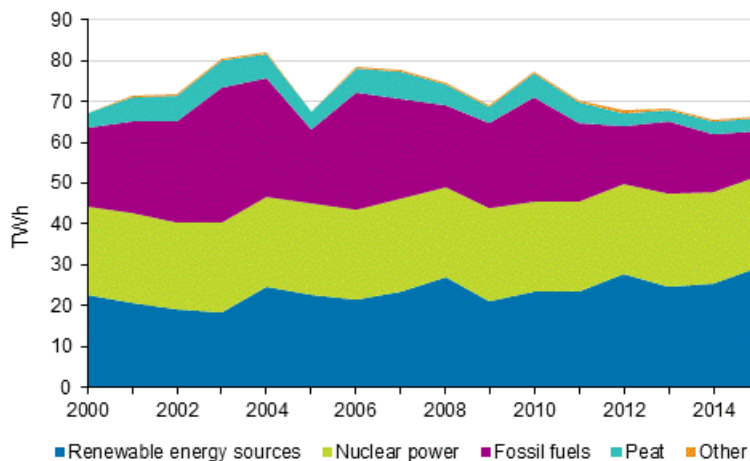


Production of electricity and heat 2015

Volume of electricity produced with renewable energy sources at record level

The production of electricity in Finland amounted to 66.2 TWh in 2015. The production grew by one per cent from the previous year. The amount of electricity produced with renewable energy sources was bigger than ever, 29.5 TWh which is 45 per cent of total electricity production. Production of district heat and industrial heat decreased slightly. The use of fossil fuels diminished, as 29 per cent less hard coal and 15 per cent less natural gas was used than in 2014. The use of peat fell by five per cent. These data derive from the statistics on the production of electricity and heat compiled by Statistics Finland.

Electricity generation by energy source in 2000 to 2015



In 2015, the **production of electricity in Finland** amounted to 66.2 terawatt hours (TWh) or billion kilowatt hours (kWh). The production went up by one per cent from the year before. In turn, total electricity consumption went down by one per cent and amounted to 82.5 TWh. Of total electricity consumption, 80 per cent was covered by domestic production and 20 per cent by net imports of electricity from the Nordic countries, Russia and Estonia. Net imports of electricity declined by nine per cent from the year before. Thirty-two per cent of domestic electricity production was based on combined heat and power production.

Electricity and heat production by production mode in 2015

	Electricity, GWh	District heat, GWh	Industrial heat, GWh	Fuels used, TJ ¹⁾
Separate production of electricity				
- Hydro power	16,584	-	-	-
- Wind power	2,327	-	-	-
- Solar power	10	-	-	-
- Nuclear power	22,326	-	-	-
- Condensing power ²⁾	4,062	-	-	42,393
- Total	45,309	-	-	42,393
Combined heat and power production	20,846	24,473	42,869	382,098
Separate heat production	-	10,558	8,975	78,692
Total production	66,155	35,031	51,844	503,183
Net imports of electricity	16,337	-	-	-
Total	82,492	35,031	51,844	503,183

1) In calculating total primary energy used, hydro power, wind power, solar 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.

Of all electricity production, 29.5 TWh were produced with renewable energy sources, which is the biggest amount ever. Forty-five per cent of electricity production was covered with renewable energy sources, which is the largest share since the 1970s. Over one-half of the electricity produced with renewable energy sources was produced with hydro power, nearly one-tenth with wind power and almost all of the remainder with wood-based fuels. Hydro power was used for producing 16.6 TWh of electricity. More electricity than this has been produced with hydro power only in 2008 and 2012. Seventeen per cent of electricity was produced with fossil fuels, four per cent with peat and 34 per cent with nuclear power.

