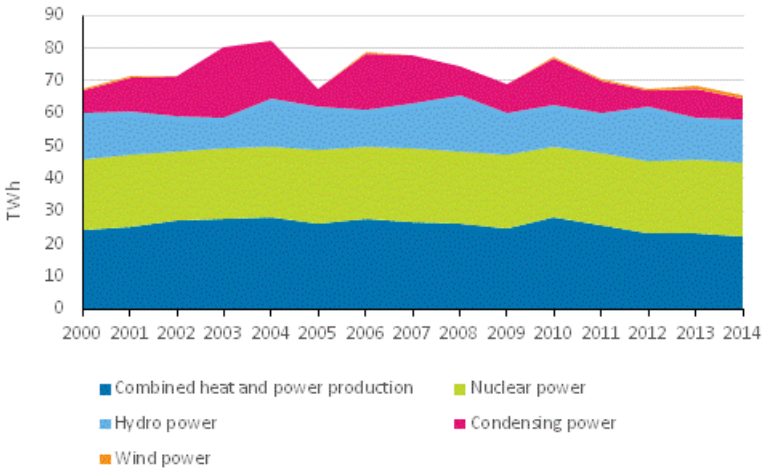
Production of electricity and heat 2014

Production of electricity at its lowest level in the 2000s

The production of electricity in Finland amounted to 65.4 TWh in 2014. Production declined by four per cent from the previous year and hit its lowest level in the 2000s. Production of district heat and industrial heat also decreased slightly. The use of renewable fuels decreased by one per cent in the production of electricity and heat. The use of fossil fuels also diminished, as 24 per cent less hard coal and 14 per cent less natural gas was used than in 2013. By contrast, the use of peat increased by seven per cent. These data derive from the statistics on the production of electricity and heat compiled by Statistics Finland.

Production of electricity by production mode in 2000 to 2014



In 2014, the **production of electricity in Finland** amounted to 65.4 terawatt hours (TWh) or billion kilowatt hours (kWh). The production went down by four per cent from the year before. In turn, total electricity consumption went down by one per cent and amounted to 83.4 TWh. Of total electricity consumption, 78 per cent was covered by domestic production and 22 per cent by net imports of electricity from the Nordic countries, Russia and Estonia. Net imports of electricity grew by 14 per cent from the year before. Imports of electricity from the Nordic markets increased by nearly 50 per cent, as the water situation was better than in 2013.

In 2014, 34 per cent of domestic electricity production was based on combined heat and power production. Thirty-nine per cent of the total production of electricity was covered by renewable energy sources and

21 per cent by fossil fuels. Thirty-five per cent of electricity was produced with nuclear power and five per cent with peat. Over one-half of the electricity produced with renewable energy sources was produced with hydro power and almost all of the remainder with wood. The amount of electricity produced with renewable energy sources increased by two per cent from 2013 because the amount of electricity produced with hydro power grew by four per cent and that produced with wind power by 43 per cent. Correspondingly, the amount of electricity produced with wood decreased by two per cent. The amount of electricity produced with fossil fuels declined by 21 per cent from the year before, as the amount produced with hard coal fell by 25 per cent and that produced with natural gas by 21 per cent. By contrast, the amount of electricity produced with peat grew by eight per cent from 2013. There is great annual variation in the use of peat due to the weather dependency of peat production.

Electricity and heat production by production mode in 2014

	Electricity, TWh	District heat, TWh	Industrial heat, TWh	Fuels used, PJ[1)]
Separate production of electricity				
- Hydro power	13,2	-	-	-
- Wind power	1,1	-	-	-
- Nuclear power	22,6	-	-	-
- Condensing power[2)]	6,3	-	-	64,3
- Total	43,3	-	-	64,3
Combined heat and power production	22,1	25,5	43,3	397,7
Separate heat production	-	8,8	8,7	73,0
Total production	**65,4**	**34,3**	**52,0**	**534,9**
Net imports of electricity	18,0	-	-	-
Total	**83,4**	**34,3**	**52,0**	**534,9**

1) In calculating total primary energy used, hydro power, wind power and net imports of electricity are made commensurate with fuels according to directly obtained electricity (3.6 PJ/TWh). Total nuclear energy used is calculated at the efficiency ratio of 33 per cent from produced nuclear power (10.91 PJ/TWh).

