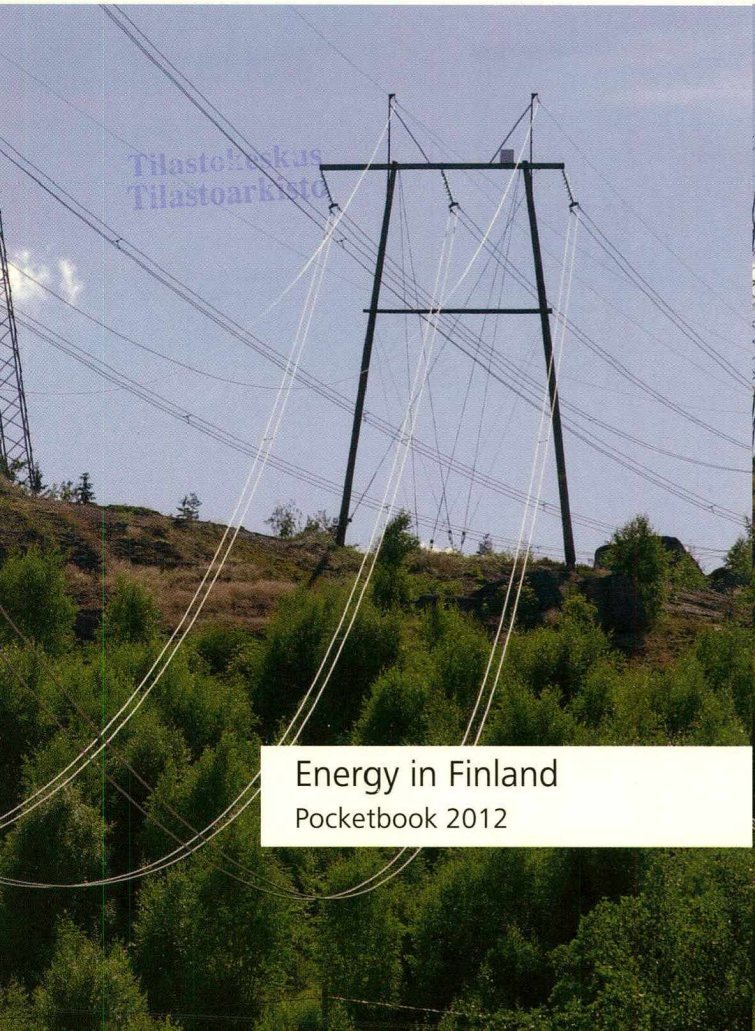




# Energy in Finland

## Pocketbook 2012

# 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 2011

| Town | Latitude | January | July |
|---|---|---|---|
| Helsinki | 60° | –4.4°C | +20.6°C |
| Sodankylä | 67° | –13.4°C | +16.6°C |

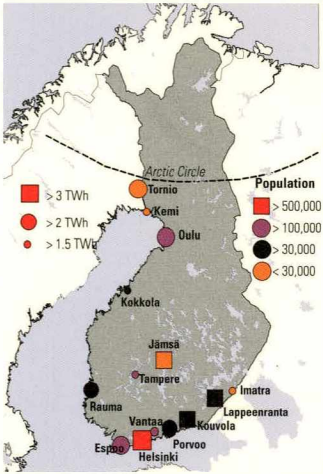
## Economy

In 2011 GDP totalled € 192 bil., i.e. € 35,559/capita. In 2010 services were 68.7%, secondary production 28.3% and primary production 3.0% of the GDP.

## Structure of industry, Value added gross in production in 2010*

| | bil. € | % |
|---|---|---|
| **Total industry** | 34.0 | **100** |
| Mining and quarrying | 0.7 | 2 |
| Forest industry | 4.3 | 13 |
| Chemical industry | 4.0 | 12 |
| Metal industry | 14.4 | 42 |
| Basic metals and metal prod. | 3.5 | 10 |
| Electrical and electronics ind. | 4.9 | 14 |
| Other metal industry | 6.0 | 18 |
| Other manufacturing ind. | 5.3 | 16 |
| Energy supply | 3.9 | 11 |
| Water supply and waste management | 1.3 | 4 |

**Municipalities with high electricity consumption 2010**




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 2011*

1,389 PJ (33.2 Mtoe)
257.7 GJ/capita (6.2 toe/capita)

## Electricity consumption in 2011*

84.4 TWh
15,666 kWh/capita

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The data in this pocketbook are based on the Preliminary Energy Statistics 2011 figures.


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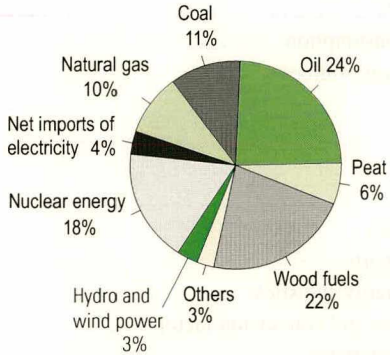
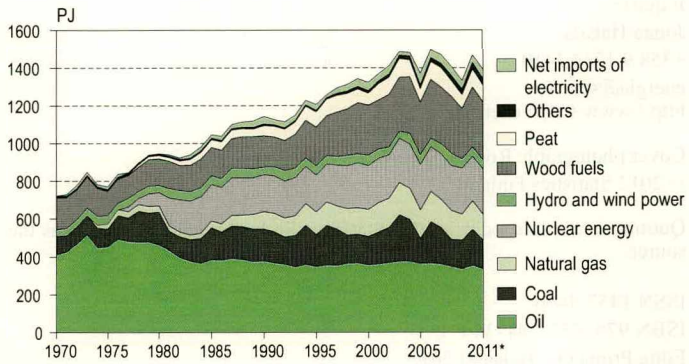
## Total energy consumption by energy source 2011*

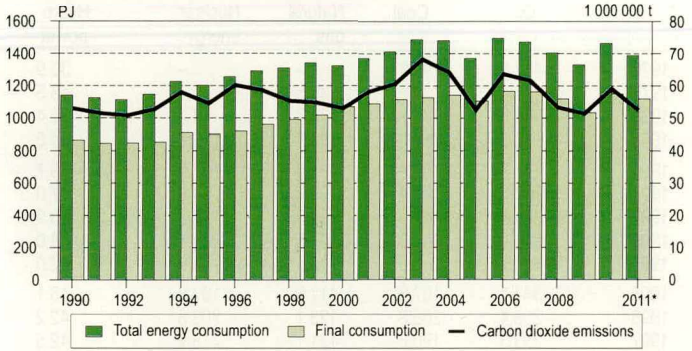



Total energy consumption in 2011* was 1 389 PJ.

## Total energy consumption by energy source 1970–2011

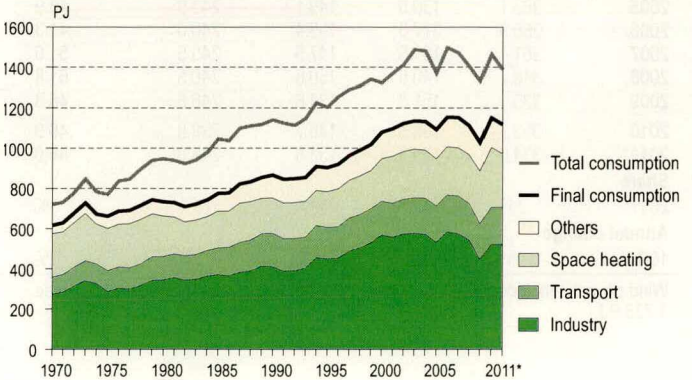


## Final energy consumption 1990–2011




Final energy consumption in 2011* was 1 118 PJ.

