

Statistics Finland 

# **ENERGY IN FINLAND**

## 2015

## Area

Situated in northern Europe with an area of 338,432 km<sup>2</sup> 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 2014

Town	Latitude	January	July
Helsinki	60°	-5.9°C	20.1°C
Sodankylä	67°	-15.1°C	18.3°C

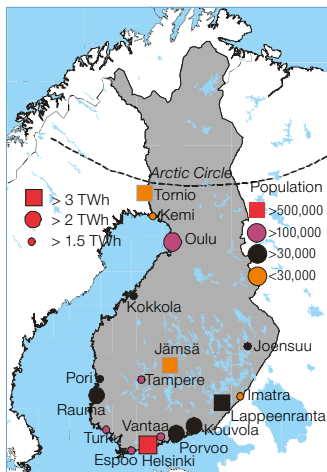
## Economy

In 2014\* GDP totalled € 204.0 bil., i.e. € 37,351/capita. In 2013\* services were 70.4%, secondary production 26.8% and primary production 2.9% of the GDP.

## Structure of industry, Value added gross in production in 2013\*

	bil. €	%
Total industry	35.3	100
Mining and quarrying	0.7	2
Forest industry	3.9	11
Chemical industry	4.8	14
Metal industry	14.7	42
Basic metals and metal prod.	3.9	11
Electrical and electronics ind.	4.6	13
Other metal industry	6.3	18
Other manufacturing ind.	5.4	15
Energy supply	4.1	12
Water supply and waste management	1.6	5

## Municipalities with high electricity consumption 2013



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 2014\*

1,340 PJ (32.0 Mtoe)  
245.0 GJ/capita (5.9 toe/capita)

## Electricity consumption in 2014\*

83.3 TWh  
15,261 kWh/capita

## Contents

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Finland in brief . . . . .	2
Total energy consumption . . . . .	4
Renewable energy sources . . . . .	8
Electricity . . . . .	10
Heating . . . . .	15
Industry . . . . .	18
Enterprises . . . . .	19
Greenhouse gases . . . . .	20
Imports and exports . . . . .	22
International energy statistics . . . . .	25
Networks information . . . . .	35
Net heat contents and conversion factors . . . . .	36
Notes and explanations . . . . .	38



The data in this pocketbook are based on the Preliminary Energy Statistics 2014 figures.

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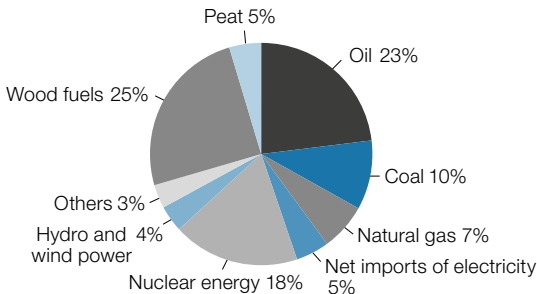
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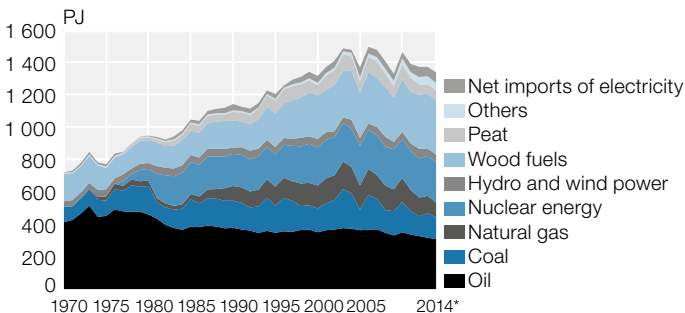
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## Total energy consumption by energy source 2014\*

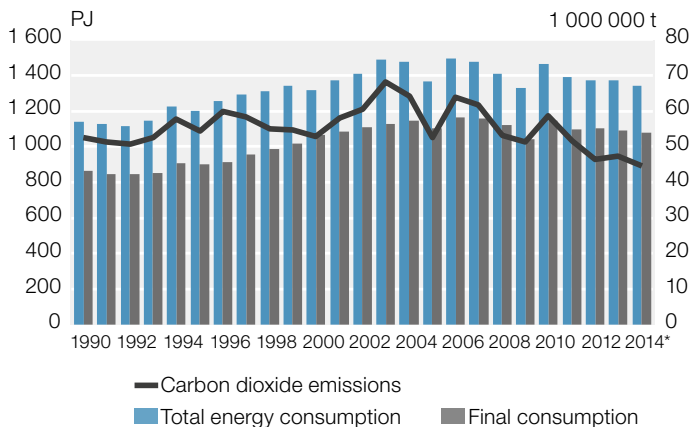


Total energy consumption in 2014\* was 1 340 PJ.

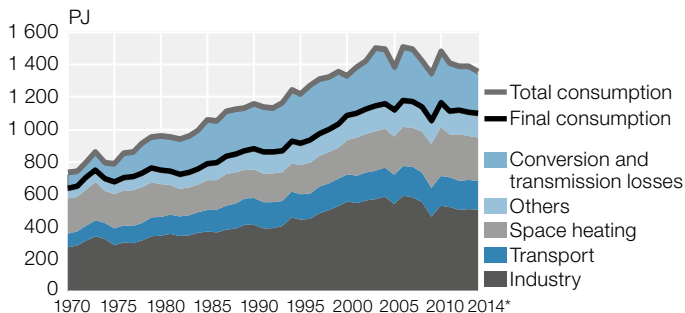
## Total energy consumption by energy source 1970–2014\*



### Energy consumption and carbon dioxide emissions 1990–2014\*



### Total energy consumption and final energy consumption by sector 1970–2014\*



## Total Energy Consumption by Energy Source, PJ

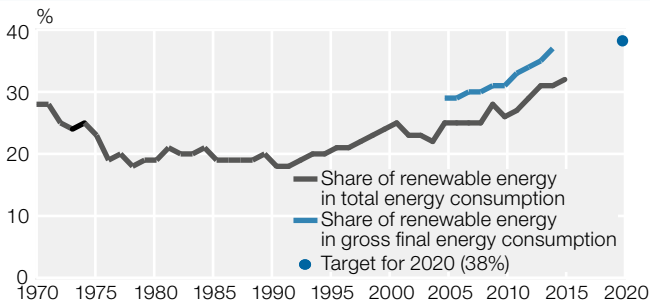
	Oil	Coal	Natural gas	Nuclear energy	Hydro power	Wind power
1970	412.9	94.8	–	–	33.9	–
1975	451.0	94.8	26.5	–	43.5	–
1980	460.3	176.2	32.2	72.3	36.4	–
1985	385.3	167.8	34.1	196.1	44.0	–
1990	377.8	167.4	90.8	197.8	38.7	0.0
1991	367.5	164.4	95.7	200.8	47.0	0.0
1992	361.2	141.9	99.3	198.2	53.8	0.0
1993	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	336.2	145.2	130.0	242.9	44.2	1.7
2012	327.1	122.7	115.0	240.7	60.0	1.8
2013	316.6	151.1	106.9	247.3	45.6	2.8
2014*	308.7	134.8	91.7	247.2	47.5	4.0
<b>Share</b>						
2014*	23%	10%	7%	18%	4%	0.3%
<b>Annual Change</b>						
13/14*	–2%	–11%	–14%	0%	4%	44%