2) Condensing power includes condensing power plants, shares of condensing electricity of combined heat and power production plants, and peak gas turbines and similar separate electricity production plants.

The production of **district heat** totalled 34.3 TWh in 2014. The production went down by one per cent year-on-year. The use of renewable fuels in the production of district heat grew by seven per cent from the year before. One-half of district heat was produced with fossil fuels, whose use fell, however, by six per cent from one year ago. District heat was produced most with wood fuels, coal and natural gas.

The **production of industrial heat** was 52 TWh in 2014. The production went down by one per cent from the year before. Over 70 per cent of heat produced by industry for its own needs was based on renewable fuels. The biggest users of industrial heat is the forest industry, which uses its own fuels in production, like black liquor and other wood fuels. In the chemical and metal industries, part of the use of heat is considered as direct fuel use, and is thus not visible in the production figures on heat.

The statistics on the production of electricity and heat cover almost the entire production of electricity connected to the grid. Small-scale production, like solar power is not yet included in the figures, but statistics compilation is being developed. The statistics do not cover small heat plants nor small-scale industrial heat production.

Links:

Statistics Finland’s heat production inquiry

Finnish Energy Industries

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Appendix table 1. Electricity and heat production by production mode and fuel in 2014

		Electricity, GWh	District heat, GWh	Industrial heat, GWh	Fuels used, GWh	Fuels used, TJ
Condensing power production[1)]	Oil	74	-	-	310	1 116
	Hard coal	3 705	-	-	9 502	34 207
	Natural gas	62	-	-	184	661
	Other fossil[2)3)]	347	-	-	1 365	4 915
	Peat	822	-	-	2 332	8 397
	Black liquor and other concentrated liquors	281	-	-	1 044	3 757
	Other wood fuels	832	-	-	2 384	8 584
	Other renewables[2)4)]	46	-	-	165	592
	Other energy sources[5)]	142	-	-	568	2 045
	Total	**6 310**	**-**	**-**	**17 854**	**64 273**
Combined heat and power production[6)]	Oil	127	143	1 050	1 665	5 993
	Hard coal	3 745	7 215	270	12 842	46 233
	Natural gas	5 324	4 252	3 458	14 948	53 814
	Other fossil[2)3)]	467	1 009	917	2 974	10 707
	Peat	2 370	4 263	3 217	11 904	42 855
	Black liquor and other concentrated liquors	5 057	196	24 467	37 438	134 775
	Other wood fuels	4 345	7 397	8 357	24 342	87 633
	Other renewables[2)4)]	401	744	444	2 041	7 347
	Other energy sources[5)]	294	262	1 079	2 321	8 354
	Total	**22 130**	**25 481**	**43 259**	**110 475**	**397 710**
Separate production of heat[7)]	Oil	-	831	794	2 781	10 011
	Hard coal	-	814	376	1 318	4 743
	Natural gas	-	2 701	1 744	4 921	17 717
	Other fossil[2)3)]	-	185	192	453	1 631
	Peat	-	838	563	1 656	5 960
	Black liquor and other concentrated liquors	-	20	780	878	3 160
	Other wood fuels	-	2 190	2 542	5 552	19 988
	Other renewables[2)4)]	-	203	125	397	1 430
	Other energy sources[5)]	-	1 055	1 614	2 309	8 314
	Total	**-**	**8 837**	**8 729**	**20 265**	**72 954**

		Electricity, GWh	District heat, GWh	Industrial heat, GWh	Fuels used, GWh	Fuels used, TJ
Total	Oil	201	974	1 843	4 755	17 120
	Hard coal	7 450	8 029	646	23 662	85 183
	Natural gas	5 386	6 953	5 201	20 053	72 192
	Other fossil[2)3)]	814	1 195	1 108	4 792	17 252
	Peat	3 192	5 101	3 780	15 892	57 212
	Black liquor and other concentrated liquors	5 338	215	25 247	39 359	141 692
	Other wood fuels	5 177	9 587	10 899	32 279	116 205
	Other renewables[2)4)]	447	947	569	2 603	9 370
	Other energy sources[5)]	436	1 317	2 693	5 198	18 713
	Total	**28 440**	**34 318**	**51 988**	**148 594**	**534 938**

1) Condensate parts produced in connection with combined heat and power production were calculated with condensing power.