## Total energy consumption and final energy consumption by sector 1970–2011



## 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 |
| 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 | 167.6 | 117.6 | 197.8 | 46.1 |
| 1996 | 356.4 | 206.8 | 123.1 | 203.8 | 42.2 |
| 1997 | 353.3 | 190.8 | 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 | 149.1 | 141.9 | 235.4 | 52.3 |
| 2001 | 361.1 | 168.2 | 153.9 | 238.4 | 47.1 |
| 2002 | 367.7 | 185.0 | 152.9 | 233.4 | 38.5 |
| 2003 | 375.4 | 244.6 | 169.2 | 238.1 | 34.4 |
| 2004 | 374.8 | 220.6 | 163.0 | 238.0 | 53.9 |
| 2005 | 363.1 | 130.5 | 149.1 | 243.9 | 48.9 |
| 2006 | 365.9 | 217.0 | 159.4 | 240.0 | 41.3 |
| 2007 | 361.4 | 191.5 | 147.5 | 245.5 | 51.0 |
| 2008 | 348.2 | 140.6 | 150.8 | 240.5 | 61.8 |
| 2009 | 335.5 | 151.3 | 134.6 | 246.6 | 46.3 |
| 2010 | 353.3 | 188.5 | 148.7 | 238.8 | 46.9 |
| 2011* | 334.0 | 149.9 | 133.8 | 243.0 | 46.0 |
| **Share** | | | | | |
| 2011* | 24% | 11% | 10% | 18% | 3% |
| **Annual change** | | | | | |
| 10/11* | –5% | –20% | –10% | 2% | –2% |

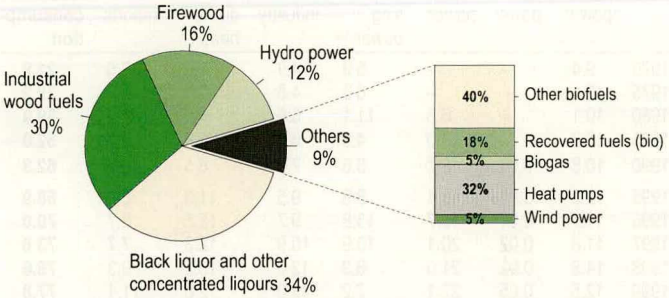
Wind power is included in hydro power. Total amount of wind power in 2011* was 1.738 PJ.

| 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 | 6.0 | 4.4 | **946.9** | 1980 |
| 151.3 | 41.1 | 9.1 | 17.0 | **1 045.8** | 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 | 62.5 | 15.3 | 42.8 | **1 323.0** | 2000 |
| 261.5 | 86.9 | 17.1 | 35.9 | **1 370.1** | 2001 |
| 282.7 | 91.6 | 17.8 | 42.9 | **1 412.4** | 2002 |
| 287.7 | 101.2 | 19.8 | 17.5 | **1 488.0** | 2003 |
| 301.9 | 89.7 | 21.7 | 17.5 | **1 481.2** | 2004 |
| 280.8 | 69.1 | 23.4 | 61.3 | **1 370.2** | 2005 |
| 315.0 | 93.8 | 23.1 | 41.0 | **1 496.6** | 2006 |
| 302.2 | 102.5 | 25.4 | 45.2 | **1 472.1** | 2007 |
| 305.5 | 81.6 | 30.3 | 46.0 | **1 405.2** | 2008 |
| 269.3 | 72.0 | 32.4 | 43.5 | **1 331.3** | 2009 |
| 319.7 | 94.5 | 35.6 | 37.8 | **1 463.8** | 2010 |
| 308.9 | 87.3 | 35.8 | 49.9 | **1 388.7** | 2011* |
| | | | | | **Share** |
| 22% | 6% | 3% | 4% | **100%** | 2011* |
| | | | | **Annual** | **change** |
| –3% | –8% | 0% | 32% | –5% | 10/11* |

## 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 | .. | 1.4 | .. | **196.6** | 19% |
| 1990 | 38.7 | 36.5 | 86.1 | 44.7 | 0.3 | 1.2 | 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 | **230.2** | 20% |
| 1994 | 42.0 | 52.4 | 104.4 | 45.0 | 0.3 | 1.4 | 0.0 | **245.5** | 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** | 21% |
| 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 | 84.7 | 137.9 | 45.3 | 2.3 | 1.5 | 1.4 | **325.1** | 25% |
| 2001 | 46.9 | 83.7 | 126.7 | 51.0 | 3.0 | 1.6 | 1.2 | **314.2** | 23% |
| 2002 | 38.2 | 90.0 | 140.1 | 52.6 | 2.8 | 1.6 | 1.5 | **326.9** | 23% |
| 2003 | 34.0 | 93.3 | 141.2 | 53.2 | 3.5 | 1.7 | 2.2 | **329.2** | 22% |
| 2004 | 53.5 | 100.2 | 148.2 | 53.5 | 4.1 | 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 | 58.1 | 5.9 | 6.7 | 7.8 | **386.8** | 28% |
| 2009 | 45.3 | 97.7 | 110.2 | 61.4 | 5.6 | 9.5 | 12.1 | **341.8** | 26% |
| 2010 | 45.9 | 116.1 | 135.7 | 67.9 | 6.1 | 11.0 | 12.6 | **395.2** | 27% |
| 2011* | 44.3 | 116.1 | 131.9 | 60.9 | 6.2 | 11.1 | 13.8 | **384.3** | 28% |

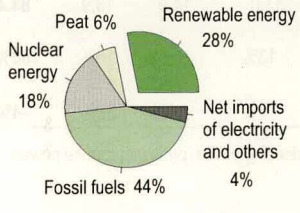
## Renewable energy 2011*




The total consumption of renewable energy in 2011* was 384 PJ which is 28% of total energy consumption.

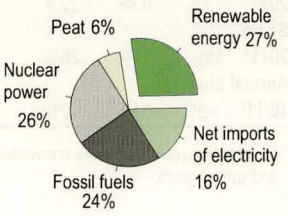
## Renewable energy 2011*

### In total energy consumption




**Total 1 389 PJ**

### In electricity supply




**Total 84 TWh**

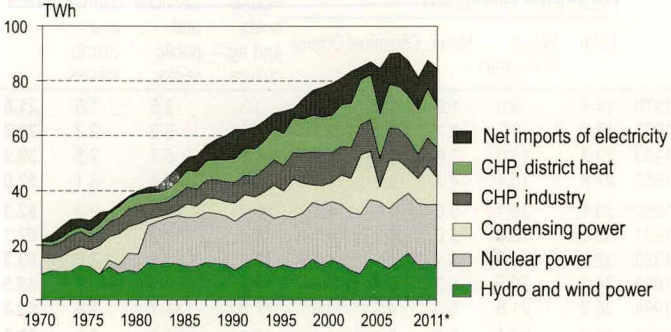
## Supply and total consumption of electricity, TWh

| | 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** |
| 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 | 22.1 | 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 | 12.7 | 0.29 | 21.9 | 14.2 | 10.3 | 17.8 | 10.5 | **87.7** |
| 2011* | 12.3 | 0.48 | 22.3 | 9.6 | 11.0 | 14.9 | 13.9 | **84.4** |
| **Share** | | | | | | | | |
| 2011* | 15% | 1% | 26% | 11% | 13% | 18% | 16% | **100%** |
| **Annual change** | | | | | | | | |
| 10/11* | –3% | 64% | 2% | –32% | 7% | –16% | 32% | **–4%** |

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

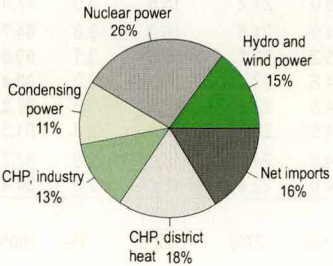
Sources: Finnish Energy Industries, Statistics Finland and Technical Research Centre of Finland VTT (wind power).

## Electricity supply 1970–2011

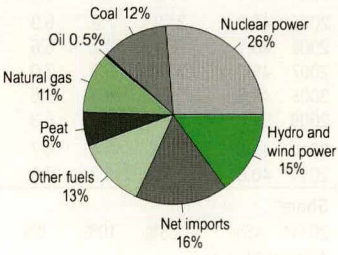



## Electricity supply 2011*

### By mode of production




### By source



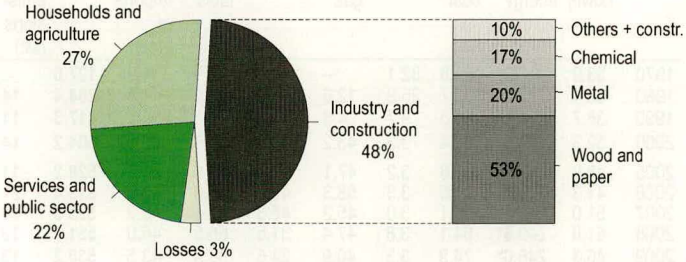

Total electricity supply in 2011* was 84.4 TWh (preliminary).