Wood fuels	Peat	Others	Net imports of electricity	Total	
170.1	0.9	6.0	1.9	<b>720.5</b>	1970
130.7	1.7	7.2	14.4	<b>769.8</b>	1975
142.1	17.1	6.0	4.4	<b>946.9</b>	1980
151.3	41.1	9.1	17.0	<b>1 045.8</b>	1985
167.2	53.3	9.8	38.7	<b>1 141.4</b>	1990
158.6	56.0	8.9	25.9	<b>1 124.7</b>	1991
161.2	58.7	9.6	29.6	<b>1 113.5</b>	1992
180.5	64.5	8.7	27.1	<b>1 147.3</b>	1993
201.8	73.7	8.9	21.9	<b>1 226.2</b>	1994
207.5	79.4	9.8	30.3	<b>1 203.2</b>	1995
212.8	87.5	9.9	13.2	<b>1 255.6</b>	1996
237.2	88.0	12.1	27.6	<b>1 291.1</b>	1997
247.6	80.7	13.8	33.5	<b>1 309.2</b>	1998
272.8	71.8	14.6	40.0	<b>1 340.7</b>	1999
267.9	62.5	15.4	42.8	<b>1 315.6</b>	2000
261.5	86.9	17.2	35.9	<b>1 369.8</b>	2001
282.7	91.6	17.9	42.9	<b>1 409.5</b>	2002
287.8	101.2	20.0	17.5	<b>1 485.4</b>	2003
302.0	89.7	21.7	17.5	<b>1 475.9</b>	2004
280.9	69.1	23.5	61.3	<b>1 367.6</b>	2005
315.1	93.8	23.1	41.0	<b>1 494.8</b>	2006
302.3	102.5	25.5	45.2	<b>1 476.2</b>	2007
308.1	81.6	30.4	46.0	<b>1 406.3</b>	2008
272.3	72.0	32.6	43.5	<b>1 328.7</b>	2009
323.9	94.5	35.9	37.8	<b>1 463.3</b>	2010
318.6	84.9	36.7	49.9	<b>1 390.4</b>	2011
332.3	65.0	45.2	62.8	<b>1 372.4</b>	2012
338.7	56.9	50.6	56.6	<b>1 373.2</b>	2013
333.2	62.3	46.1	64.7	<b>1 340.1</b>	2014*
25%	5%	3%	5%	<b>100%</b>	Share 2014*
-2%	9%	-9%	14%	<b>-2%</b>	Annual Change 13/14*

## Renewable energy, PJ

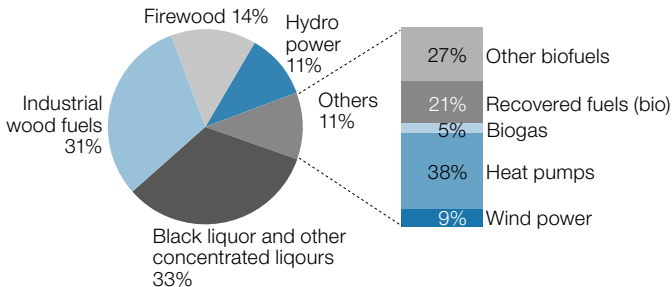
	Hydro power	Wind power	Wood fuels in industry and energy production	Black liquor and others	Small combustion of wood	Heat pumps	Others	Total	Share of total energy consumption, %
1970	33.9	–	20.2	57.7	92.2	..	..	<b>204.0</b>	28%
1980	36.4	–	31.1	67.4	43.6	0.4	..	<b>178.9</b>	19%
1990	38.7	0.0	36.5	86.1	44.7	1.2	0.3	<b>207.4</b>	18%
2000	52.0	0.3	84.7	137.9	45.3	1.5	3.5	<b>325.2</b>	25%
2005	48.3	0.6	95.0	132.1	53.8	2.3	7.4	<b>339.5</b>	25%
2006	40.7	0.5	103.6	156.0	55.5	3.1	6.8	<b>366.3</b>	25%
2007	50.4	0.7	93.2	153.1	56.0	3.8	8.1	<b>365.2</b>	25%
2008	60.9	0.9	103.7	143.7	60.7	6.7	12.6	<b>389.2</b>	28%
2009	45.3	1.0	97.7	110.2	64.5	9.5	16.2	<b>344.3</b>	26%
2010	45.9	1.1	116.4	135.7	71.9	11.0	17.7	<b>399.6</b>	27%
2011	44.2	1.7	122.4	135.1	61.1	12.5	20.0	<b>397.1</b>	29%
2012	60.0	1.8	130.2	135.8	66.3	16.2	22.0	<b>432.3</b>	31%
2013	45.6	2.8	136.5	140.7	61.4	16.7	25.2	<b>429.0</b>	31%
2014*	47.5	4.0	130.6	142.0	60.6	16.8	23.6	<b>425.2</b>	32%

## Share of renewable energy in total energy consumption (1970–2014\*) and gross final energy consumption (2004–2013), and target for 2020



Share of renewable energy in gross final energy consumption in 2013 was 37%.

### Renewable energy 2014\*

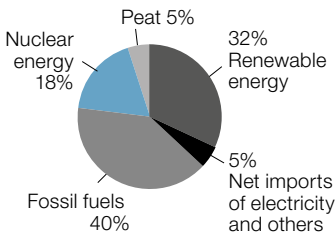


The divisions of the group Others are partly based on data for 2013.

The total consumption of renewable energy in 2014\* was 425 PJ which is 32% of total energy consumption.

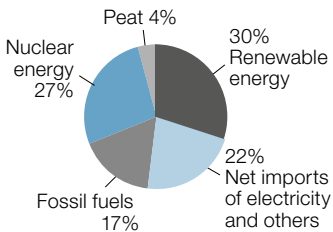
### Renewable energy 2014\*

#### In total energy consumption



Total 1 340 PJ

#### In electricity supply



Total 83 TWh

## Supply and total consumption of electricity, TWh

	Hydro power	Wind power	Nuclear power	Con- densing power <sup>1)</sup>	CHP indus- try	CHP district heat	Net imports	Total consump- tion
1970	9.4	–	–	5.9	4.9	1.0	0.5	<b>21.8</b>
1975	12.1	–	–	6.3	4.8	2.1	4.0	<b>29.2</b>
1980	10.1	–	6.6	11.1	6.6	4.2	1.2	<b>39.9</b>
1985	12.2	–	18.0	4.9	6.4	5.9	4.7	<b>52.0</b>
1990	10.8	0.00	18.1	6.6	7.7	8.5	10.7	<b>62.3</b>
1995	12.8	0.01	18.1	8.9	9.5	11.3	8.4	<b>68.9</b>
1996	11.7	0.01	18.7	13.8	9.7	12.5	3.7	<b>70.0</b>
1997	11.8	0.02	20.1	10.9	10.9	12.3	7.7	<b>73.6</b>
1998	14.8	0.02	21.0	6.3	12.0	13.2	9.3	<b>76.6</b>
1999	12.5	0.05	22.1	7.2	12.0	12.8	11.1	<b>77.8</b>
2000	14.5	0.08	21.6	6.9	10.8	13.4	11.9	<b>79.2</b>
2001	13.0	0.07	21.9	10.8	10.5	15.0	10.0	<b>81.2</b>
2002	10.6	0.06	21.4	12.4	11.4	15.7	11.9	<b>83.5</b>
2003	9.5	0.09	21.8	21.5	11.5	16.0	4.9	<b>85.2</b>
2004	14.9	0.12	21.8	17.4	11.8	16.2	4.9	<b>87.0</b>
2005	13.4	0.17	22.4	5.3	10.8	15.6	17.0	<b>84.7</b>
2006	11.3	0.15	22.0	17.6	12.0	15.5	11.4	<b>90.0</b>
2007	14.0	0.19	22.5	14.4	11.6	15.1	12.6	<b>90.4</b>
2008	16.9	0.26	22.0	8.8	11.2	15.3	12.8	<b>87.2</b>
2009	12.6	0.28	22.6	9.0	9.0	15.8	12.1	<b>81.3</b>
2010	12.7	0.29	21.9	14.2	10.4	17.7	10.5	<b>87.7</b>
2011	12.3	0.48	22.3	9.8	10.1	15.5	13.9	<b>84.2</b>
2012	16.7	0.49	22.1	5.2	8.8	14.5	17.4	<b>85.1</b>
2013	12.7	0.77	22.7	8.9	9.1	14.3	15.7	<b>84.0</b>
2014*	13.2	1.11	22.7	6.7	9.2	12.6	18.0	<b>83.3</b>