2) Mixed fuels (such as recycled fuel) are divided into renewable and fossil fuels in ratio to the fossil and biodegradable coal contained in them.

3) Other fossil fuels include blast furnace gas and coke oven gas and coke, and plastics fuels and other waste fuels and the fossil part of mixed fuels.

4) Other renewable fuels comprise the bio part of mixed fuels and biogas.

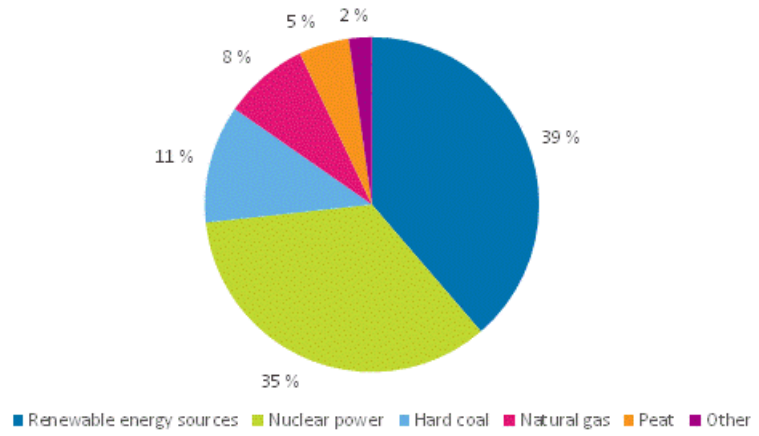
5) Other energy sources include hydrogen, electricity, and reaction and secondary heat of industry.

6) Combined heat and power production includes pure combined production.

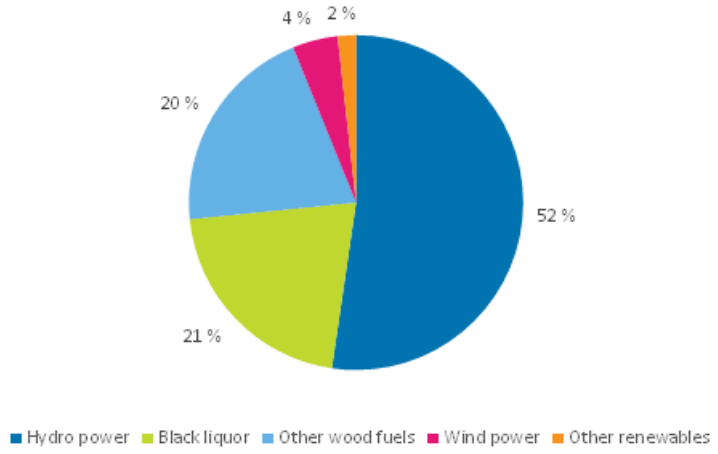
7) Reduction heat produced in connection with condensate production and combined heat and power production were calculated in separate production of heat.

Appendix figures

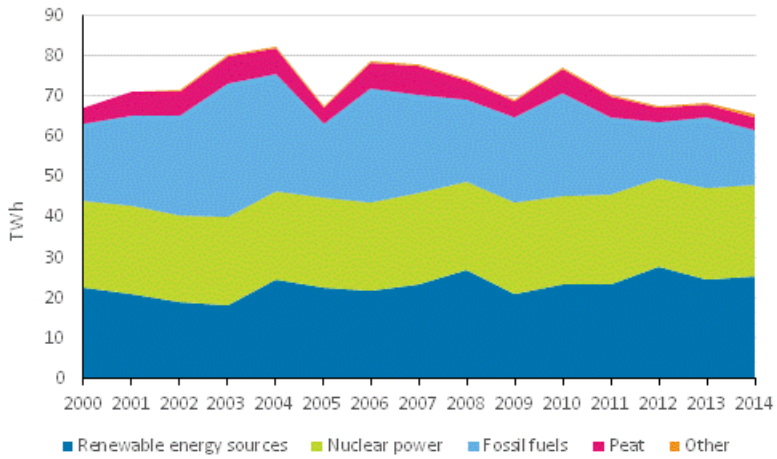
Appendix figure 1. Electricity generation by energy source 2014