## Electricity consumption by sector, TWh

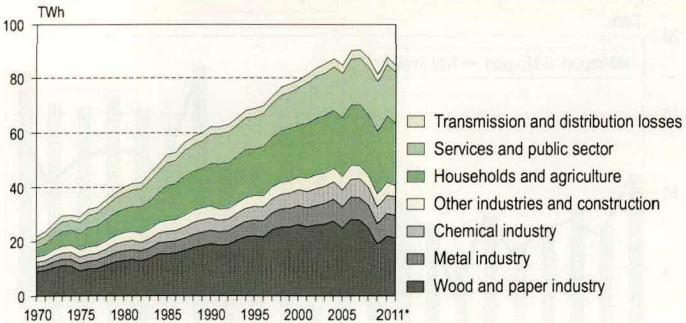
| | Industry and construction | | | | | House-holds and agri-culture | Services and public sector | Transm. and distrib. losses | **Total** |
|---|---|---|---|---|---|---|---|---|---|
| | Total | Wood and paper | Metal | Chemical | Others | | | | |
| 1970 | 14.5 | 9.0 | 1.8 | 1.8 | 1.9 | 3.3 | 2.5 | 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 | 25.1 | 8.3 | 6.6 | 4.5 | 22.1 | 17.3 | 3.3 | **87.2** |
| 2009 | 37.6 | 19.1 | 7.4 | 6.3 | 4.8 | 22.9 | 18.0 | 2.8 | **81.3** |
| 2010 | 41.8 | 21.9 | 8.4 | 6.7 | 4.8 | 24.5 | 18.6 | 2.8 | **87.7** |
| 2011* | 40.6 | 21.5 | 8.2 | 7.0 | 4.0 | 22.4 | 18.6 | 2.8 | **84.4** |
| **Share** | | | | | | | | | |
| 2011* | 48% | 25% | 10% | 8% | 5% | 27% | 22% | 3% | **100%** |
| **Annual Change** | | | | | | | | | |
| 11/10 | –3% | –2% | –2% | 4% | –17% | –9% | 0% | 1% | –4% |

Sources: Finnish Energy Industries, Statistics Finland

## Electricity consumption by sector 2011*




## Electricity consumption by sector 1970–2011

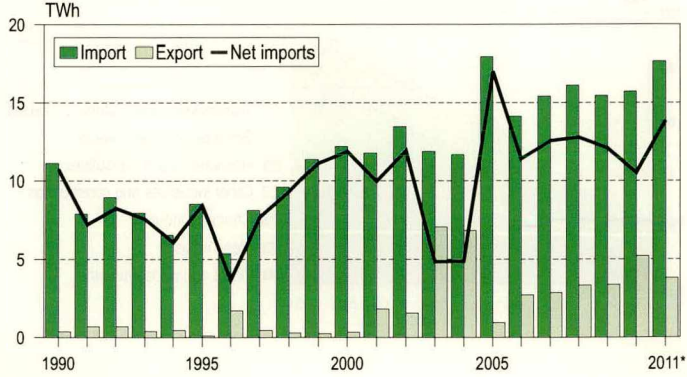


## Energy sources in electricity generation, PJ

| | 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** | 14 |
| 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** | 17 |
| 2011* | 46.0 | 243.0 | 72.7 | 2.3 | 41.7 | 33.9 | 58.3 | 49.9 | **547.9** | 13 |

Wind power is included in hydro power.
Sources: Finnish Energy Industries, Statistics Finland and Technical Research Centre of Finland VTT (wind power).

## Imports and exports of electricity 1990–2011



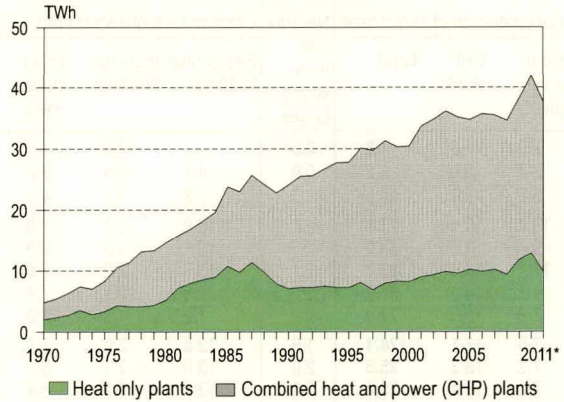

Source: Finnish Energy Industries

## Production and consumption of district heat, TWh

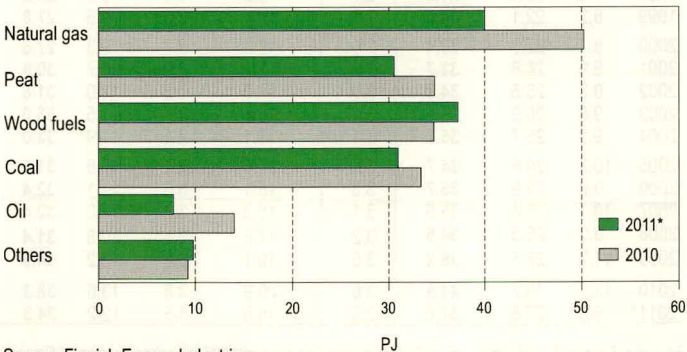
| | Net production of district heat | | | Network and measuring losses | Consumption of district heat | | | |
|---|---|---|---|---|---|---|---|---|
| | Heat only plants | CHP plants | **Total** | | Residential buildings | Industrial buildings | Other consumers | **Total** |
| 1970 | 2.0 | 2.8 | **4.8** | 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 | 8.1 | 22.3 | **30.4** | 2.6 | 15.8 | 2.7 | 9.3 | **27.8** |
| 2001 | 8.9 | 24.8 | **33.7** | 2.9 | 17.2 | 3.0 | 10.7 | **30.8** |
| 2002 | 9.3 | 25.5 | **34.8** | 3.0 | 17.6 | 3.2 | 11.0 | **31.8** |
| 2003 | 9.8 | 26.3 | **36.1** | 3.1 | 18.4 | 3.1 | 11.5 | **33.0** |
| 2004 | 9.5 | 25.7 | **35.2** | 3.1 | 17.1 | 3.1 | 11.9 | **32.0** |
| 2005 | 10.2 | 24.6 | **34.7** | 3.2 | 17.6 | 3.1 | 10.8 | **31.5** |
| 2006 | 9.8 | 25.9 | **35.7** | 3.3 | 18.1 | 3.3 | 11.1 | **32.4** |
| 2007 | 10.1 | 25.4 | **35.5** | 3.1 | 18.3 | 3.2 | 11.0 | **32.4** |
| 2008 | 9.3 | 25.3 | **34.6** | 3.2 | 17.6 | 3.1 | 10.8 | **31.4** |
| 2009 | 11.7 | 26.5 | **38.2** | 3.5 | 19.1 | 3.5 | 12.2 | **34.8** |
| 2010 | 12.7 | 29.2 | **41.9** | 3.6 | 20.9 | 3.8 | 13.6 | **38.3** |
| 2011* | 9.8 | 27.8 | **37.6** | 3.3 | 18.6 | 3.5 | 12.2 | **34.3** |

