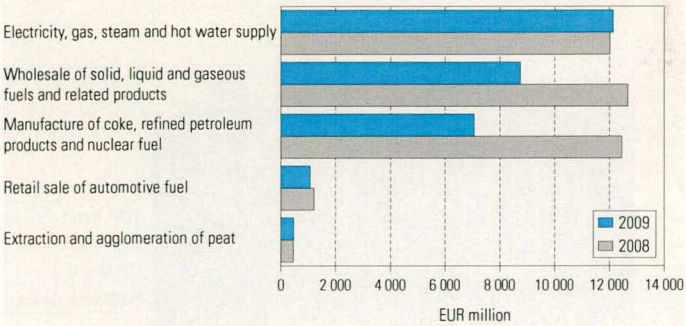
Electricity consumption by branch of industry 1970–2009



Enterprises in energy sector in 2009

	Number of enterprises	Turnover, EUR mil.	Employees	Staff expenses, EUR mil.
Wholesale of solid, liquid and gaseous fuels and related products	139	8 764	1 801	113
Electricity, gas, steam and hot water supply	711	12 135	12 519	746
Extraction and agglomeration of peat	457	471	1 432	60
Retail sale of automotive fuel	870	1 066	4 625	133
Manufacture of coke, refined petroleum products and nuclear fuel	16	7 062	2 630	183

Turnover of enterprises in energy sector 2008–2009



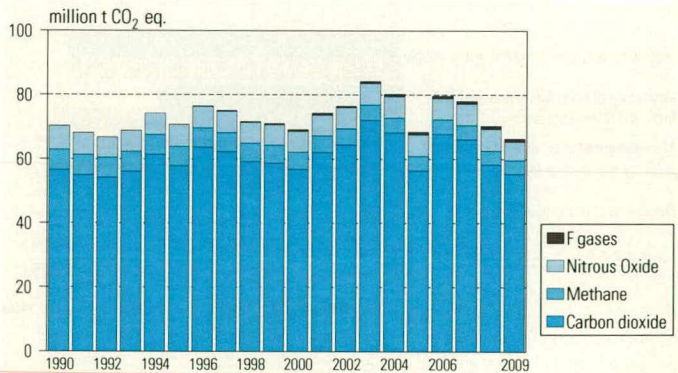
Source: Statistics Finland, Financial statements of enterprises.

Greenhouse gas emissions 1990–2010

The gases included in the Kyoto Protocol

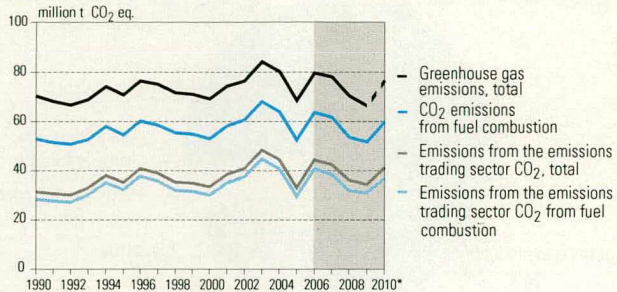
	1990	1995	2000	2005	2006	2007	2008	2009	2010*
	million tonnes of CO_2 equivalent								
Energy	54.5	56.0	54.4	54.0	65.2	63.2	55.1	53.1	59.8
Industrial prosesses	5.1	4.6	5.5	6.2	6.2	6.7	7.1	5.2	..
Solvent and other product use	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	..
Agriculture	6.7	6.0	5.9	5.8	5.8	5.8	5.9	5.7	..
Waste	4.0	3.9	3.3	2.4	2.5	2.4	2.3	2.2	..
Total emission without land use, land use change and forestry	**70.4**	**70.8**	**69.2**	**68.5**	**79.7**	**78.1**	**70.4**	**66.3**	**76.0**
Land use, land use change and forestry	–15.0	–13.3	–20.9	–27.7	–31.2	–23.3	–27.0	–40.6	..