### Share

2014*	16%	1%	27%	8%	11%	15%	22%	<b>100%</b>
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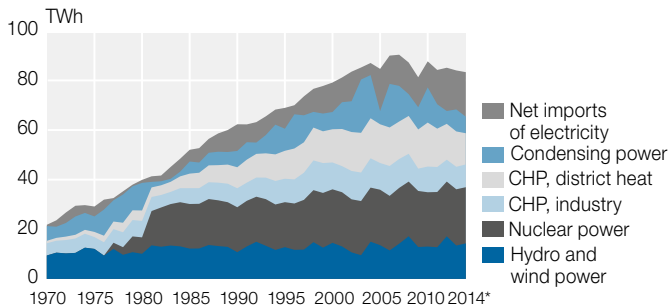
### Annual Change

13/14*	4%	44%	0%	–25%	1%	–12%	14%	<b>–1%</b>
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1) Condensing power includes conventional condensing power, peak gas turbine power and gas engines.

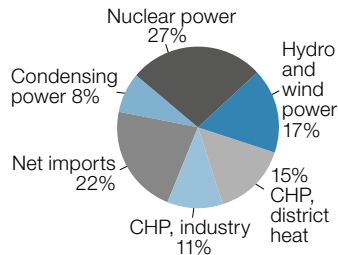
Sources: Statistics Finland, Finnish Energy Industries and Technical Research Centre of Finland VTT (wind power)

## Electricity supply 1970–2014\*

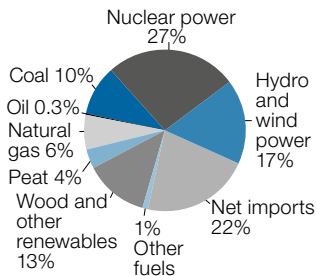


## Electricity supply 2014\*

### By mode of production



### By source



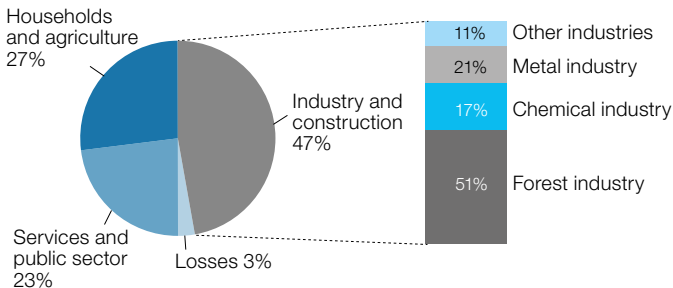
Total electricity supply in 2014\* was 83.3 TWh

## Electricity consumption by sector, TWh

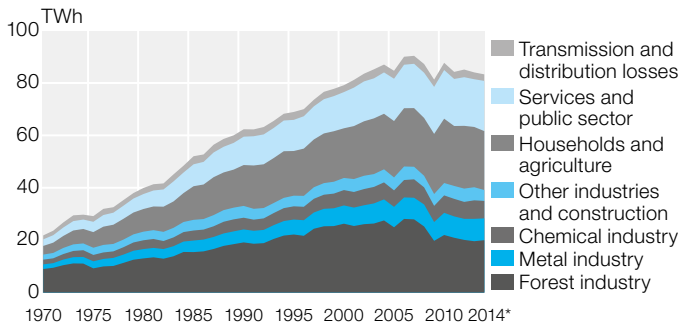
	Industry and construction					Households and agriculture	Services and public sector	Transm. and distrib. losses	Total
	Total	Forest industry	Metal industry	Chemical industry	Others				
1970	14.5	9.0	1.8	1.8	1.9	3.3	2.5	1.5	<b>21.8</b>
1975	17.1	9.2	2.7	2.4	2.7	6.0	3.9	2.2	<b>29.2</b>
1980	23.3	13.0	3.6	3.4	3.3	8.6	5.7	2.3	<b>39.9</b>
1985	27.8	15.4	4.4	3.8	4.1	12.8	8.4	3.1	<b>52.0</b>
1990	33.1	19.1	5.0	4.5	4.5	15.6	10.8	2.8	<b>62.3</b>
1995	37.0	22.2	5.7	5.0	4.1	17.1	11.9	3.0	<b>68.9</b>
1996	36.9	21.7	6.0	5.1	4.2	18.0	12.4	2.7	<b>70.0</b>
1997	40.2	24.4	6.2	5.2	4.4	18.2	12.6	2.5	<b>73.6</b>
1998	41.8	25.3	6.7	5.4	4.4	19.0	13.1	2.8	<b>76.6</b>
1999	42.3	25.4	6.8	5.6	4.5	19.3	13.4	2.8	<b>77.8</b>
2000	43.8	26.3	7.0	5.9	4.6	19.0	13.8	2.6	<b>79.2</b>
2001	43.3	25.4	7.0	5.9	4.9	20.2	14.7	2.9	<b>81.2</b>
2002	44.6	26.1	7.2	6.2	5.1	20.8	15.2	2.9	<b>83.5</b>
2003	45.2	26.4	7.7	6.3	4.9	21.3	15.3	3.4	<b>85.2</b>
2004	47.1	27.5	8.0	6.5	5.0	21.2	15.8	3.0	<b>87.0</b>
2005	44.0	24.9	7.8	6.3	4.9	21.5	16.2	3.0	<b>84.7</b>
2006	48.1	28.1	8.2	6.6	5.2	22.2	16.6	3.1	<b>90.0</b>
2007	48.0	27.9	8.3	7.0	4.8	22.4	16.9	3.0	<b>90.4</b>
2008	44.6	25.2	8.4	6.5	4.4	22.1	17.3	3.3	<b>87.2</b>
2009	37.6	19.7	7.2	6.2	4.5	22.9	18.0	2.8	<b>81.3</b>
2010	41.8	22.0	8.5	6.7	4.7	24.5	18.6	2.8	<b>87.7</b>
2011	40.7	20.9	8.2	6.7	4.9	22.9	18.0	2.7	<b>84.2</b>
2012	39.7	20.1	8.0	6.5	5.1	24.0	18.6	2.9	<b>85.1</b>
2013	40.2	19.6	8.5	7.1	5.0	23.0	18.2	2.6	<b>84.0</b>
2014*	39.2	20.0	8.3	6.7	4.2	22.5	19.2	2.5	<b>83.3</b>
<b>Share</b>									
2014*	47%	24%	10%	8%	5%	27%	23%	3%	<b>100 %</b>
<b>Annual Change</b>									
13/14*	-3%	2%	-2%	-6%	-17%	-2%	5%	-4%	<b>-1%</b>

Sources: Finnish Energy Industries and Statistics Finland

## Electricity consumption by sector 2014\*



## Electricity consumption by sector 1970–2014\*



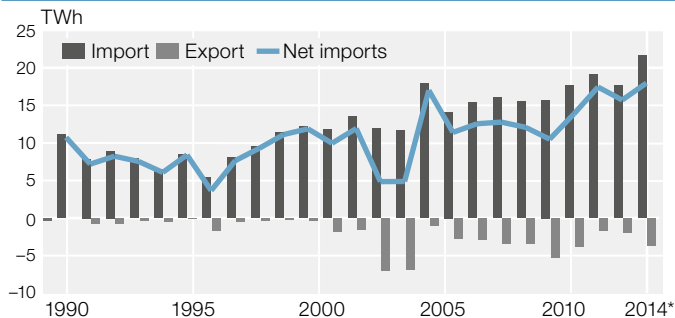
## Energy sources in electricity generation, PJ