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

## Production of district heat 1970–2011

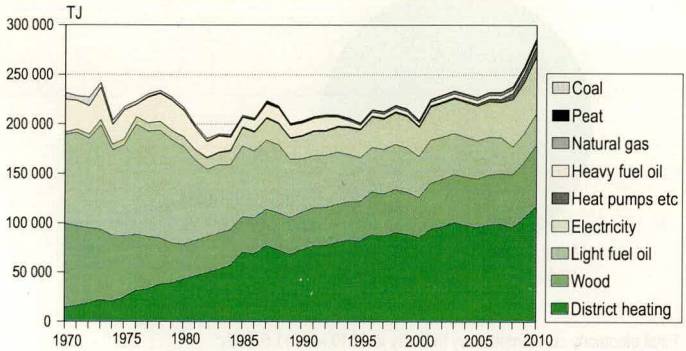



## Fuel consumption in production of district heat 2010–2011

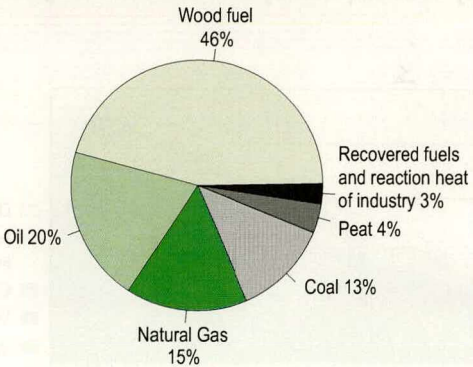



Source: Finnish Energy Industries

## Consumption of energy for heating residential, commercial and public buildings 1970–2010

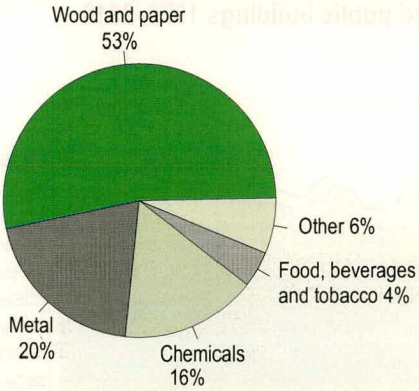



## Fuel consumption in industry 2010



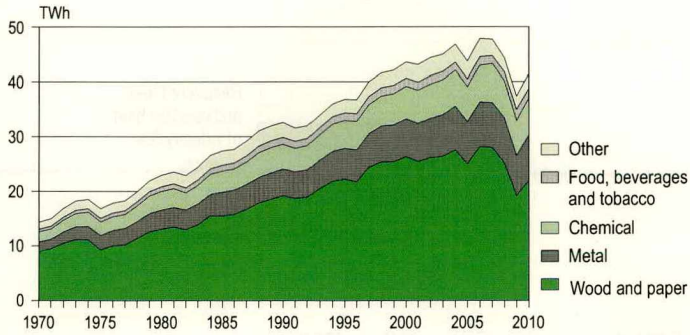

Total fuel consumption in industry in 2010 was 385 PJ.

## Electricity consumption by branch of industry 2010




Total electricity consumption by industry in 2010 was 41.5 TWh.

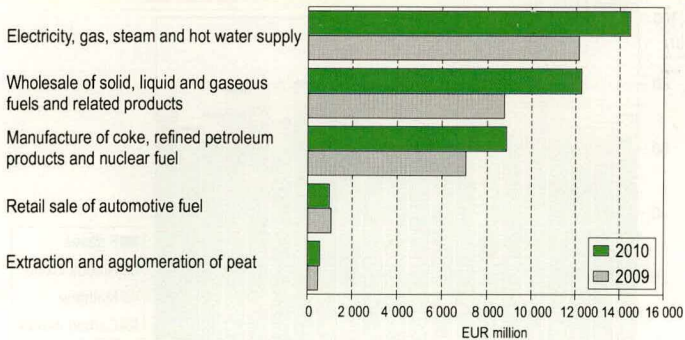
## Electricity consumption by branch of industry 1970–2010



## Enterprises in energy sector in 2010

| | Number of enterprises | Turnover, EUR mil. | Employees | Staff expenses, EUR mil. |
|---|---|---|---|---|
| Wholesale of solid, liquid and gaseous fuels and related products | 139 | 12 256 | 1 561 | 98 |
| Electricity, gas, steam and hot water supply | 732 | 14 455 | 12 656 | 778 |
| Extraction and agglomeration of peat | 460 | 554 | 1 401 | 57 |
| Retail sale of automotive fuel | 831 | 978 | 4 271 | 122 |
| Manufacture of coke, refined petroleum products and nuclear fuel | 15 | 8 869 | 2 505 | 115 |

## Turnover of enterprises in energy sector 2009–2010



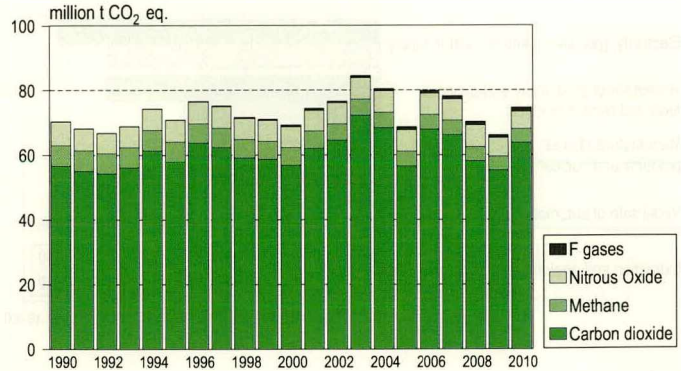

Source: Statistics Finland, Financial statements of enterprises.

## Greenhouse gas emissions 1990–2011

**The gases included in the Kyoto Protocol**

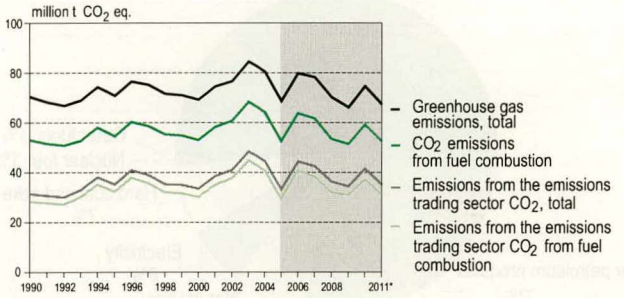
| | 1990 | 1995 | 2000 | 2005 | 2007 | 2008 | 2009 | 2010 | 2011* |
|---|---|---|---|---|---|---|---|---|---|
| | million tonnes of $CO_2$ equivalent | | | | | | | | |
| Energy | 54.5 | 56.0 | 54.4 | 54.0 | 63.1 | 54.9 | 52.8 | 60.6 | 53.7 |
| Industrial prosesses | 5.1 | 4.7 | 5.6 | 6.3 | 6.8 | 7.1 | 5.3 | 5.8 | 5.6 |
| Solvent and other product use | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| Agriculture | 6.6 | 6.0 | 5.8 | 5.8 | 5.8 | 5.9 | 5.7 | 5.9 | 5.8 |
| Waste | 4.0 | 3.9 | 3.3 | 2.4 | 2.4 | 2.3 | 2.2 | 2.2 | 2.2 |
| **Total emission** without land use, land use change and forestry | **70.4** | **70.8** | **69.2** | **68.6** | **78.2** | **70.2** | **66.1** | **74.6** | **67.3** |
| Land use, land use change and forestry | –15.7 | –14.5 | –20.1 | –28.6 | –24.0 | –26.6 | –36.1 | –22.1 | –20.6 |

## Greenhouse gas emissions by gases 1990–2010

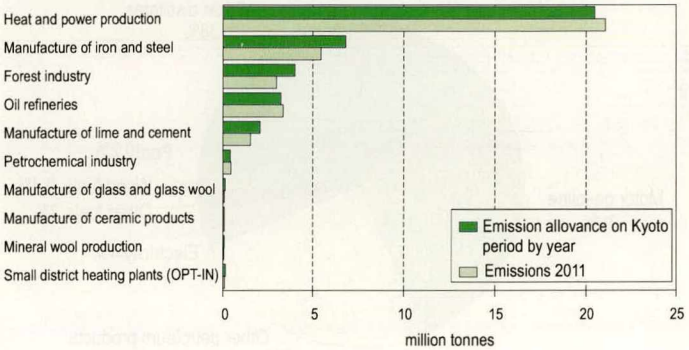



Source: Statistics Finland, Greenhouse Gas Inventory

## Finland's greenhouse gas emissions 1990–2011



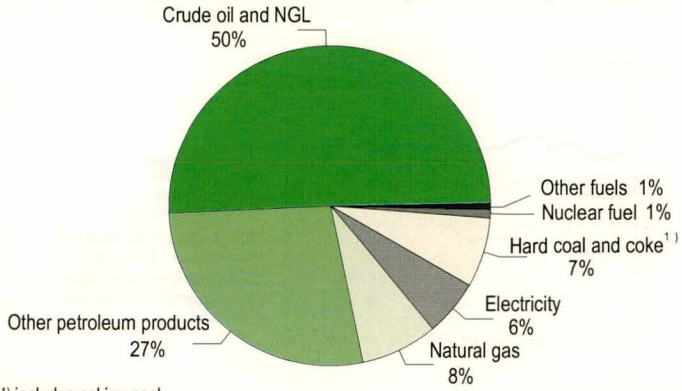

## National allowances under EU ETS and verified $CO_2$ emissions for 2011 by branch in Finland




Total allowances in 2011 were 37.4 million tonnes and verified $CO_2$ emissions in 2011 were 35.1 million tonnes.