Greenhouse gas emissions by gases 1990–2009

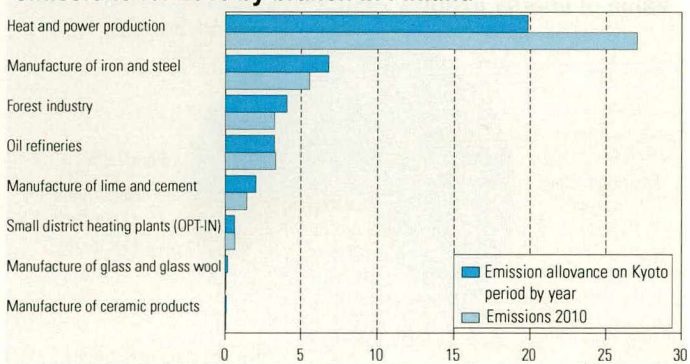


Source: Statistics Finland, Greenhouse Gas Inventory

Finland's greenhouse gas emissions 1990–2010



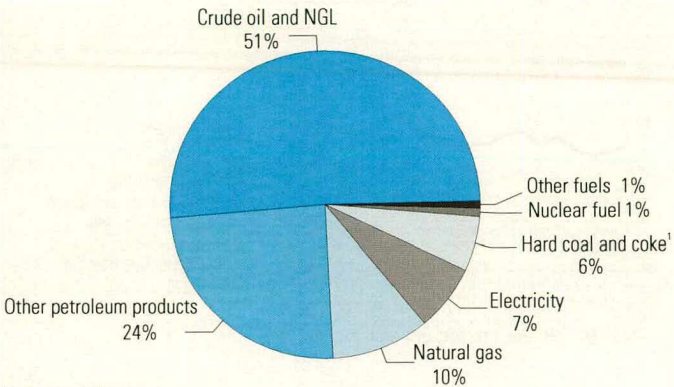
National allowances under EU ETS and verified CO_2 emissions for 2010 by branch in Finland



Total allowance were 37.9 million tonnes and verified CO_2 emissions in 2010 were 41.5 million tonnes.

Source: Energy Market Authority

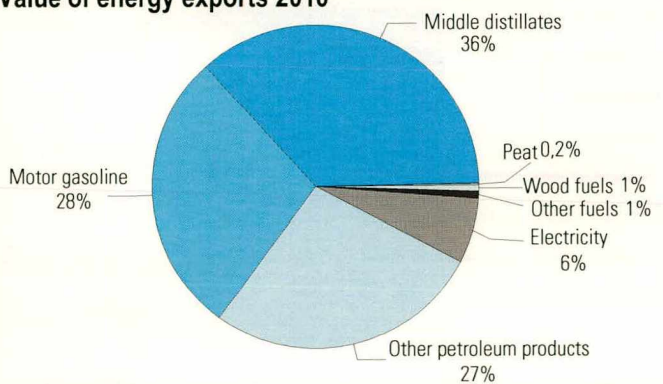
Value of energy imports 2010



1) includes coking coal

Total imports of energy products were 9 700 million euros in 2010. That was 18.8 % of total imports to Finland.

Value of energy exports 2010



Total exports of energy products were 4 539 million euros in 2010. That was 8.7 % of total exports from Finland.

Source: Board of Customs /Foreign Trade Statistics

Energy imports 2010

		Russia	Sweden	Norway	Nether-land	Kazak-stan	Other countries	Total Amount	Total Value mil. €
Hard coal	1 000 t	3 680	6	0	–	55	846	**4 593**	**325**
Coke	1 000 t	–	–	–	–	–	1	**1**	**0**
Coking coal	1 000 t	–	–	–	–	–	1 327	**1 327**	**224**
Natural gas	mil. m³	4 461	–	–	–	–	0	**4 461**	**988**
Crude oil[1)]	1 000 t	10 561	0	539	–	30	81	**11 212**	**4 950**
Motor gasoline	1 000 t	–	0	–	0	–	0	**7**	**6**
Middle distillates	1 000 t	1 511	111	–	–	–	218	**1 826**	**853**
Heavy fuel oil	1 000 t	11	313	–	199	–	201	**724**	**262**
LPG	1 000 t	148	0	68	–	–	–	**256**	**129**
Other petroleum prod.	1 000 t	881	46	0	182	212	678	**1 998**	**1 114**
Methanol	1 000 t	389	0	–	0	–	0	**390**	**58**
MTBE	1 000 t	–	5	–	–	–	–	**9**	**6**
Peat	1 000 t	7	0	0	0	–	4	**11**	**1**
Wood fuels[2)]		175	3	0	0	–	93	**271**	**11**
Nuclear fuel	tU	23	20	–	–	–	18	**61**	**83**
Electricity	TWh	12	2	0	–	–	2	**16**	**689**
Value	mil. €	7 687	345	317	196	169	985		**9 700**