	Hydro power	Nuclear energy	Hard coal	Oil	Natural gas	Peat	Other fuels	Net imports of electr.	Total	CO <sub>2</sub> emissions (Mt)
1970	33.9	–	41.8	32.1	–	..	17.9	1.9	<b>127.6</b>	..
1980	36.4	72.3	102.7	26.8	12.6	..	29.2	4.4	<b>284.4</b>	14
1990	38.7	197.8	61.3	9.7	24.8	17.2	29.1	38.7	<b>417.3</b>	11
2000	52.3	235.4	55.4	3.3	43.2	21.5	50.3	42.8	<b>504.2</b>	12
2005	48.9	243.9	37.6	3.2	47.1	25.4	60.8	61.3	<b>528.2</b>	11
2006	41.3	240.0	119.8	3.3	58.3	43.0	68.8	41.0	<b>615.4</b>	21
2007	51.0	245.5	97.1	3.0	45.2	46.3	62.4	45.2	<b>595.8</b>	19
2008	61.8	240.5	54.1	3.8	47.4	31.5	66.5	46.0	<b>551.7</b>	13
2009	46.3	246.6	74.3	3.3	40.9	24.5	50.9	43.5	<b>530.2</b>	13
2010	46.9	238.8	103.2	2.8	46.9	38.5	66.1	37.8	<b>581.0</b>	18
2011	46.0	243.0	72.7	2.3	41.7	33.9	58.3	49.9	<b>547.9</b>	13
2012	61.8	240.7	41.8	2.2	27.8	19.2	64.4	62.8	<b>520.7</b>	9
2013	48.4	247.3	72.4	1.7	27.9	17.5	69.8	56.6	<b>541.6</b>	11
2014*	51.5	247.1	56.6	1.5	22.5	18.0	63.0	64.7	<b>524.9</b>	9

Wind power is included in hydro power.

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

## Imports and exports of electricity 1990–2014\*



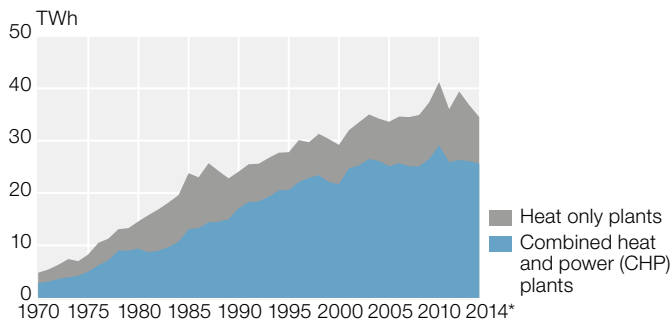
Source: Finnish Energy Industries

## Production and consumption of district heat, TWh

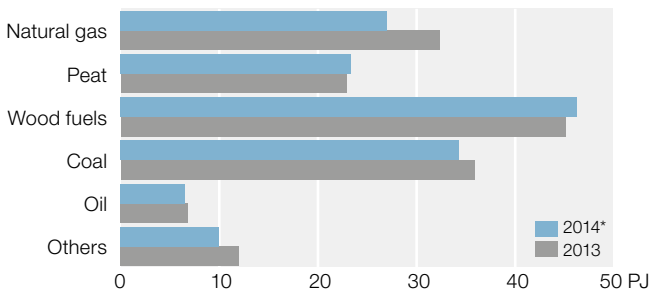
	Net production of district heat			Net-network and measuring losses	Consumption of district heat			
	Heat only plants	CHP plants	Total		Residential buildings	Industrial buildings	Other consumers	Total
1970	2.0	2.8	<b>4.8</b>	0.3	..	0.6	..	<b>4.5</b>
1975	3.3	5.0	<b>8.2</b>	0.6	4.7	0.9	2.0	<b>7.7</b>
1980	5.2	9.4	<b>14.6</b>	1.3	7.8	1.4	4.1	<b>13.3</b>
1985	10.7	13.1	<b>23.8</b>	2.2	12.6	2.1	7.0	<b>21.7</b>
1990	7.0	17.1	<b>24.1</b>	1.9	12.5	2.0	7.7	<b>22.3</b>
1991	7.2	18.3	<b>25.5</b>	2.0	13.0	2.1	8.4	<b>23.5</b>
1992	7.2	18.4	<b>25.6</b>	2.0	13.1	2.1	8.4	<b>23.6</b>
1993	7.4	19.3	<b>26.7</b>	2.0	13.9	2.3	8.5	<b>24.6</b>
1994	7.2	20.5	<b>27.6</b>	2.3	14.0	2.4	8.9	<b>25.3</b>
1995	7.2	20.6	<b>27.8</b>	2.4	14.3	2.7	8.4	<b>25.4</b>
1996	8.0	22.1	<b>30.0</b>	2.5	15.3	2.9	9.4	<b>27.6</b>
1997	6.8	22.9	<b>29.7</b>	2.6	15.1	2.9	9.1	<b>27.1</b>
1998	7.9	23.4	<b>31.3</b>	2.7	15.6	3.0	9.9	<b>28.5</b>
1999	8.2	22.1	<b>30.4</b>	2.6	15.4	3.0	9.5	<b>27.8</b>
2000	7.5	21.7	<b>29.2</b>	2.9	14.9	2.6	8.8	<b>26.3</b>
2001	7.3	24.7	<b>32.0</b>	2.8	16.2	2.9	10.1	<b>29.2</b>
2002	8.2	25.3	<b>33.5</b>	3.5	16.6	3.0	10.4	<b>30.0</b>
2003	8.5	26.5	<b>35.0</b>	3.8	17.6	3.0	10.6	<b>31.2</b>
2004	8.1	26.1	<b>34.2</b>	3.9	17.0	2.9	10.3	<b>30.3</b>
2005	8.5	25.1	<b>33.5</b>	3.8	16.6	3.0	10.2	<b>29.8</b>
2006	8.9	25.7	<b>34.7</b>	4.0	17.1	3.1	10.5	<b>30.7</b>
2007	9.4	25.1	<b>34.5</b>	3.7	17.3	3.1	10.4	<b>30.8</b>
2008	9.8	25.1	<b>34.9</b>	4.0	17.2	3.0	10.6	<b>30.9</b>
2009	10.8	26.5	<b>37.3</b>	3.7	18.3	3.3	12.0	<b>33.6</b>
2010	12.1	29.1	<b>41.2</b>	4.1	20.2	3.7	13.2	<b>37.1</b>
2011	10.1	25.9	<b>36.0</b>	3.6	17.6	3.3	11.5	<b>32.4</b>
2012	13.1	26.3	<b>39.5</b>	4.2	19.4	3.5	12.4	<b>35.3</b>
2013	10.7	26.1	<b>36.8</b>	3.6	18.3	3.2	11.7	<b>33.2</b>
2014*	8.9	25.6	<b>34.5</b>	3.2	..	..	..	<b>31.3</b>