Source: European Commission

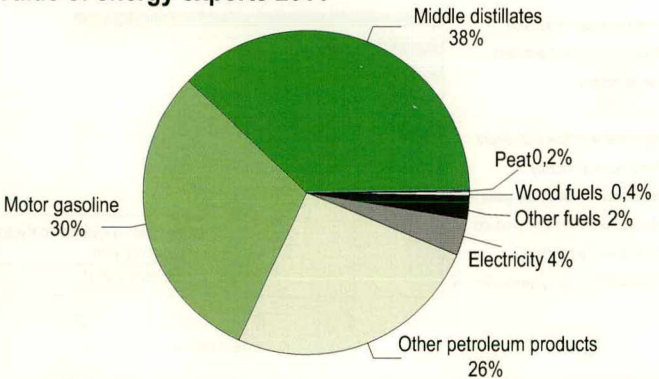
## Value of energy imports 2011




[1)] includes coking coal

Total imports of energy products were 13 484 million euros in 2011. That was 22.4 % of total imports to Finland.

## Value of energy exports 2011




Total exports of energy products were 5 503 million euros in 2011. That was 9.7 % of total exports from Finland.

Source: Board of Customs /Foreign Trade Statistics

## Energy imports 2011

| | | Russia | Sweden | Norway | Nether-land | Kazak-stan | Other countries | Total Amount | Total Value mil. € |
|---|---|---|---|---|---|---|---|---|---|
| Hard coal | 1 000 t | 5 199 | 4 | – | 20 | 152 | 328 | **5 703** | **521** |
| Coke | 1 000 t | – | – | – | – | – | 444 | **444** | **145** |
| Coking coal | 1 000 t | 49 | – | – | 6 | – | 1 214 | **1 270** | **276** |
| Natural gas | mil. m³ | 3 901 | – | – | – | – | 0 | **3 901** | **1 061** |
| Crude oil[1)] | 1 000 t | 10 020 | – | 1 407 | – | 43 | 35 | **11 505** | **6 795** |
| Motor gasoline | 1 000 t | – | 17 | 1 | 0 | – | 11 | **29** | **21** |
| Middle distillates | 1 000 t | 1 765 | 171 | – | 20 | 77 | 410 | **2 442** | **1 561** |
| Heavy fuel oil | 1 000 t | 16 | 265 | 64 | 162 | – | 198 | **705** | **349** |
| LPG | 1 000 t | 206 | 0 | 76 | 0 | 24 | 1 | **308** | **187** |
| Other petroleum prod. | 1 000 t | 709 | 48 | 0 | 38 | 301 | 1 024 | **2 121** | **1 576** |
| Methanol | 1 000 t | 392 | 0 | – | 0 | – | 8 | **401** | **66** |
| MTBE | 1 000 t | 10 | 0 | – | 0 | – | 0 | **10** | **8** |
| Peat | 1 000 t | 10 | 32 | 0 | 0 | – | 72 | **114** | **3** |
| Wood fuels[2)] | 1 000 t | 188 | 3 | 14 | 0 | – | 30 | **235** | **11** |
| Nuclear fuel | tU | 32 | 18 | – | – | – | 21 | **72** | **111** |
| Electricity | TWh | 11 | 5 | 0 | – | – | 2 | **18** | **792** |
| Value | mil. € | 9 635 | 573 | 1 027 | 175 | 298 | 1 775 | | **13 484** |

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

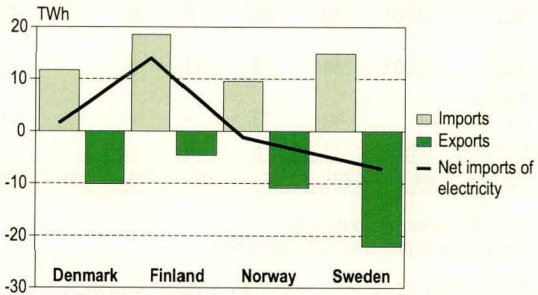
Source: Board of Customs /Foreign Trade Statistics; Natural gas: Statistics Finland

## Energy exports 2011

| | | Sweden | Nether-lands | Belgium | Canada | Russia | Other countries | Total Amount | Total Value mil. € |
|---|---|---|---|---|---|---|---|---|---|
| Motor gasoline | 1 000 t | 557 | 237 | – | 763 | 5 | 775 | **2 337** | **1 672** |
| Middle distillates | 1 000 t | 1 337 | 145 | 3 | – | 5 | 1 298 | **2 787** | **2 071** |
| Heavy fuel oil | 1 000 t | 92 | 581 | 22 | – | – | 247 | **941** | **429** |
| Other petroleum prod. | 1 000 t | 232 | 164 | 439 | 19 | 101 | 307 | **1 263** | **918** |
| Peat | 1 000 t | 15 | 13 | 5 | 0 | 0 | 58 | **91** | **9** |
| Wood fuels[1)] | 1 000 t | 74 | – | – | – | 0 | 104 | **178** | **20** |
| Electricity | TWh | 3 | – | – | – | – | 1 | **4** | **202** |
| Value | mil. € | 1 814 | 621 | 391 | 562 | 256 | 1 858 | | **5 503** |

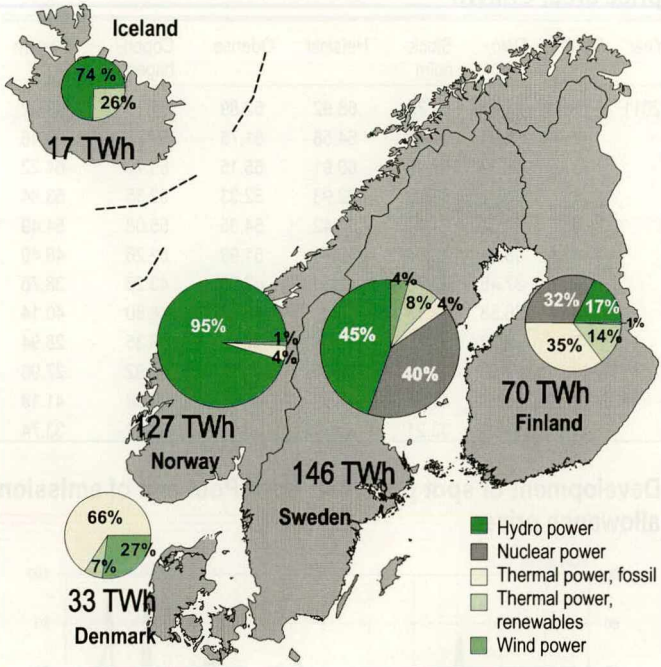
[1)] Includes wood pellets and other wood fuels

## Imports and exports of electricity in Nordic countries 2011




Source: Swedenergy, Norwegian Water Resources and Energy Directorate

## Electricity generation in Nordic Countries 2011

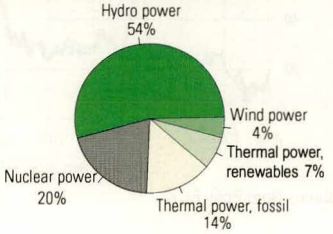



### Electricity consumption in Nordic Countries 2011, TWh

| | |
|---|---|
| Sweden | 139 |
| Norway | 122 |
| Finland | 84 |
| Denmark | 34 |
| Iceland | 17 |
| **Total** | **397** |