[1)] Includes natural gas condensate
[2)] Includes wood pellets and other wood fuels

Source: Board of Customs /Foreign Trade Statistics; Natural gas: Statistics Finland

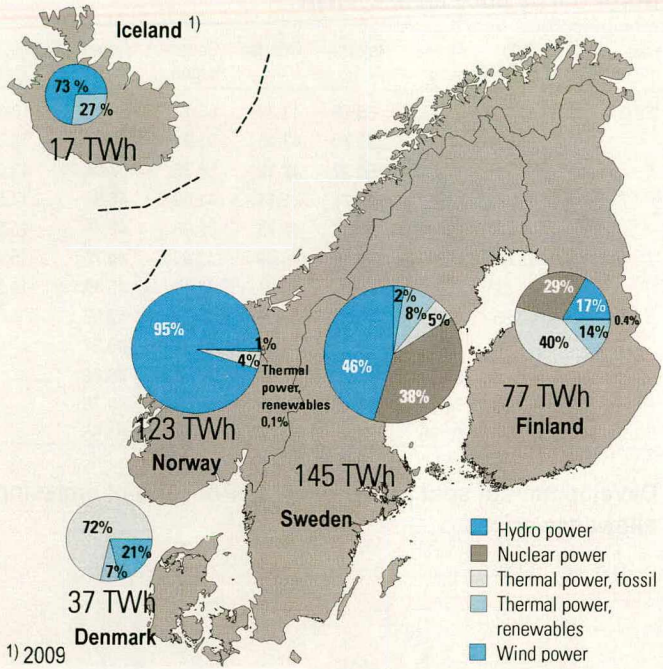
Energy exports 2010

		Sweden	Nether-lands	Belgium	Canada	Russia	Other countries	Total Amount	Total Value mil. €
Coke	1 000 t	–	–	–	–	–	5	**5**	**1**
Motor gasoline	1 000 t	704	233	–	566	6	800	**2 310**	**1 293**
Middle distillates	1 000 t	1 163	–	32	–	0	1 597	**2 891**	**1 659**
Heavy fuel oil	1 000 t	108	374	21	–	–	202	**705**	**239**
LPG	1 000 t	0	–	0	–	0	7	**7**	**4**
Other petroleum prod.	1 000 t	243	516	621	0	91	549	**818**	**33**
Peat	1 000 t	23	–	–	–	0	47	**79**	**8**
Wood fuels[1)]	1 000 t	109	–	–	–	–	97	**207**	**25**
Electricity	TWh	5	–	–	–	–	0	**5**	**293**
Value	mil. €	1 498	512	348	336	221	1 624		**4 539**