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

## Production of district heat 1970–2014\*

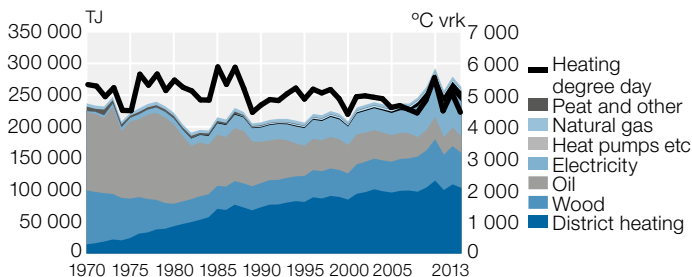


## Fuel consumption in production of district heat 2013–2014\*

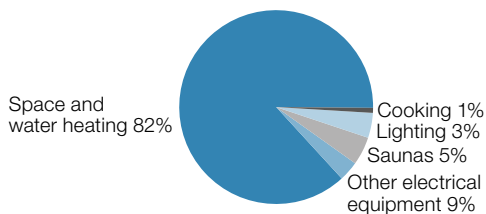


Sources: Statistics Finland, Finnish Energy Industries

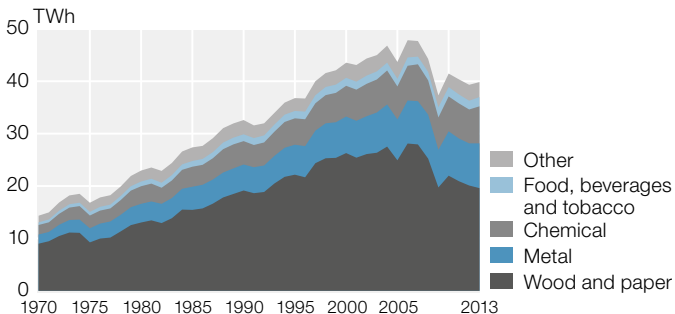
## Consumption of energy for heating residential, commercial and public buildings 1970–2013



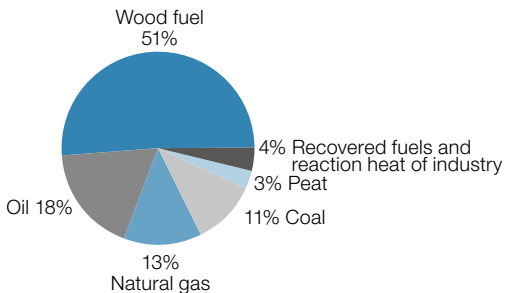
## Energy consumption in households 2013



## Electricity consumption by branch of industry 1970–2013



## Fuel consumption in industry 2013

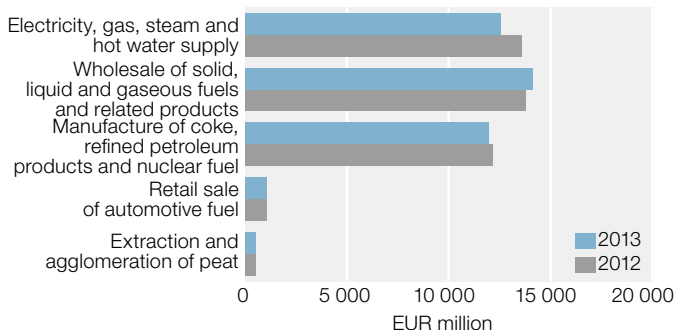


Total fuel consumption in industry in 2013 was 379 PJ.

## Enterprises in energy sector in 2013

	Number of enterprises	Turnover, EUR mil.	Employees	Staff expenses, EUR mil.
Extraction and agglomeration of peat	473	494	1 595	59
Manufacture of coke, refined petroleum products and nuclear fuel	17	11 981	2 659	216
Electricity, gas, steam and hot water supply	800	12 568	11 328	736
Wholesale of solid, liquid and gaseous fuels and related products	157	14 108	1 125	84
Retail sale of automotive fuel	746	1 050	4 152	124

## Turnover of enterprises in energy sector 2012–2013



Source: Statistics Finland, Financial statements of enterprises.

## Greenhouse gas emissions 1990–2014\*

### The gases included in the Kyoto Protocol

	1990	1995	2000	2005	2010	2011	2012	2013	2014*
	million tonnes of CO <sub>2</sub> equivalent								
Energy	53.7	55.4	53.8	53.6	60.0	52.9	47.5	48.4	45.5
Industrial processes and product use	5.3	4.8	5.7	6.4	6.5	6.2	6.0	6.0	5.7
Agriculture	7.6	6.9	6.5	6.5	6.7	6.5	6.5	6.5	6.5
Waste	4.7	4.6	3.9	2.8	2.6	2.5	2.5	2.3	2.2
Indirect CO <sub>2</sub> emissions from energy and industrial processes and product use	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1

### Total emission

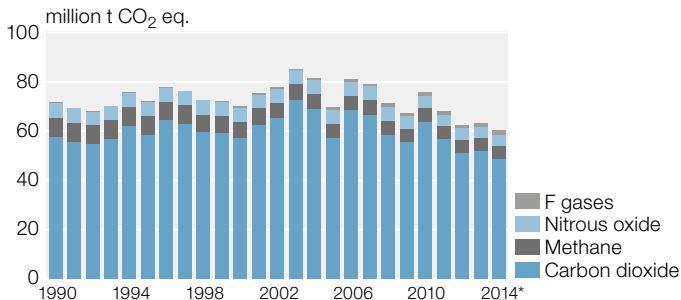
without land use, land use change and forestry

**71.6 72.0 70.1 69.6 75.8 68.2 62.5 63.2 60.1**

Land use, land use change and forestry

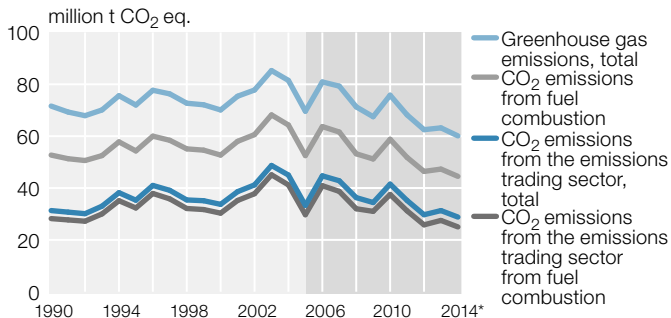
**-15.8 -15.5 -24.5 -29.6 -26.7 -26.2 -27.9 -20.4 -21.1**

## Greenhouse gas emissions by gases 1990–2014\*



Source: Statistics Finland, Greenhouse Gas Inventory

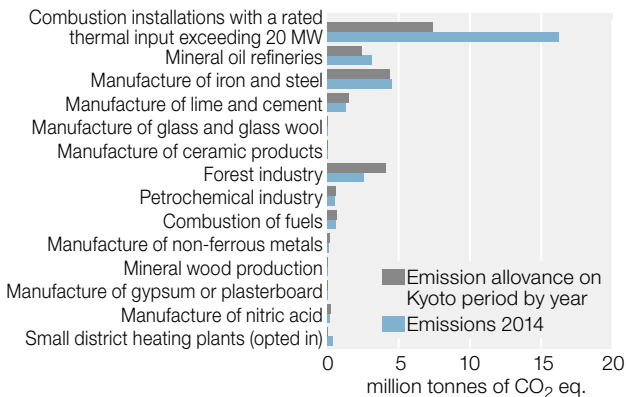
## Finland's greenhouse gas emissions 1990–2014\*



The EU's emissions trading started in 2005.

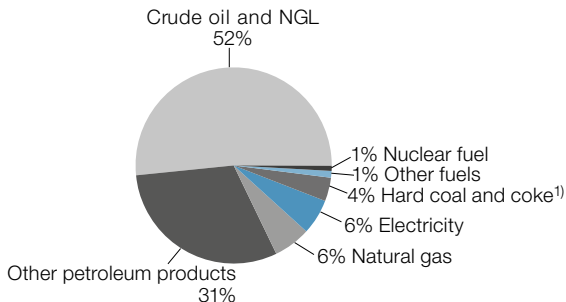
Source: Statistics Finland, Greenhouse Gas Inventory

## National allowances under EU ETS and verified CO<sub>2</sub> emissions for 2014 by branch in Finland



Source: European Commission

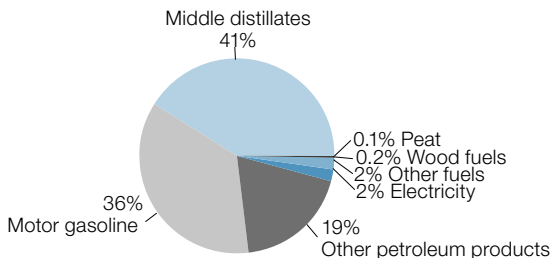
## Value of energy imports 2014\*



1) includes coking coal

Total imports of energy products were 10 604 million euros in 2014\*. That was 18.4% of total imports to Finland.