Source: Entso-e: Statistical Yearbook 2010, Monthly Statistics 2011

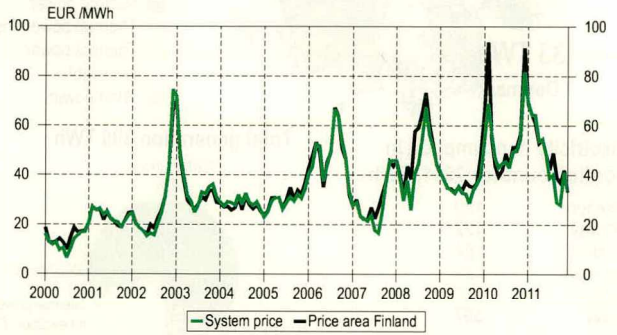
### Total generation 395 TWh



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

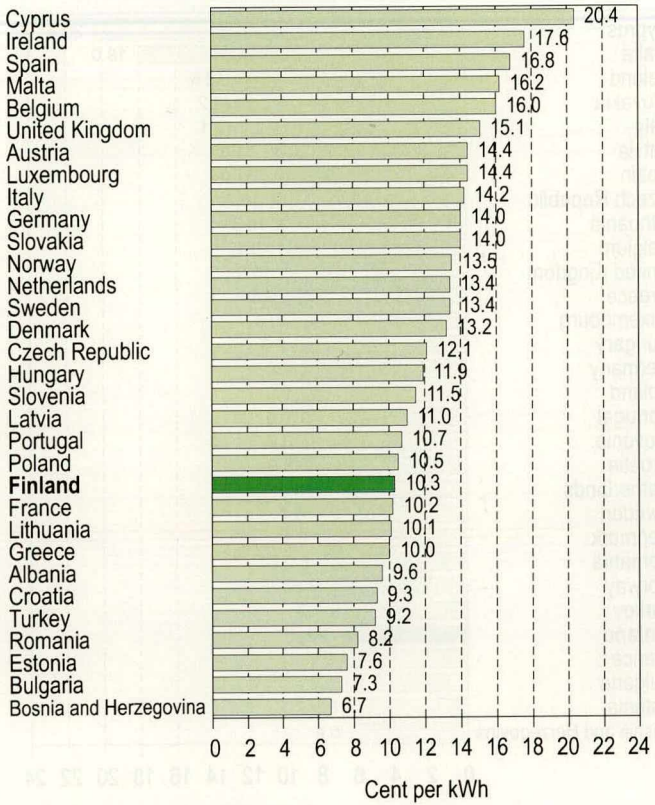
| Year | Month | Oslo | Stock-holm | Helsinki | Odense | Copen-hagen | System |
|---|---|---|---|---|---|---|---|
| 2011 | 1 | 71.87 | 69.72 | 68.92 | 52.89 | 54.36 | 69.62 |
| | 2 | 65.94 | 64.53 | 64.58 | 51.75 | 52.23 | 64.46 |
| | 3 | 65.32 | 63.29 | 60.91 | 55.15 | 55.17 | 64.22 |
| | 4 | 54.22 | 53.60 | 52.93 | 52.33 | 52.35 | 53.84 |
| | 5 | 54.67 | 54.47 | 54.42 | 54.35 | 55.08 | 54.49 |
| | 6 | 48.34 | 48.55 | 48.54 | 51.99 | 52.26 | 48.40 |
| | 7 | 37.45 | 39.78 | 42.20 | 42.20 | 43.25 | 38.78 |
| | 8 | 36.58 | 42.13 | 48.98 | 45.42 | 48.80 | 40.14 |
| | 9 | 23.18 | 32.10 | 38.86 | 47.79 | 48.35 | 28.94 |
| | 10 | 26.00 | 30.49 | 36.90 | 42.75 | 46.92 | 27.96 |
| | 11 | 40.51 | 41.60 | 42.03 | 45.45 | 50.00 | 41.18 |
| | 12 | 34.21 | 33.21 | 33.34 | 33.97 | 34.61 | 33.74 |

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



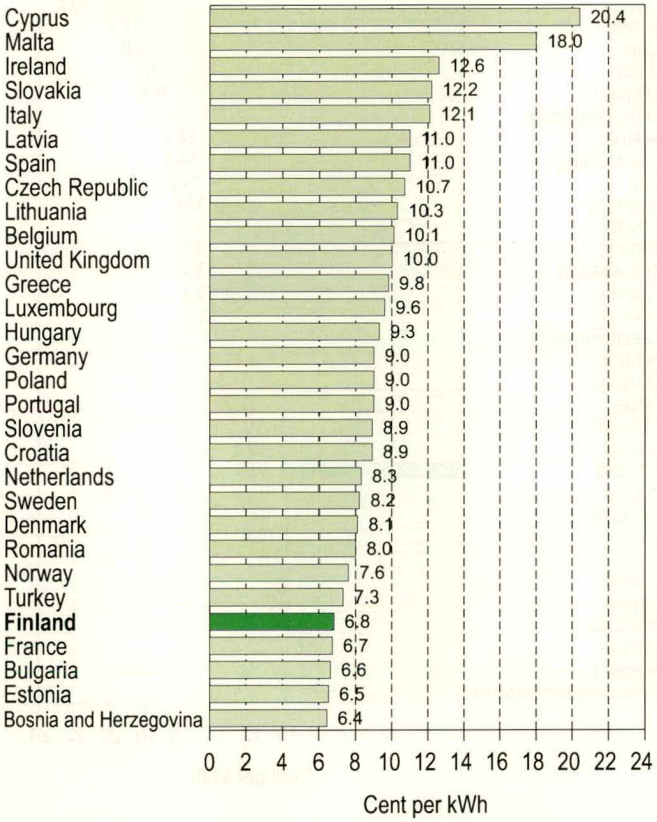

Source: Nord Pool, ECX

## Electricity prices for households on the 2nd half of 2011




Households annual consumption of 2 500 – 5 000 kWh. Prices without taxes.

## Electricity prices for industry on the 2nd half of 2011




Electricity prices to industrial consumers with annual consumption of 500–2 000 MWh.
Prices without taxes.

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

| | 1985 | 1990 | 1995 | 2000 | 2005 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|
| Germany | 15 040 | 14 930 | 14 330 | 14 390 | 14 480 | 14 350 | 13 670 |
| France | 8 540 | 9 530 | 10 100 | 10 790 | 11 580 | 11 480 | 11 000 |
| United Kingdom | 8 530 | 8 820 | 9 290 | 9 700 | 9 770 | 9 180 | 8 660 |
| Italy | 5 590 | 6 440 | 6 820 | 7 360 | 7 860 | 7 570 | 7 070 |
| Spain | 3 170 | 3 800 | 4 280 | 5 190 | 6 040 | 5 950 | 5 450 |
| Poland | .. | 4 340 | 4 190 | 3 760 | 3 900 | 4 140 | 3 990 |
| Netherlands | 2 550 | 2 810 | 3 070 | 3 210 | 3 460 | 3 510 | 3 420 |
| Belgium | 1 840 | 2 040 | 2 270 | 2 480 | 2 470 | 2 500 | 2 440 |
| Sweden | 1 960 | 1 980 | 2 110 | 2 000 | 2 170 | 2 090 | 1 920 |
| Czech Republic | .. | 2 090 | 1 750 | 1 730 | 1 900 | 1 890 | 1 770 |
| Romania | .. | 2 610 | 1 980 | 1 540 | 1 650 | 1 700 | 1 480 |
| Finland | 1 120 | 1 210 | 1 240 | 1 370 | 1 460 | 1 510 | 1 420 |
| Austria | 990 | 1 060 | 1 140 | 1 220 | 1 450 | 1 430 | 1 350 |
| Greece | 990 | 940 | 1 000 | 1 180 | 1 310 | 1 330 | 1 280 |
| Hungary | .. | 1 220 | 1 100 | 1 060 | 1 160 | 1 120 | 1 060 |
| Portugal | 520 | 740 | 860 | 1 050 | 1 150 | 1 060 | 1 050 |
| Denmark | 820 | 750 | 850 | 830 | 830 | 840 | 810 |
| Bulgaria | .. | 1 180 | 980 | 780 | 840 | 840 | 740 |
| Slovakia | .. | 890 | 750 | 750 | 800 | 770 | 700 |
| Ireland | 370 | 430 | 460 | 600 | 640 | 660 | 620 |
| Lithuania | .. | 670 | 370 | 300 | 360 | 380 | 350 |
| Slovenia | .. | 240 | 250 | 270 | 310 | 320 | 290 |
| Estonia | .. | 430 | 220 | 210 | 230 | 250 | 220 |
| Latvia | .. | 330 | 190 | 160 | 190 | 190 | 180 |
| Luxembourg | 130 | 150 | 140 | 150 | 200 | 190 | 180 |
| Cyprus | .. | 70 | 80 | 100 | 110 | 120 | 120 |
| Malta | .. | 20 | 30 | 30 | 40 | 40 | 30 |
| **EU 27** | **..** | **69 720** | **69 840** | **72 210** | **76 330** | **75 440** | **71 290** |
| United States | .. | 54 160 | .. | 64 740 | .. | 64 410 | 61 230 |
| Japan | .. | 12 560 | .. | 14 450 | .. | 13 370 | 13 130 |
| Canada | .. | 6 650 | .. | 7 940 | .. | 8 390 | 8 130 |
| **OECD Total** | **..** | **130 190** | **..** | **152 670** | **..** | **156 450** | **149 970** |