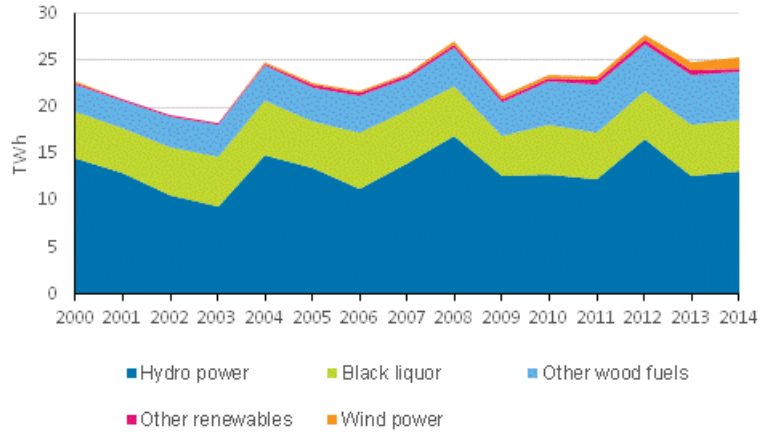
Appendix figure 2. Electricity generation with renewables 2014



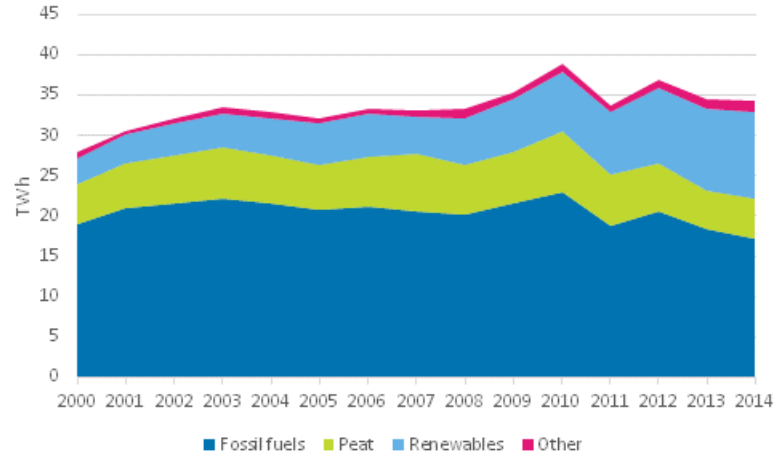
Appendix figure 3. Electricity generation by energy source 2000-2014



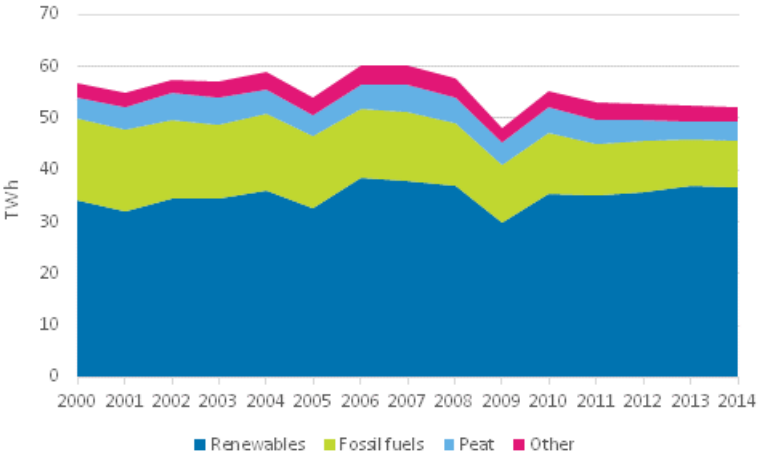
Appendix figure 4. Electricity generation with renewables 2000-2014