## Value of energy exports 2014\*



Total exports of energy products were 5 231 million euros in 2014\*. That was 9.4% of total exports from Finland.

Source: Finnish Customs/Foreign Trade Statistics

## Energy imports 2014\*

	Unit	Russia	Sweden	Norway	Other countries	Total Amount	Total Value mil. €
Coal and coal products	1000 t	2 841	0	6	1 585	4 432	386
Natural gas	mil. m <sup>3</sup>	2 897	–	–	0	2 897	649
Oil and petroleum products <sup>1)</sup>	1000 t	9 707	1 064	985	2 903	14 660	8 830
Peat	1000 t	8	13	0	5	25	1
Wood fuels <sup>2)</sup>	1000 t	202	18	0	30	250	13
Nuclear fuel	tU	20	19	–	19	59	91
Electricity	GWh	2	15	0	0	18	635
<b>Value</b>	<b>€ mil.</b>	<b>6 320</b>	<b>1 390</b>	<b>627</b>	<b>2 267</b>		<b>10 604</b>

1) Includes natural gas condensate

2) Includes wood pellets and other wood fuels

Source: Finnish Customs/ Foreign Trade Statistics

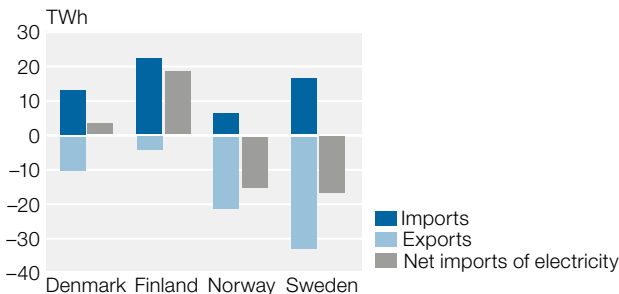
## Energy exports 2014\*

	Unit	Sweden	United Kingdom	Estonia	Other countries	Total Amount	Total Value mil. €
Coke	1000 t	–	–	–	0	0	0
Petroleum products	1000 t	1 775	1 013	461	4 003	7 251	5 105
Peat	1000 t	4	–	1	32	36	5
Wood fuels <sup>1)</sup>	1000 t	81	–	0	29	110	10
Electricity	TWh	–	–	3	0	3	111
<b>Value</b>	<b>€ mil.</b>	<b>1 395</b>	<b>660</b>	<b>433</b>	<b>2 743</b>		<b>5 231</b>

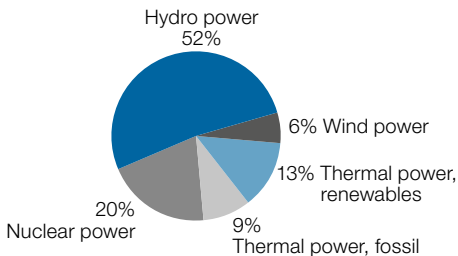
1) Includes wood pellets and other wood fuels

Source: Finnish Customs/ Foreign Trade Statistics

## Imports and exports of electricity in Nordic countries 2014



## Total electricity generation in Nordic Countries 2014



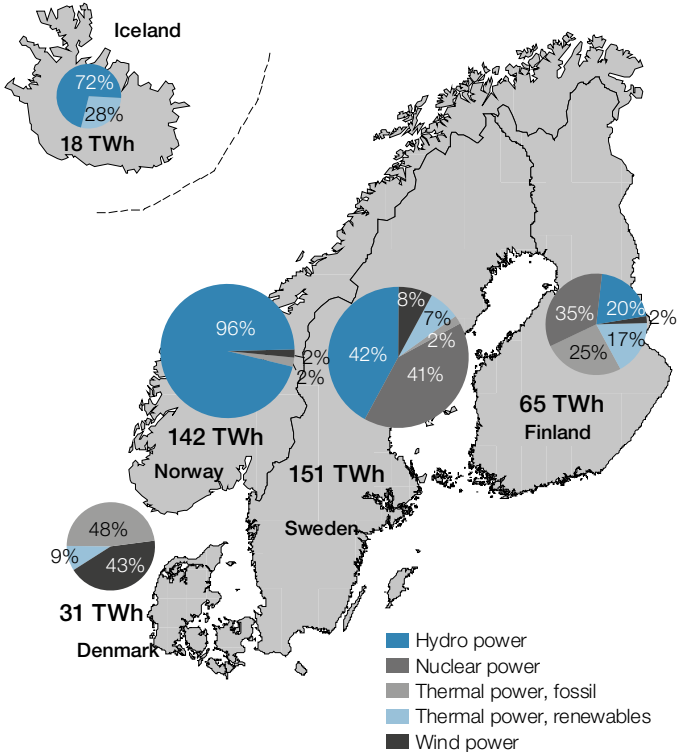
Total generation 407 TWh

## Electricity consumption in Nordic Countries 2014, TWh

Sweden	136
Norway	125
Finland	83
Denmark	33
Iceland	18
<b>Total</b>	<b>395</b>

Source: Entso-e: Monthly Statistics 2014

## Electricity generation in Nordic Countries 2014

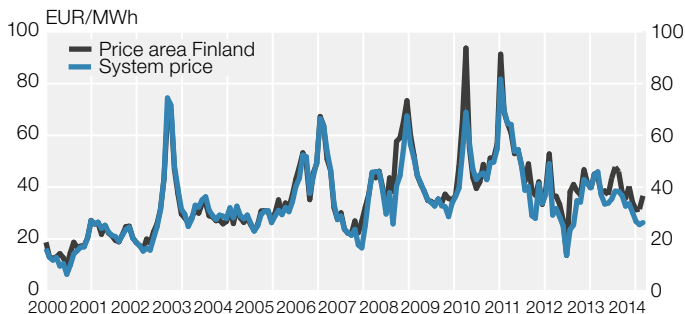


Source: Entso-e: Monthly Statistics 2014

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

Year	Month	Oslo	Stockholm	Helsinki	Copenhagen	Tallinn	System
2014	1	33.18	32.84	40.23	31.05	40.98	33.60
	2	30.14	30.14	34.16	30.08	34.79	30.23
	3	26.44	26.53	31.21	26.79	31.57	26.74
	4	23.52	27.17	31.53	28.73	31.64	25.52
	5	19.28	35.11	36.62	35.29	36.85	26.30
	6	18.95	31.47	35.43	32.73	35.81	25.19
	7	26.77	29.76	36.81	31.06	44.17	28.52
	8	29.77	34.54	38.38	34.53	39.10	32.07
	9	33.16	36.46	38.33	37.65	42.97	34.91
	10	27.57	31.27	36.72	32.19	40.22	30.61
	11	28.04	30.15	35.41	32.63	35.41	29.87
	12	31.17	31.47	37.13	32.99	37.42	31.67

