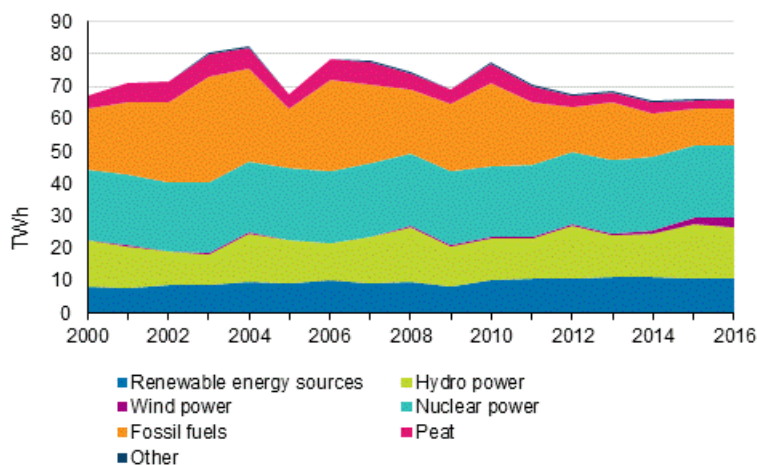


Production of electricity and heat 2016

Renewable energy sources produced 45 per cent of electricity and 57 per cent of heat

The production of electricity in Finland amounted to 66.2 TWh in 2016. The production remained on level with the previous year. The amount of electricity produced with renewable energy sources also remained on level with last year, being 29.6 TWh, which is 45 per cent of total electricity production. The production of district heat grew by 10 per cent and that of industrial heat by two per cent. The use of fossil fuels grew in the production of electricity and heat, 32 per cent more hard coal was used in the production of electricity and heat than in the year before. The use of peat fell by three per cent. These data derive from the statistics on the production of electricity and heat compiled by Statistics Finland.

Electricity generation by energy source 2000-2016



In 2016, the **production of electricity in Finland** amounted to 66.2 terawatt hours (TWh) or billion kilowatt hours (kWh). The production remained on level with the previous year. In turn, total electricity consumption went up by three per cent from the year before and amounted to 85.2 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 16 per cent from the year before. Thirty-two per cent of domestic electricity production was based on combined heat and power production.

Renewable energy sources produced 29.6 TWh of total production of electricity. The share of electricity production stood at 45 per cent. Over one-half of the electricity produced with renewable energy sources was produced with hydro power, one tenth with wind power and almost all of the remainder with wood-based fuels. The share of hydro power in electricity production varies yearly according to the water situation. In 2016, hydro power was used for producing 15.6 TWh of electricity. Seventeen per cent of electricity was produced with fossil fuels, four per cent with peat and 34 per cent with nuclear power.

In 2016, the amount of electricity produced with renewable energy sources was on level with the previous year. The amount of electricity produced with hydro power decreased by six per cent and that produced with wind power grew by one third. Correspondingly, the amount of electricity produced with wood increased by one per cent. Completed waste-to-energy plants also contributed to the growth in the use of renewable energy in electricity production. Although the amount of electricity produced with renewable energy sources varies by year due to hydro power production, its trend has been rising in recent years. The amount of electricity produced with fossil fuels grew by three per cent from the year before, as the amount produced with hard coal grew by 36 per cent and that produced with natural gas declined by 28 per cent. The use of fossil fuels varies yearly particularly according to the use of hard coal. In recent years, the use has, however, decreased as a whole. The amount of electricity produced with peat decreased by six per cent from the year before.

Electricity and heat production and fuels used by production mode in 2016

	Electricity, GWh	District heat, GWh	Industrial heat, GWh	Fuels used, TJ ¹⁾
Separate production of electricity				
- Hydro power	15,634	..	..	..
- Wind power	3,068	..	..	..
- Solar power	18	..	..	..
- Nuclear power	22,280	..	..	..
- Condensing power ²⁾	4,319	..	..	44,699
- Total	45,319	..	..	44,699
Combined heat and power production	20,880	24,636	42,484	387,967
Separate heat production	..	13,874	10,368	98,123
Total production	66,200	38,510	52,853	530,790
Net imports of electricity	18,951	..	..	..
Total	85,150	38,510	52,853	530,790

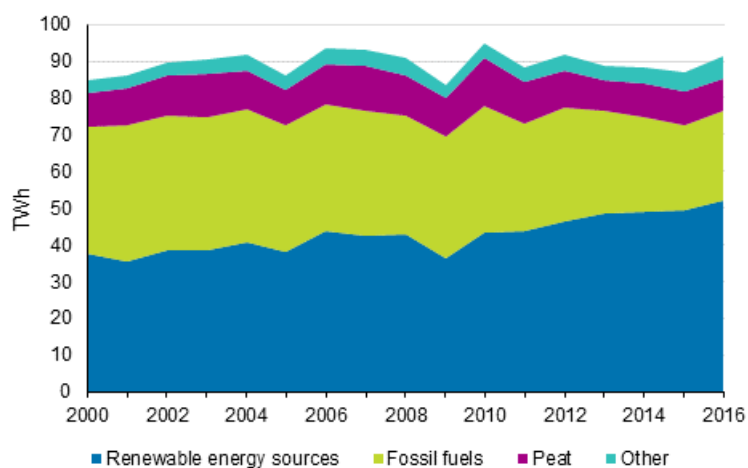
1) In calculating total primary energy used, hydro power, wind power, solar power and net imports of electricity are made commensurate with fuels according to directly obtained electricity (3.6 PJ/TWh). Total nuclear energy used is calculated at the efficiency ratio of 33 per cent from produced nuclear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

The **production of district heat** totalled 38.5 TWh in 2016. The production went up by 10 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. Nearly one-half of district heat was produced with fossil fuels, whose use grew by seven per cent from one year ago. Most of district heat was produced with wood fuels and hard coal.