[1)] Includes wood pellets and other wood fuels

Source: Board of Customs /Foreign Trade Statistics

Electricity generation in Nordic Countries 2010



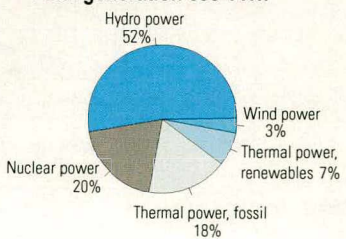
1) 2009

Electricity consumption in Nordic Countries 2010, TWh

Sweden	147
Norway	130
Finland	87
Denmark	36
Iceland[1)]	17
Total	**416**

Source: Entso-e: Statistical Yearbook 2009, Monthly Statistics 2010

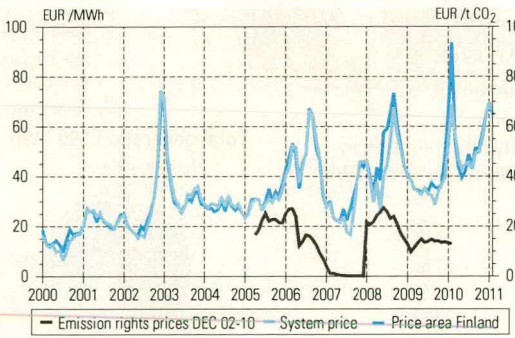
Total generation 399 TWh



Spot prices of the Nordic Power Exchange NordPool by price area, € /MWh

Year	Month	Oslo	Stock-holm	Helsinki	Odense	Copen-hagen	System	EUA (€/CO_2 t)
2010	1	50.18	65.78	65.78	43.29	66.12	53.38	13.19
	2	79.37	93.99	93.70	43.45	93.91	68.92	13.06
	3	60.22	59.06	55.22	42.12	56.36	57.04	13.03
	4	48.45	44.22	43.71	41.11	41.09	46.87	14.52
	5	45.11	39.65	39.47	41.73	39.28	42.98	15.53
	6	45.67	41.96	41.96	45.49	43.65	44.76	15.48
	7	45.52	45.81	48.76	46.81	47.14	45.43	14.29
	8	42.85	43.21	43.21	43.28	47.30	42.89	..
	9	48.60	51.20	51.20	49.86	51.20	49.37	..
	10	48.92	51.32	51.23	43.28	52.06	49.66	..
	11	55.09	56.26	56.63	50.45	55.96	54.78	..
	12	82.83	91.86	91.34	60.50	91.64	81.65	..

Development of spot prices on Nord Pool and of emission allowance prices

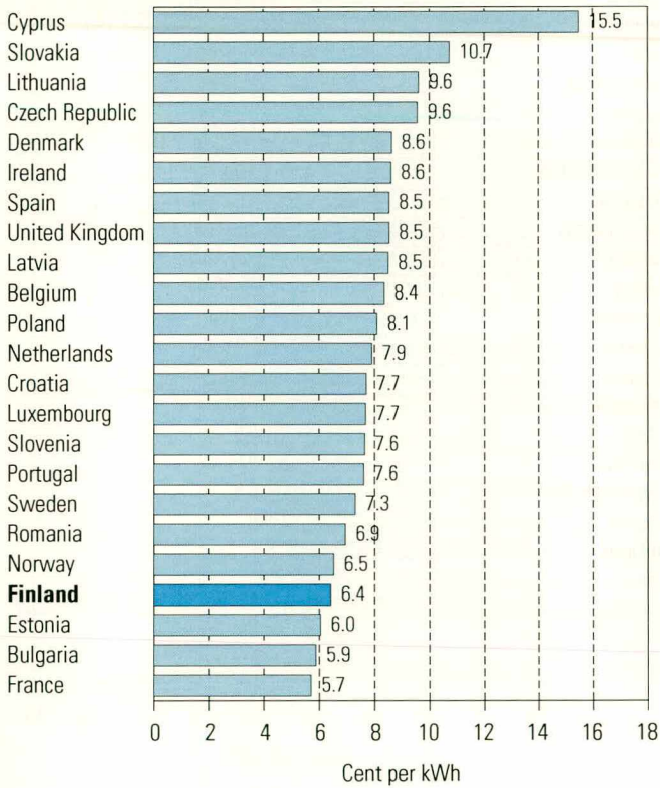


Source: Nord Pool, ECX

Electricity prices for households on the 2nd half of 2010

Households annual consumption of 5 000 –15 000 kWh. Prices without taxes.

Electricity prices for industry on the 2nd half of 2010



Electricity prices to industrial consumers with annual consumption of 2 000–20 000 MWh. Prices without taxes.