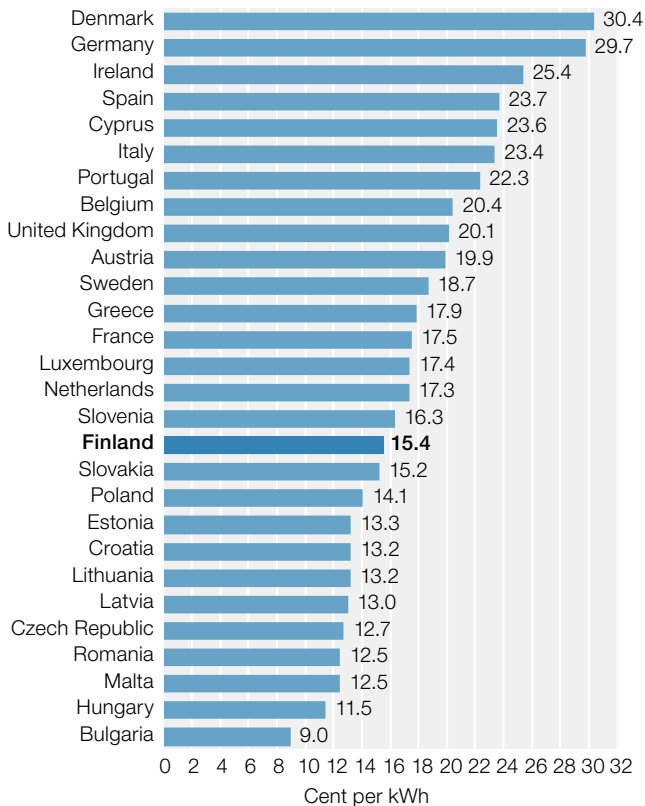
## Development of spot prices on Nord Pool



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

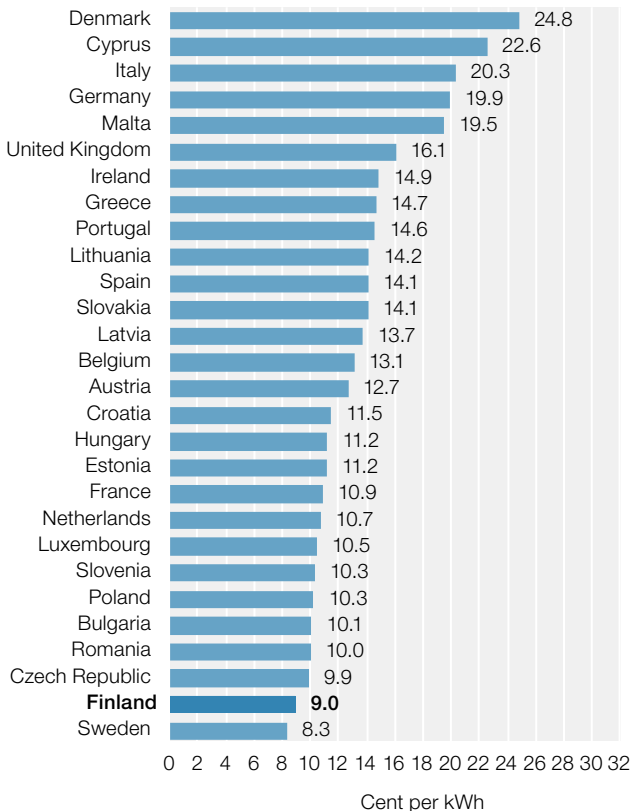
## Electricity prices for households on the 2nd half of 2014



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

Source: Eurostat

## Electricity prices for industry on the 2nd half of 2014



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	2012	2013
Germany	15 040	14 910	14 300	14 330	14 310	13 280	13 280	13 340
France	8 540	9 540	10 120	10 790	11 570	10 870	10 800	10 820
United Kingdom	8 530	8 820	9 310	9 650	9 800	8 600	8 260	8 490
Italy	5 590	6 430	6 770	7 290	7 850	7 070	7 200	6 960
Spain	3 170	3 770	4 270	5 180	6 040	5 460	5 370	5 350
Poland	..	4 330	4 140	3 730	3 870	3 970	4 240	4 090
Netherlands	2 550	2 790	3 040	3 160	3 410	3 390	3 360	3 420
Belgium	1 840	2 040	2 260	2 480	2 460	2 390	2 500	2 290
Sweden	1 960	1 990	2 150	2 050	2 130	1 900	2 080	2 090
Czech Republic	..	2 090	1 750	1 720	1 890	1 780	1 810	1 790
<b>Finland</b>	<b>1 120</b>	<b>1 200</b>	<b>1 230</b>	<b>1 360</b>	<b>1 450</b>	<b>1 420</b>	<b>1 490</b>	<b>1 450</b>
Austria	990	1 050	1 130	1 210	1 440	1 350	1 410	1 410
Romania	..	2 430	1 940	1 530	1 640	1 490	1 530	1 480
Greece	990	940	1 000	1 180	1 310	1 280	1 160	1 160
Portugal	520	760	860	1 060	1 150	1 050	990	940
Hungary	..	1 210	1 100	1 060	1 160	1 050	1 050	990
Denmark	820	750	850	830	820	800	780	750
Slovakia	..	910	740	770	800	700	730	700
Bulgaria	..	1 160	950	780	830	730	800	760
Ireland	370	430	460	600	630	620	590	580
Croatia	..	380	300	330	370	360	360	340
Slovenia	..	240	250	270	310	300	300	290
Lithuania	..	670	360	300	360	350	290	300
Estonia	..	420	230	210	240	220	260	260
Latvia	..	330	190	160	190	190	180	190
Luxembourg	130	150	140	150	200	180	190	190
Cyprus	..	70	80	100	110	120	110	110
Malta	..	20	30	30	40	40	40	40
<b>EU28</b>	..	<b>69 800</b>	<b>69 960</b>	<b>72 300</b>	<b>76 380</b>	<b>70 960</b>	<b>71 150</b>	<b>70 580</b>

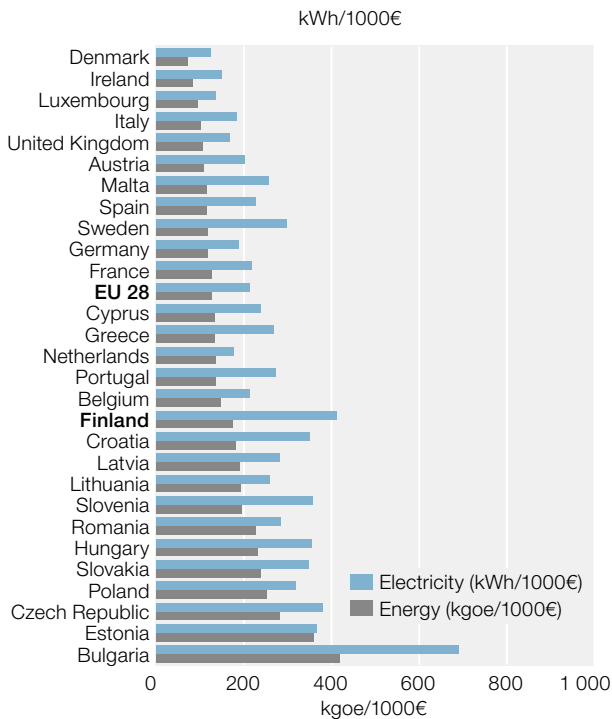
Source: Eurostat

## Electricity consumption in EU, TWh

	1985	1990	1995	2000	2005	2010	2012	2013
Germany	425	455	451	483	522	532	526	518
France	253	302	343	385	423	445	434	448
United Kingdom	242	274	295	329	349	329	318	317
Italy	174	215	238	273	301	299	297	287
Spain	103	126	141	188	242	245	239	232
Sweden	114	120	125	129	131	131	127	125
Poland	92	96	90	99	105	119	123	124
Netherlands	61	74	83	98	105	107	106	106
Belgium	48	58	68	78	80	83	81	82
<b>Finland</b>	<b>49</b>	<b>59</b>	<b>65</b>	<b>76</b>	<b>81</b>	<b>83</b>	<b>81</b>	<b>80</b>
Austria	37	43	47	52	58	62	63	63
Czech Republic	43	48	48	49	55	57	57	57
Greece	24	28	34	43	51	53	52	49
Portugal	17	24	29	38	46	50	46	45
Romania	..	54	40	34	39	42	42	40
Hungary	30	32	28	29	32	34	35	35
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	25
Ireland	10	12	15	20	24	25	24	24
Croatia	0	13	10	12	14	16	15	15
Slovenia	..	9	9	11	13	12	13	13
Lithuania	..	12	6	6	8	8	9	9
Estonia	..	7	5	5	6	7	7	7
Latvia	..	8	4	4	6	6	7	7
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
<b>EU 28</b>	<b>1 772</b>	<b>2 165</b>	<b>2 264</b>	<b>2 531</b>	<b>2 786</b>	<b>2 844</b>	<b>2 797</b>	<b>2 778</b>