In 2015, the amount of electricity produced with renewable energy sources increased by 17 per cent from 2014 because the amount of electricity produced with hydro power grew by one-quarter and that produced with wind power more than doubled. Correspondingly, the amount of electricity produced with wood decreased by four per cent. The amount of electricity produced with renewable energy sources varies by year mainly due to hydro power production, but its trend has been rising in recent years. The amount of electricity produced with fossil fuels declined by 23 per cent from the year before, as the amount produced with hard coal fell by 35 per cent and that produced with natural gas by 6 per cent. The use of fossil fuels varies yearly by the use of hard coal in particular, but its trend has been falling in recent years. In recent years, the use has, however, decreased as a whole. The amount of electricity produced with peat decreased by nine per cent from the year before. The use of peat has annual variation due to the weather dependency of peat production, but its share of the produced electricity has remained at around five per cent in recent years.

The production of **district heat** totalled 35.0 TWh in 2015. The production went down from the year before. The use of renewable fuels in the production of district heat grew by five per cent from the year before. Nearly one-half of district heat was produced with fossil fuels, whose use fell, however, by 14 per cent from one year ago. Most of district heat was produced with wood fuels and hard coal.

The **production of industrial heat** was 51.8 TWh in 2015. The production went down slightly from the year before. Over 70 per cent of heat produced for the needs of industry 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 the entire production of electricity connected to the grid. The coverage of the statistics has been improved by adding district heat production plants. Therefore, the figures are not fully comparable with the statistics for previous years. Solar power and small CHP have also been added for the first time in the statistics. The statistics do not cover small heat plants nor small-scale industrial heat production.

Links:

[Statistics Finland's electricity and heat production inquiry](#)

Finnish Energy Industries http://energia.fi/ajankohtaista_ja_materiaalipankki/tilastot/sahkotilastot

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Appendix tables

Appendix table 1. Electricity and heat production by production mode and fuel in 2015

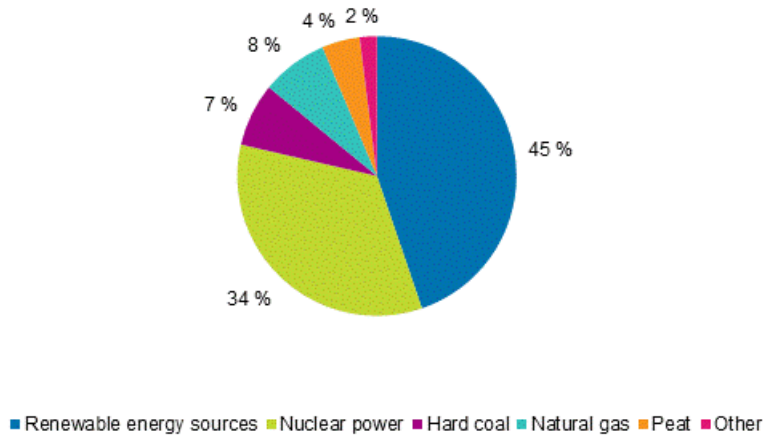
		Electricity, GWh	District heat, GWh	Industrial heat, GWh	Fuels used, GWh	Fuels used, TJ
Condensing power production ¹⁾	Oil	72	-	-	254	914
	Hard coal	1,539	-	-	4,137	14,893
	Natural gas	36	-	-	98	354
	Other fossil ²⁾³⁾	479	-	-	1,369	4,928
	Peat	570	-	-	1,659	5,971
	Black liquor and other concentrated liquors	388	-	-	1,329	4,783
	Other wood fuels	816	-	-	2,346	8,446
	Other renewables ²⁾⁴⁾	99	-	-	278	999
	Other energy sources ⁵⁾	62	-	-	307	1,105
	Total	4,062	-	-	11,776	42,393
Combined heat and power production ⁶⁾	Oil	115	119	1,400	1,978	7,122
	Hard coal	3,282	6,185	444	11,567	41,642
	Natural gas	5,050	4,019	2,834	13,453	48,430
	Other fossil ²⁾³⁾	381	1,012	741	2,556	9,200
	Peat	2,323	4,560	3,019	11,606	41,781
	Black liquor and other concentrated liquors	5,054	190	24,582	37,506	135,020
	Other wood fuels	3,865	7,096	8,094	22,584	81,303
	Other renewables ²⁾⁴⁾	531	1,126	753	2,926	10,532
	Other energy sources ⁵⁾	245	167	1,002	1,963	7,068
	Total	20,846	24,473	42,869	106,138	382,098
Separate production of heat ⁷⁾	Oil	-	989	986	2,830	10,190
	Hard coal	-	605	386	1,149	4,135
	Natural gas	-	1,614	1,612	3,601	12,963
	Other fossil ²⁾³⁾	-	147	191	412	1,483
	Peat	-	1,225	639	2,159	7,773
	Black liquor and other concentrated liquors	-	19	435	561	2,020
	Other wood fuels	-	4,269	2,774	8,067	29,041
	Other renewables ²⁾⁴⁾	-	247	202	555	1,997
	Other energy sources ⁵⁾	-	1,441	1,751	2,525	9,091
	Total	-	10,558	8,975	21,859	78,692