Total energy consumption of in EU and some of the OECD countries, PJ

	1985	1990	1995	2000	2005	2007	2008
Germany	15 040	14 990	14 250	14 330	14 530	14 290	14 390
France	8 540	9 500	10 070	10 810	11 570	11 320	11 460
United Kingdom	8 530	8 850	9 150	9 700	9 740	9 220	9 150
Italy	5 590	6 420	6 810	7 310	7 890	7 760	7 590
Spain	3 170	3 760	4 310	5 180	6 050	6 140	5 940
Poland	..	4 190	4 180	3 800	3 910	4 090	4 130
Netherlands	2 550	2 850	3 130	3 230	3 450	3 580	3 500
Belgium	1 840	2 040	2 300	2 570	2 560	2 400	2 440
Sweden	1 960	1 980	2 110	1 990	2 160	2 100	2 090
Czech Republic	..	2 050	1 740	1 700	1 860	1 940	1 890
Romania	..	2 670	1 970	1 550	1 640	1 690	1 700
Finland	1 120	1 220	1 220	1 360	1 460	1 570	1 520
Austria	990	1 060	1 130	1 220	1 450	1 420	1 420
Greece	990	940	1 010	1 180	1 310	1 320	1 340
Hungary	..	1 200	1 080	1 050	1 170	1 130	1 120
Portugal	520	750	860	1 050	1 130	1 090	1 040
Bulgaria	0	1 170	980	780	840	850	840
Denmark	820	750	850	820	820	860	830
Slovakia	..	880	740	730	800	760	780
Ireland	370	430	450	600	630	660	660
Lithuania	..	670	360	300	360	380	380
Slovenia	..	230	260	270	300	310	320
Estonia	..	430	230	210	230	250	240
Latvia	..	330	190	160	190	200	190
Luxembourg	130	150	140	150	200	190	190
Cyprus	..	..	80	100	100	110	120
Malta	..	20	30	30	40	40	40
EU 27	..	..	**69 640**	**72 190**	**76 420**	**75 690**	**75 330**
United States	..	80 650	87 370	96 410	98 050	99 100	..
Japan	..	18 590	20 970	22 050	22 120	21 880	..
Canada	..	8 770	9 700	10 550	11 460	11 400	..
OECD Total	..	**189 320**	..	**222 960**	**232 530**	**234 070**	..

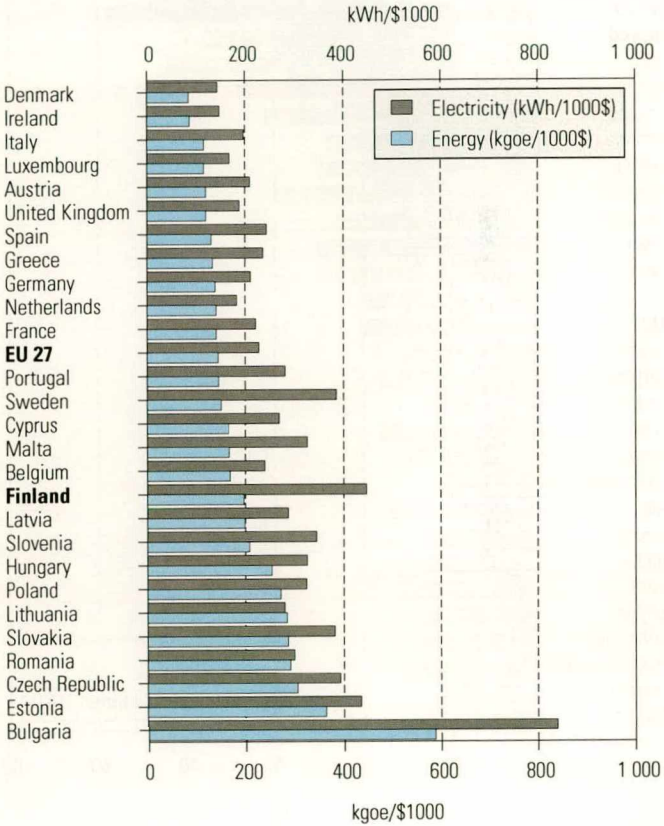
Source: Eurostat, IEA /Energy Balances of OECD Countries 2006–2008