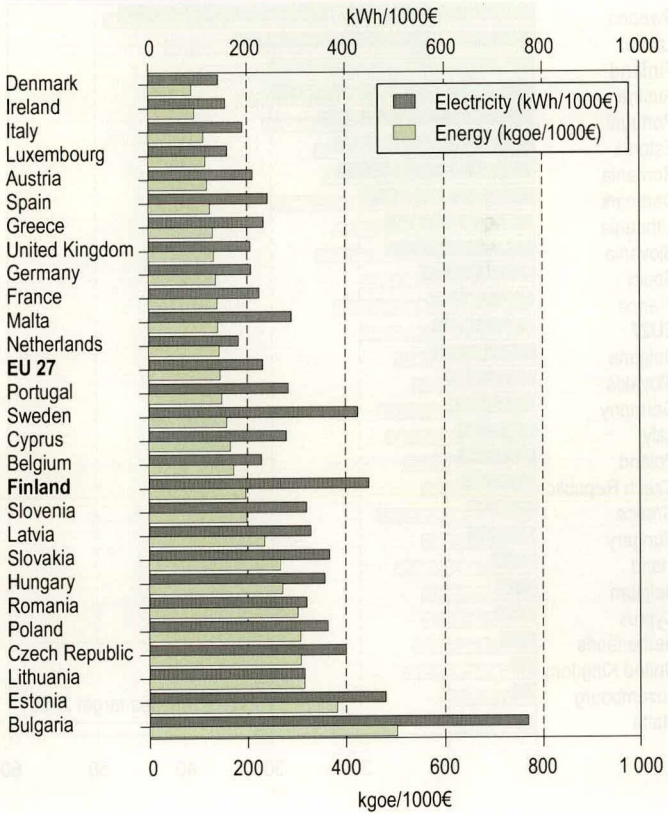
Source: Eurostat, IEA /Energy Balances of OECD Countries 2011 Edition

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

| | 1985 | 1990 | 1995 | 2000 | 2005 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|
| Germany | 424.6 | 455.1 | 451.2 | 483.5 | 521.0 | 525.5 | 495.6 |
| France | 252.9 | 302.2 | 342.9 | 384.9 | 422.8 | 433.5 | 423.4 |
| United Kingdom | 242.1 | 274.4 | 294.7 | 329.4 | 348.7 | 341.9 | 322.4 |
| Italy | 173.7 | 214.6 | 238.3 | 273.0 | 300.9 | 309.3 | 290.0 |
| Spain | 102.8 | 125.8 | 140.9 | 188.5 | 242.2 | 268.7 | 255.4 |
| Sweden | 113.6 | 120.3 | 124.6 | 128.7 | 130.7 | 128.6 | 123.4 |
| Poland | 92.1 | 96.2 | 89.7 | 98.6 | 105.4 | 117.6 | 112.7 |
| Netherlands | 61.5 | 73.5 | 82.7 | 97.8 | 104.5 | 109.1 | 104.0 |
| Belgium | 48.4 | 58.0 | 68.4 | 77.5 | 80.2 | 82.7 | 77.3 |
| Finland | 48.5 | 58.9 | 65.2 | 75.6 | 80.9 | 82.6 | 77.2 |
| Austria | 37.0 | 42.8 | 46.7 | 50.9 | 57.7 | 60.0 | 57.9 |
| Czech Republic | 43.3 | 48.2 | 48.1 | 49.4 | 55.3 | 58.0 | 54.9 |
| Greece | 23.8 | 28.5 | 34.1 | 43.2 | 50.9 | 56.6 | 54.7 |
| Portugal | 17.4 | 23.5 | 28.8 | 38.4 | 46.3 | 48.4 | 47.9 |
| Romania | .. | 54.2 | 36.4 | 33.9 | 38.9 | 41.8 | 37.6 |
| Hungary | 30.2 | 31.6 | 27.7 | 29.4 | 32.3 | 34.3 | 33.2 |
| Denmark | 25.4 | 28.4 | 30.9 | 32.5 | 33.5 | 33.3 | 31.6 |
| Bulgaria | .. | 35.3 | 28.7 | 24.3 | 25.7 | 28.7 | 26.8 |
| Ireland | 9.8 | 11.9 | 14.9 | 20.3 | 24.4 | 26.7 | 25.0 |
| Slovakia | 21.5 | 23.4 | 21.7 | 22.0 | 22.9 | 24.8 | 23.1 |
| Slovenia | .. | 9.2 | 9.3 | 10.5 | 12.7 | 12.8 | 11.3 |
| Lithuania | .. | 12.0 | 6.4 | 6.2 | 8.0 | 9.0 | 8.4 |
| Estonia | .. | 7.0 | 4.6 | 5.0 | 6.0 | 7.0 | 6.7 |
| Luxembourg | 3.8 | 4.1 | 5.0 | 5.4 | 6.1 | 6.6 | 6.1 |
| Latvia | .. | 8.3 | 4.5 | 4.5 | 5.7 | 6.6 | 6.1 |
| Cyprus | .. | 1.8 | 2.2 | 3.0 | 4.0 | 4.6 | 4.8 |
| Malta | .. | 0.9 | 1.3 | 1.6 | 2.0 | 1.9 | 1.7 |
| **EU 27** | **1 772.3** | **2 150.3** | **2 249.7** | **2 517.8** | **2 769.6** | **2 860.8** | **2 718.9** |
| United States | .. | 2 712.6 | .. | 3 589.9 | 4 049.4 | 3 907.2 | 3 724.7 |
| Japan | .. | 758.8 | .. | 956.5 | 1 047.9 | 981.0 | 948.5 |
| Canada | .. | 433.1 | .. | 503.5 | 559.5 | 528.1 | 503.4 |
| **OECD Total** | **..** | **6 630.1** | **..** | **8 577.6** | **9 801.9** | **9 621.3** | **9 240.4** |

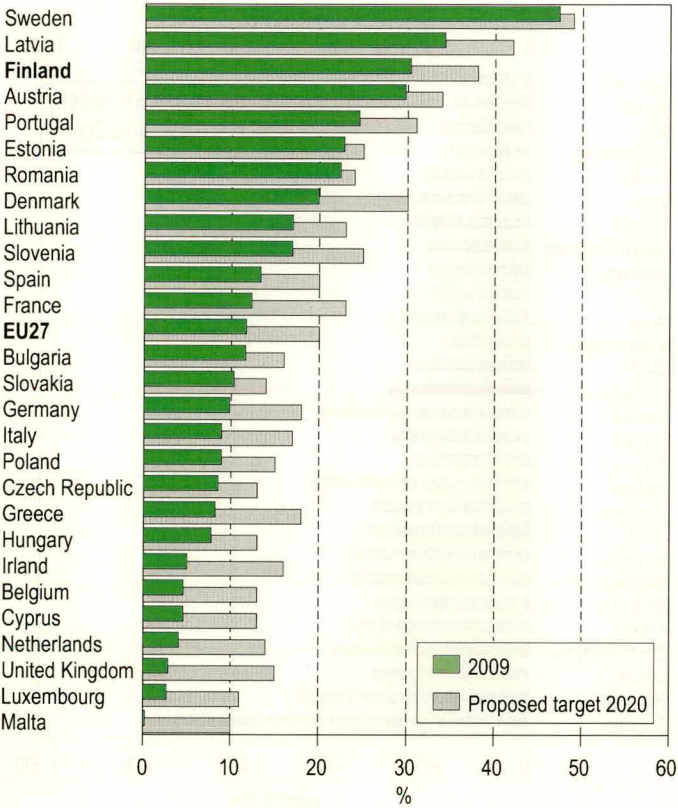
Source: Eurostat, IEA /Energy Balances of OECD Countries 2011 Edition