		Electricity, GWh	District heat, GWh	Industrial heat, GWh	Fuels used, GWh	Fuels used, TJ
Total	Oil	187	1,107	2,386	5,063	18,226
	Hard coal	4,821	6,790	830	16,853	60,671
	Natural gas	5,086	5,633	4,446	17,152	61,747
	Other fossil ²⁾³⁾	860	1,159	931	4,336	15,611
	Peat	2,893	5,785	3,658	15,423	55,525
	Black liquor and other concentrated liquors	5,442	209	25,017	39,395	141,823
	Other wood fuels	4,681	11,365	10,868	32,997	118,790
	Other renewables ²⁾⁴⁾	629	1,373	955	3,758	13,528
	Other energy sources ⁵⁾	307	1,608	2,752	4,796	17,264
	Total	24,908	35,031	51,844	139,773	503,183

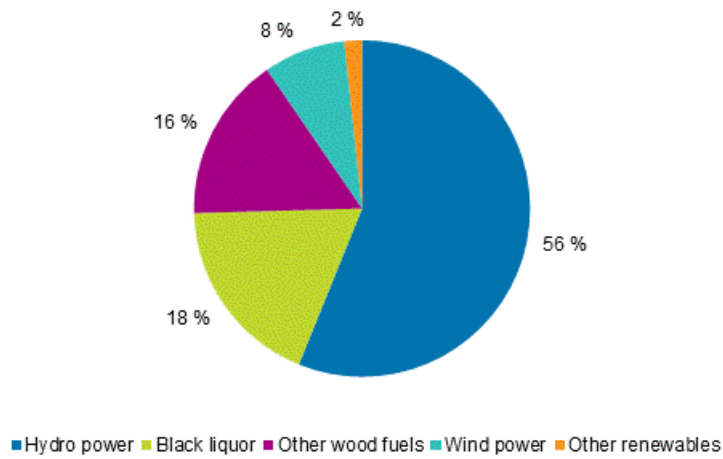
- 1) Condensate parts produced in connection with combined heat and power production were calculated with condensing power.
- 2) Mixed fuels (such as recycled fuel) are divided into renewable and fossil fuels in ratio to the fossil and biodegradable coal contained in them.
- 3) Other fossil fuels include 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

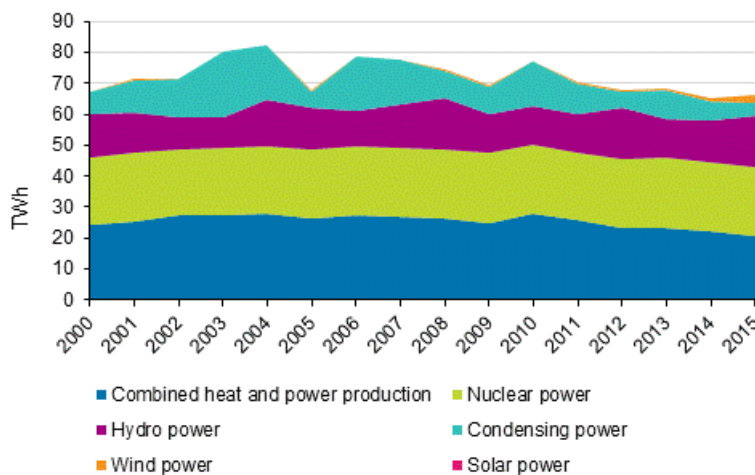
Appendix figure 1. Electricity generation by energy source 2015