Electricity consumption in EU and some of the OECD countries, TWh

	1985	1990	1995	2000	2005	2007	2008
Germany	424.6	446.5	452.5	482.5	516.2	527.4	525.5
France	252.9	301.9	342.6	384.9	422.6	425.9	433.3
United Kingdom	242.1	274.4	293.9	329.4	346.5	341.4	341.6
Italy	173.7	214.1	237.7	272.5	300.4	308.8	308.8
Spain	102.8	125.8	140.9	188.5	242.2	262.2	265.4
Sweden	113.6	120.3	124.6	128.7	132.4	131.1	128.6
Netherlands	61.5	73.5	82.7	97.8	104.5	108.5	109.1
Poland	92.1	96.1	89.6	98.3	105.0	114.1	117.5
Finland	48.5	58.9	65.2	75.4	80.9	86.3	82.6
Belgium	48.4	58.0	68.4	77.5	80.2	82.9	82.6
Austria	37.0	42.2	46.0	51.4	57.9	59.3	59.4
Czech Republic	43.3	48.2	48.0	49.4	55.2	57.2	58.0
Greece	23.8	28.5	34.1	43.2	50.9	55.2	56.6
Portugal	17.4	23.5	28.8	38.4	46.3	49.0	48.4
Romania	..	54.6	36.4	33.9	38.8	40.9	41.8
Denmark	25.4	28.4	30.9	32.5	33.5	33.6	33.4
Hungary	30.2	31.6	27.7	29.4	32.3	33.7	34.3
Bulgaria	..	35.3	28.7	24.1	25.7	27.2	28.6
Slovakia	21.5	23.4	21.7	22.0	22.9	24.6	24.8
Ireland	9.8	11.9	14.9	20.3	24.4	25.9	26.7
Slovenia	..	9.7	9.4	10.5	12.7	13.3	12.8
Lithuania	..	12.0	6.3	6.2	7.9	8.8	9.0
Luxembourg	3.8	4.1	5.0	5.7	6.2	6.7	6.6
Estonia	..	6.8	4.5	5.0	6.0	6.8	7.0
Latvia	..	8.3	4.4	4.4	5.7	6.6	6.6
Cyprus	..	1.8	2.2	3.0	4.0	4.4	4.6
Malta	..	0.9	1.3	1.6	1.7	1.9	1.9
EU 27	**1 772.3**	**2 140.7**	**2 248.5**	**2 516.6**	**2 763.0**	**2 843.6**	**2 855.6**
United States	..	2 634.1	..	3 499.9	4 049.4	3 825.5	3 814.2
Japan	..	749.7	..	943.5	1 047.9	1 009.3	964.5
Canada	..	418.2	..	481.7	559.5	508.5	518.9
OECD Total	**..**	**6 368.2**	**..**	**8 252.8**	**9 801.9**	**9 245.4**	**9 245.5**

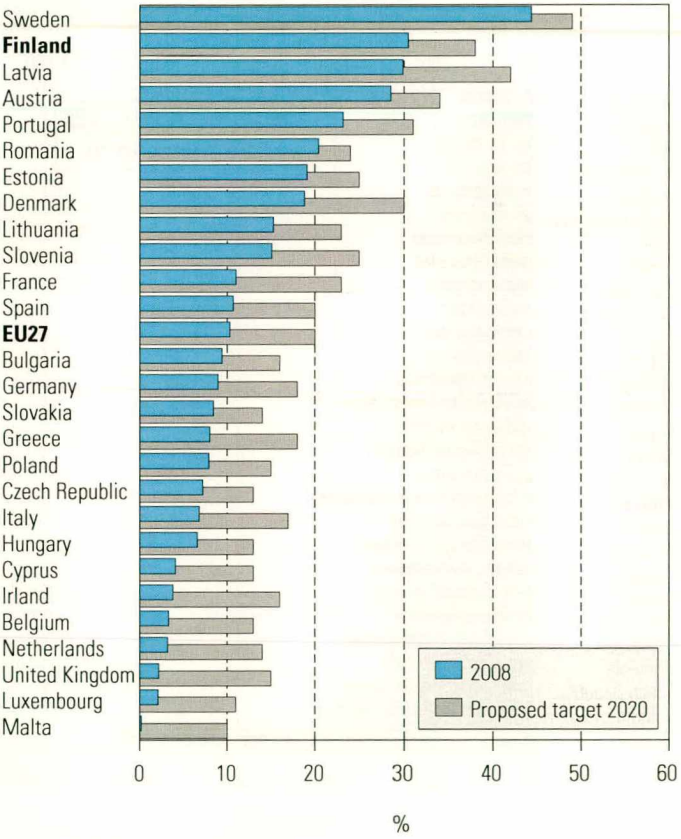
Source: Eurostat, IEA /Energy Balances of OECD Countries 2006–2008