## Consumption of energy and electricity per GDP-unit in EU countries 2009



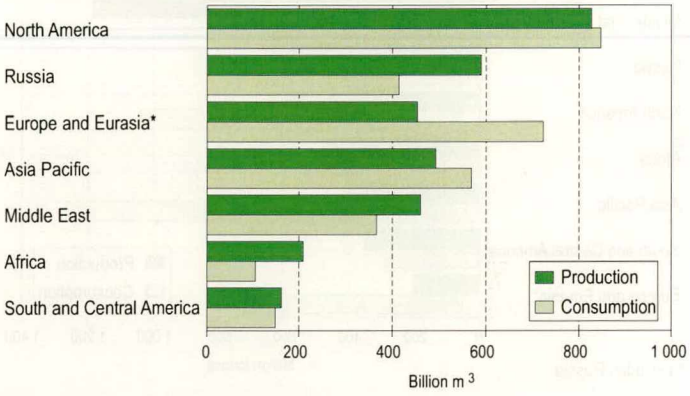

Source: Eurostat

## Renewable energy as a proportion of final energy consumption in 2009, and the target for 2020

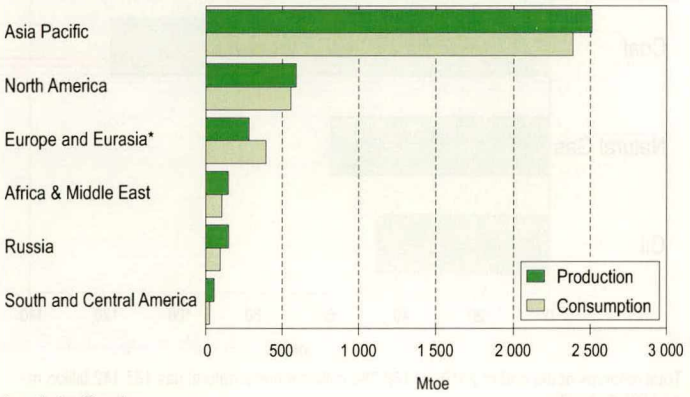



Source: European Commission/DG TREN

## Gas production and consumption by region in 2010



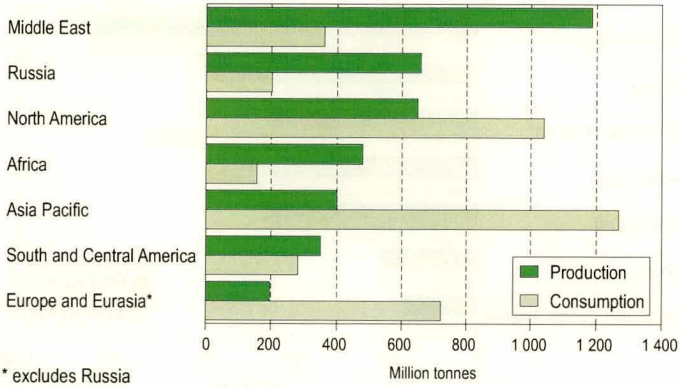

## Coal production and consumption by region in 2010




* excludes Russia

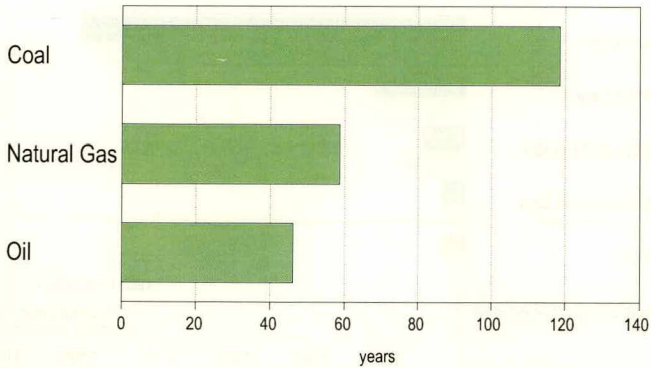
Source: BP statistical review of world energy June 2011

## Oil production and consumption by region in 2010




* excludes Russia

## World oil, natural gas and coal reserve sufficiency




Total reserves at the end of 2010: oil 188 788 million tonnes, natural gas 187 142 billion $m^3$, coal 860 938 million tonnes.

Source: BP statistical review of world energy June 2011

## 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 | 42.2 | 11.7 | 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 | 25.1 | 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 | 68.7 | Default bio share 7% |
| Diesel fuel | 68.0 | Default bio share 8% |
| Light fuel oil | 72.6 | Default bio share 2% |
| 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 |

## Electricity network information

| | 1990 | 2000 | 2011 |
|---|---|---|---|
| Transformer substations, number | | | |
| High voltage substations | 715 | 591 | 966 |
| Distribution substations | 114 019 | 124 851 | 129 848 |
| Lengths of low voltage lines (0.4 kV - 1 kV), km | | | |
| Overhead lines | 162 076 | 158 576 | 150 212 |
| Cables (inc. sea cable) | 45 705 | 63 327 | 85 753 |
| Cabling rate | 22 % | 29 % | 36 % |
| Lengths of medium voltage lines (over 1 kV - 70 kV), km | | | |
| Overhead lines | 122 329 | 121 754 | 121 640 |
| Cables (inc. sea cable) | 10 586 | 12 116 | 15 929 |
| Cabling rate | 8 % | 9 % | 12 % |
| Lengths of high voltage lines (110 kV - 400 kV), km | | | |
| 110 kV | 14 000 | 15 050 | 15 697 |
| 220 kV | 2 471 | 2 510 | 2 568 |
| 400 kV | 3 164 | 3 926 | 4 586 |

## Energy statistics by Statistics Finland

### Energy statistics publication and EnergyCD

(Energiatilasto ja EnergiaCD)

Annual publication containing detailed basic statistics on energy in Finland appeared in 2012 for the last time as a printed copy.

### Energy in Finland

Statistical pocketbook on energy statistics.

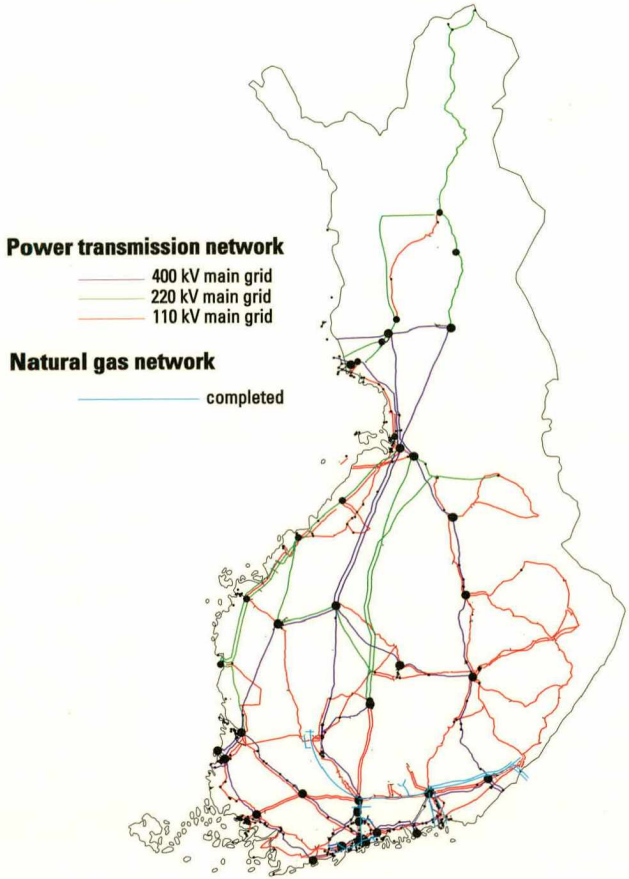
### Internet www.stat.fi/energy

(www.tilastokeskus.fi/energia)

The updated statistics, latest tables and figures on

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

# Power transmission and natural gas networks 2012



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