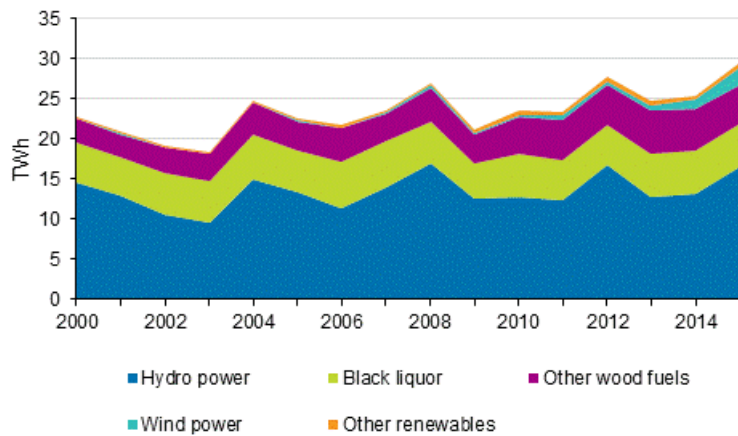
Appendix figure 2. Electricity generation with renewables 2015



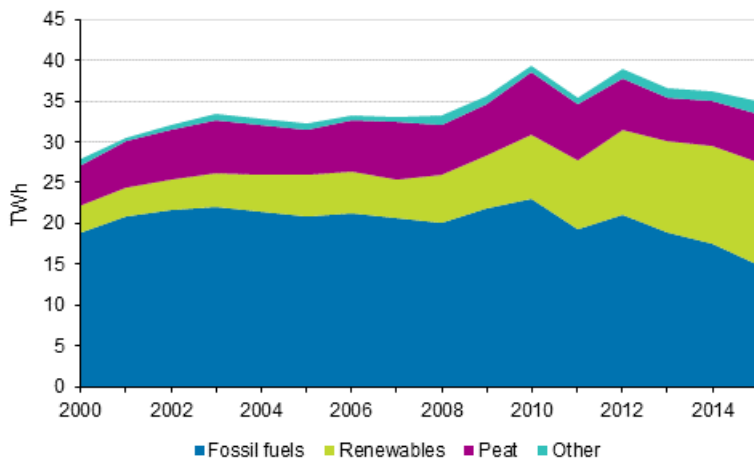
Appendix figure 3. Electricity generation by production mode 2000-2015



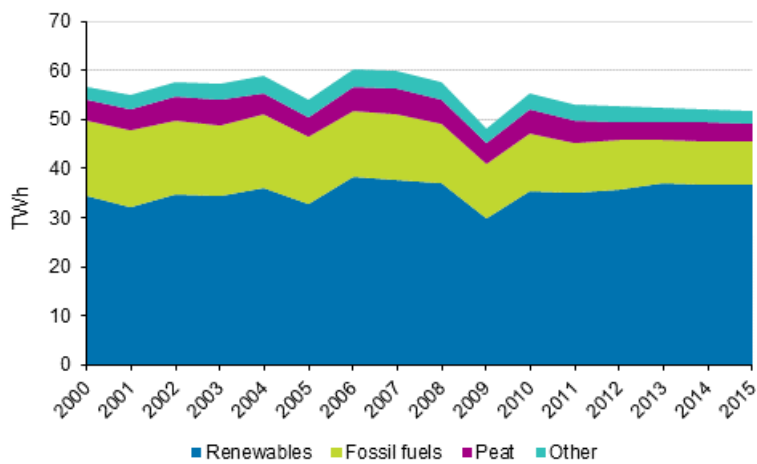
Appendix figure 4. Electricity generation with renewables 2000-2015