Consumption of energy and electricity per GDP-unit in EU countries 2008



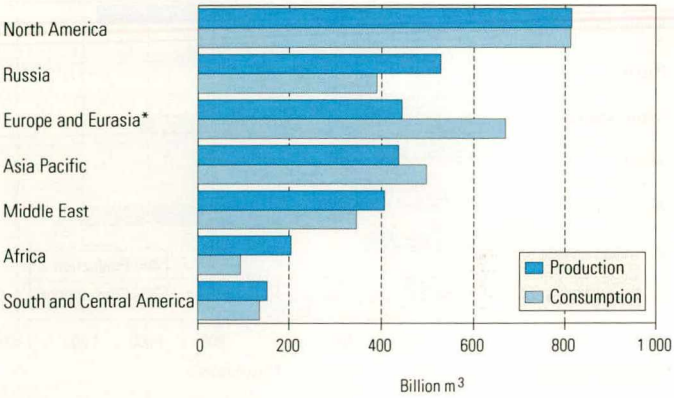
Source: Eurostat

Renewable energy as a proportion of final energy consumption in 2008, and the target for 2020

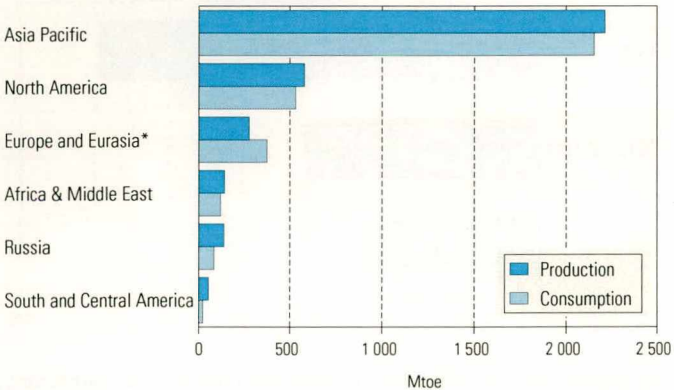


Source: European Commission/DG TREN

Gas production and consumption by region in 2009



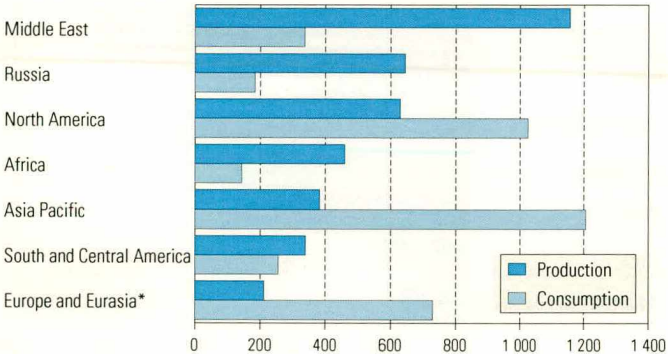
Coal production and consumption by region in 2009



* excludes Russia

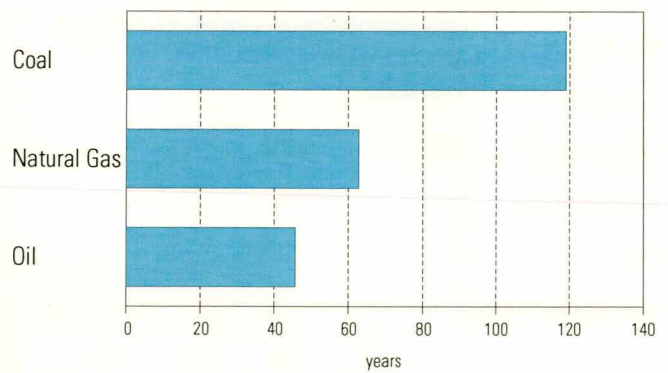
Source: BP statistical review of world energy June 2010

Oil production and consumption by region in 2009



* excludes Russia

World oil, natural gas and coal reserve sufficiency



Total reserves at the end of 2009: oil 181 700 million tonnes, natural gas 187 490 billion m^3, coal 826 001 million tonnes.