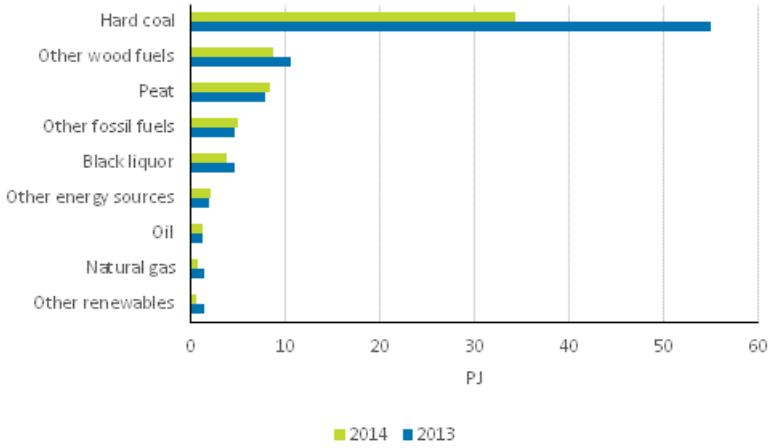
Appendix figure 5. District heat production by fuels 2000-2014



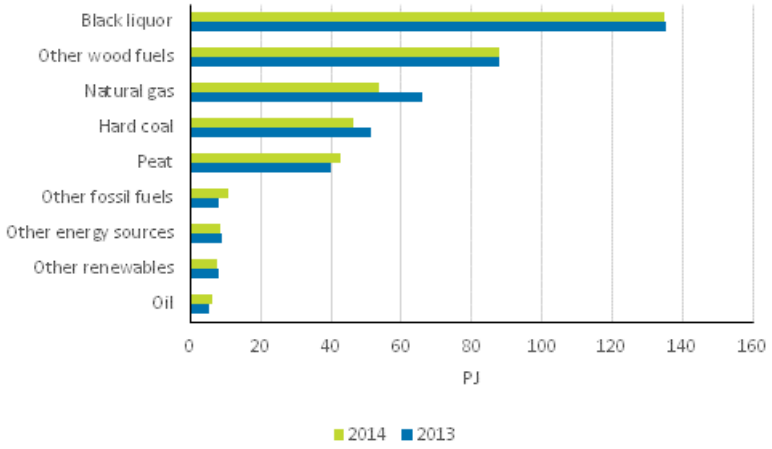
Appendix figure 6. Industrial heat production by fuels 2000-2014



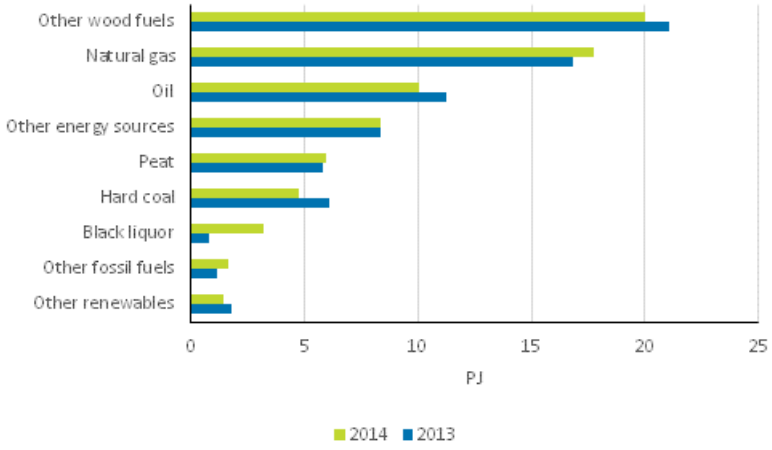
Appendix figure 7. Fuel use in separate electricity production 2013-2014



Appendix figure 8. Fuel use in combined heat and power production 2013-2014



Appendix figure 9. Fuel use in separate heat production 2013-2014



Statistics Finland

Suomen virallinen tilasto
Finlands officiella statistik
Official Statistics of Finland

Energy 2015

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Source: Statistics on production of electricity and heat, Statistics Finland and Electricity statistics, Finnish Energy Industries

Communication and Information Services, Statistics Finland
tel. +358 29 551 2220
www.stat.fi

Publication orders, Edita Publishing Oy
tel. +358 20 450 05
www.editapublishing.fi

ISSN 1796-0479
= Official Statistics of Finland
ISSN 1798-5099 (pdf)