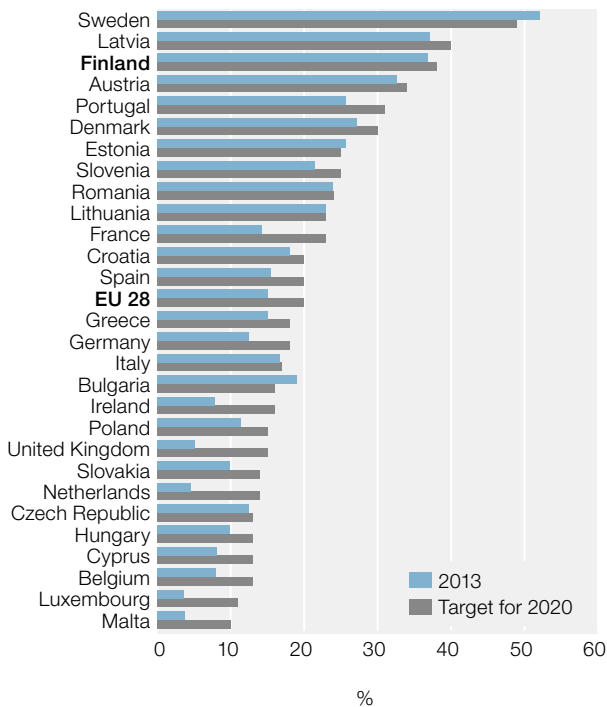
Source: Eurostat

## Consumption of energy and electricity per GDP-unit in EU countries 2013



Source: Eurostat

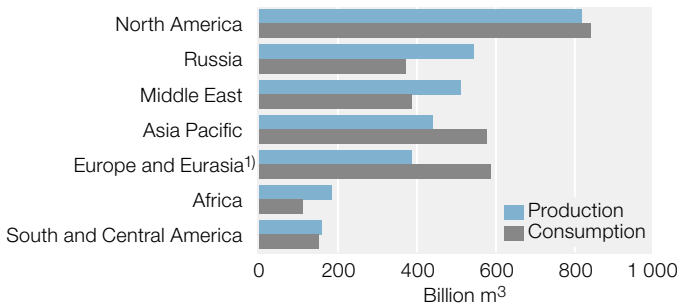
## Share of renewable energy in gross final energy consumption in 2013, and the target for 2020



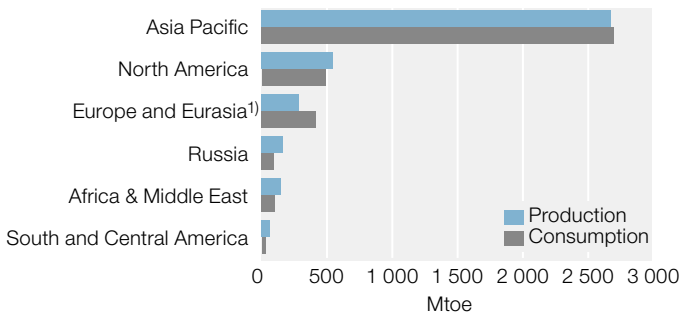
This indicator is calculated on the basis of data covered by Regulation (EC) No 1099/2008 on energy statistics. Reporting countries provide additional information on renewable source not covered by the Regulation. This indicator may be considered an estimate of the indicator described in Directive 2009/28/EC 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 2013

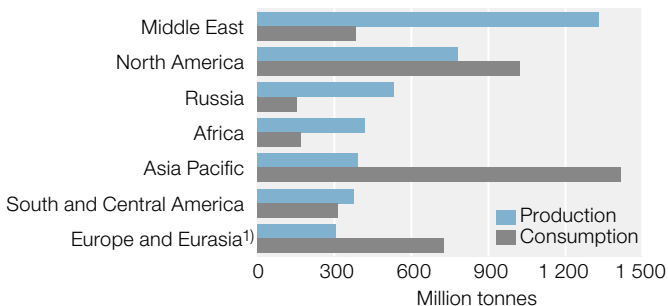


### Coal production and consumption by region in 2013



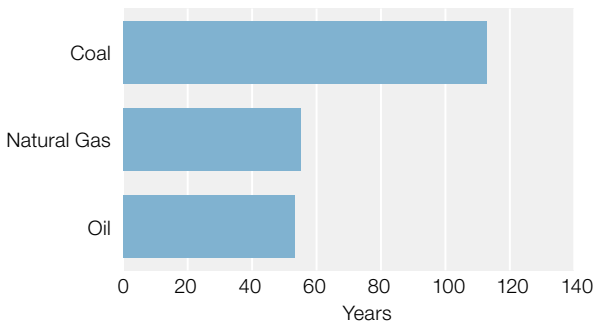
1) excludes Russia

## Oil production and consumption by region in 2013



1) excludes Russia

## World oil, natural gas and coal reserve sufficiency



Total reserves at the end of 2013: oil 238 billion tonnes, natural gas 186 trillion m<sup>3</sup>, coal 892 billion tonnes.

Source: BP Statistical Review of World Energy June 2014

## Electricity network information

	1990	2000	2012	2013	2014*
Transformer substations, number					
High voltage substations	715	591	984	885	883
Distribution substations	114 019	124 851	133 138	134 395	133 512
Lengths of low voltage lines (0.4 kV–1 kV), km					
Overhead lines	162 076	158 576	148 769	145 268	141 971
Cables (inc. sea cable)	45 705	63 327	89 235	92 843	97 924
Cabling rate	22 %	29 %	37 %	39 %	41 %
Lengths of medium voltage lines (over 1 kV–70 kV), km					
Overhead lines	122 329	121 754	121 191	119 807	117 927
Cables (inc. sea cable)	10 586	12 116	17 005	20 406	23 161
Cabling rate	8 %	9 %	12 %	15 %	16 %
Lengths of high voltage lines (110 kV–400 kV), km					
110 kV	14 000	15 050	15 754	16 017	16 136
220 kV	2 471	2 510	2 568	2 331	2 225
400 kV	3 164	3 926	4 586	5 083	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/energia2014/](http://pxweb2.stat.fi/Sahkoiset_julkaisut/energia2014/).

### Energy in Finland

Statistical pocketbook on energy statistics.

### Homepage of the Energy topic [www.stat.fi/energy](http://www.stat.fi/energy) ([www.tilastokeskus.fi/energia](http://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

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Fuels	Unit	Net heat content		Density t/m <sup>3</sup>
		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	43.2	12.0	0.84
Kerosenes	t	43.3	12.0	0.80
Other kerosines	t	43.1	12.0	0.81
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	0.51
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 <sup>3</sup> (0°C)	36.0	10.0	
Blast furnace gas	1 000 m <sup>3</sup>	3.8	1.1	
Coke oven gas	1 000 m <sup>3</sup>	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 <sup>3</sup>	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 <sub>2</sub> / MJ	
Motor gasolines	69.4	Default bio share 8%
Diesel fuel	65.5	Default bio share 11%
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	108.0	
Natural gas	55.04	
Milled peat	105.9	
Bark, wood fuel	109.6	
Industrial wood residue	109.6	
Black liquor	109.6	

Source: Statistics Finland/Fuel classification 2015  
[www.tilastokeskus.fi/polttaineluokitus](http://www.tilastokeskus.fi/polttaineluokitus)

## Note

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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

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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

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



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