Source: BP statistical review of world energy June 2010

Net heat contents and densities of energy sources

Fuels	Unit	Net heat content		Density
		GJ	MWh	t/m³
Crude oil	t	41.8	11.6	0.86
Heavy fuel oil	t	41.1	11.4	0.98
Light fuel oil	t	42.7	11.9	0.85
Diesel fuel	t	42.8	11.9	0.84
Kerosenes	t	43.3	12.0	0.80
Other kerosenes	t	43.1	12.0	0.81
Naphtha	t	44.3	12.3	0.70
Motor gasolines	t	42.3	11.8	0.75
Aviation gasolines	t	43.7	12.1	0.71
LPG	t	46.2	12.8	0.51
Refinery gases	t	50.0	13.9	
Hard coal	t	25.2	7.0	
Coke	t	29.3	8.1	
Natural gas	1 000 m³ (0°C)	36.0	10.0	
Blast furnace gas	1 000 m³	3.8	1.1	
Coke oven gas	1 000 m³	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 m³	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	= 10^3	= 1 000
M = mega	= 10^6	= 1 000 000
G = giga	= 10^9	= 1 000 000 000
T = tera	= 10^{12}	= 1 000 000 000 000
P = peta	= 10^{15}	= 1 000 000 000 000 000

Carbon dioxide factors for some fuels

	g CO_2 /MJ
Motor gasolines	69.1
Diesel fuel	71.6
Light fuel oil	72.6
Heavy fuel oil	78.8
Kerosenes	73.2
LPG	65.0
Other oils	71.3–79.2
Hard coal	94.6
Coke	108.0
Natural gas	55.04
Milled peat	105.9
Bark, wood fuel	109.6
Industrial wood residue	109.6
Black liquor	109.6

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 is 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%

Sources: 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

Energy statistics by Statistics Finland

Energy statistics publication and EnergyCD

(Energiatilasto ja EnergiaCD)

Annual publication containing detailed basic statistics on energy in Finland. Includes data on energy consumption and supply, consumption of electricity and district heat, foreign trade, energy prices and emissions etc.

Energy in Finland

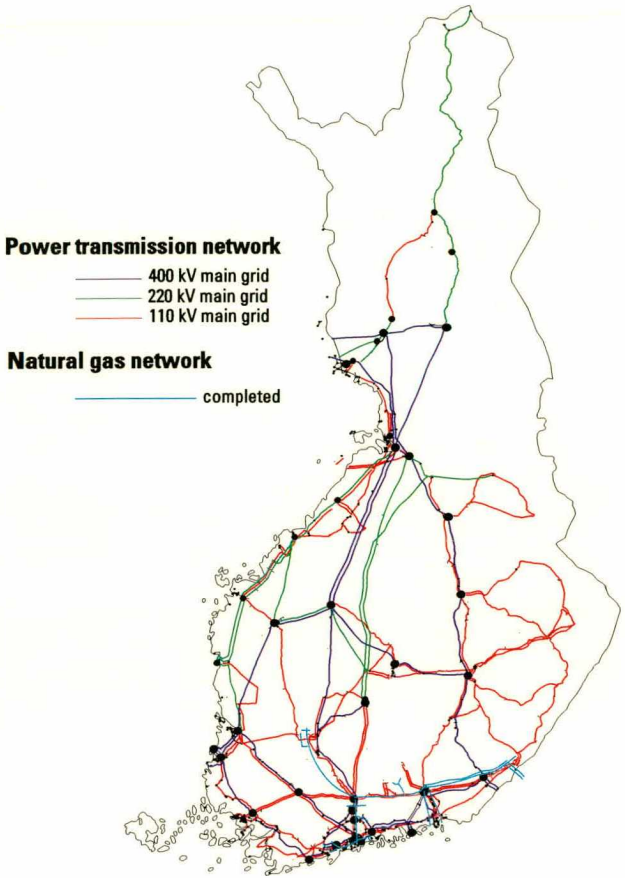
Statistical pocketbook on energy statistics.

Internet www.stat.fi/energy

(www.tilastokeskus.fi/energia)

The updated statistics on consumption of hard coal, energy supply, consumption and prices as well as production of electricity and heat. Latest tables and figures.

Power transmission and natural gas networks 2009



Statistics Finland
Sales Services
PO Box 4 C
FI–00022 STATISTICS FINLAND
Tel. +358 9 1734 2011
Fax. +358 9 1734 2500
myynti@stat.fi
www.stat.fi

ISSN 1457–0491
ISBN 978–952–244–309–0
Product number 3055