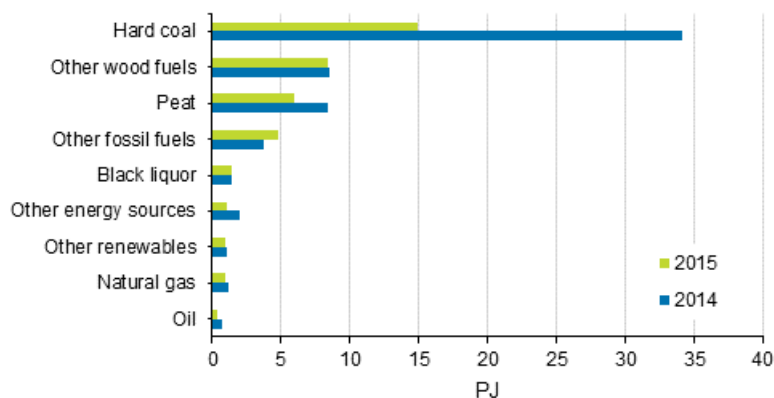
Appendix figure 5. District heat production by fuels 2000-2015



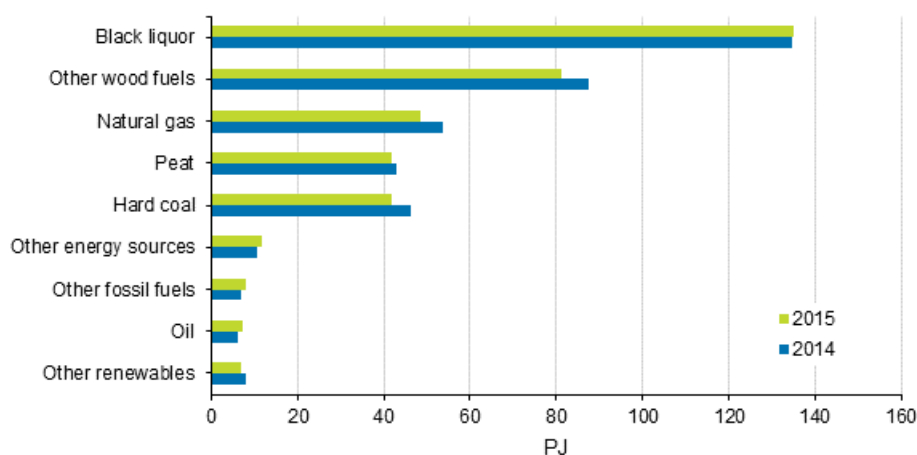
Appendix figure 6. Industrial heat production by fuels 2000-2015



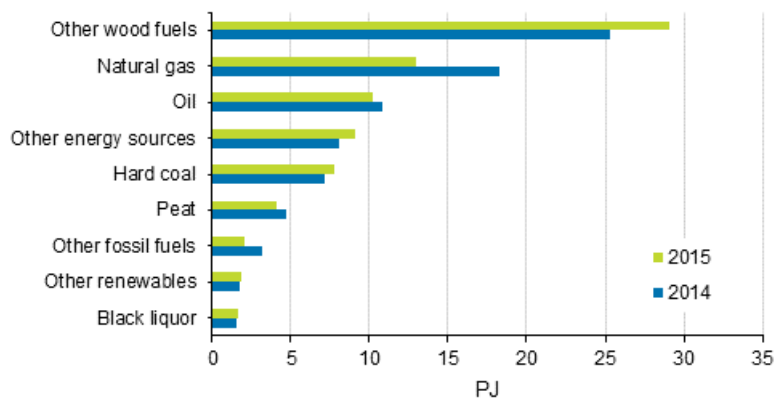
Appendix figure 7. Fuel use in separate electricity production 2014-2015



Appendix figure 8. Fuel use in combined heat and power production 2014-2015



Appendix figure 9. Fuel use in separate heat production 2014-2015



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