The **production of industrial heat** was 52.9 TWh in 2016. The production went up 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.

District heat and industrial heat production by fuels 2000-2016



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 are also included in the statistics. From 2015 onwards, the statistics also cover small heat plants, that is, all production of district heat. The statistics do not include all industrial heat.

Links:

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

Finnish Energy Industries https://energia.fi/en/news_and_publications/statistics/electricity_statistics

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Appendix tables

Appendix table 1. Electricity and heat production by production mode and fuel in 2016

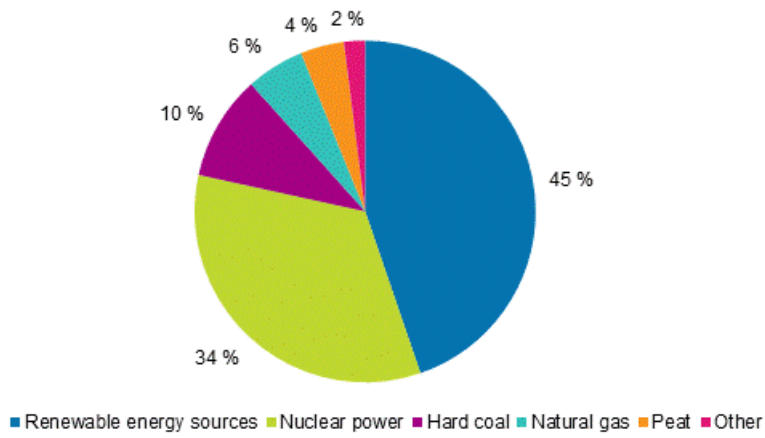
		Electricity, GWh	District heat, GWh	Industrial heat, GWh	Fuels used, GWh	Fuels used, TJ
Condensing power production ¹⁾	Oil	66	..	..	258	929
	Hard coal	2,084	..	..	5,569	20,047
	Natural gas	25	..	..	75	269
	Other fossil ²⁾³⁾	508	..	..	1,563	5,628
	Peat	448	..	..	1,328	4,782
	Black liquor and other concentrated liquors	338	..	..	1,070	3,850
	Other wood fuels	708	..	..	2,052	7,389
	Other renewables ²⁾⁴⁾	90	..	..	274	986
	Other energy sources ⁵⁾	51	..	..	227	818
	Total	4,319	..	..	12,416	44,699
Combined heat and power production ⁶⁾	Oil	103	100	373	720	2,593
	Hard coal	4,468	8,046	761	15,447	55,608
	Natural gas	3,617	2,753	2,558	10,201	36,725
	Other fossil ²⁾³⁾	405	1,087	472	2,517	9,060
	Peat	2,284	4,183	2,819	11,264	40,550
	Black liquor and other concentrated liquors	5,031	188	25,527	39,174	141,026
	Other wood fuels	4,105	6,880	8,187	23,249	83,698
	Other renewables ²⁾⁴⁾	577	1,219	609	3,055	10,999
	Other energy sources ⁵⁾	291	180	1,178	2,141	7,707
	Total	20,880	24,636	42,484	107,769	387,967
Separate production of heat ⁷⁾	Oil	..	1,265	1,887	4,156	14,962
	Hard coal	..	682	342	1,155	4,159
	Natural gas	..	1,880	1,627	3,941	14,186
	Other fossil ²⁾³⁾	..	193	328	631	2,271
	Peat	..	1,278	674	2,328	8,380
	Black liquor and other concentrated liquors	..	19	223	319	1,147
	Other wood fuels	..	4,938	3,471	9,849	35,457
	Other renewables ²⁾⁴⁾	..	302	372	823	2,961
	Other energy sources ⁵⁾	..	3,316	1,445	4,056	14,601
	Total	..	13,874	10,368	27,256	98,123

		Electricity, GWh	District heat, GWh	Industrial heat, GWh	Fuels used, GWh	Fuels used, TJ
Total	Oil	168	1,365	2,260	5,135	18,484
	Hard coal	6,552	8,727	1,103	22,171	79,814
	Natural gas	3,643	4,633	4,185	14,217	51,180
	Other fossil ²⁾³⁾	913	1,280	800	4,711	16,959
	Peat	2,731	5,461	3,492	14,920	53,713
	Black liquor and other concentrated liquors	5,370	207	25,750	40,562	146,024
	Other wood fuels	4,812	11,819	11,658	35,151	126,544
	Other renewables ²⁾⁴⁾	668	1,521	981	4,152	14,947
	Other energy sources ⁵⁾	342	3,496	2,623	6,424	23,125
	Total	25,199	38,510	52,853	147,442	530,790

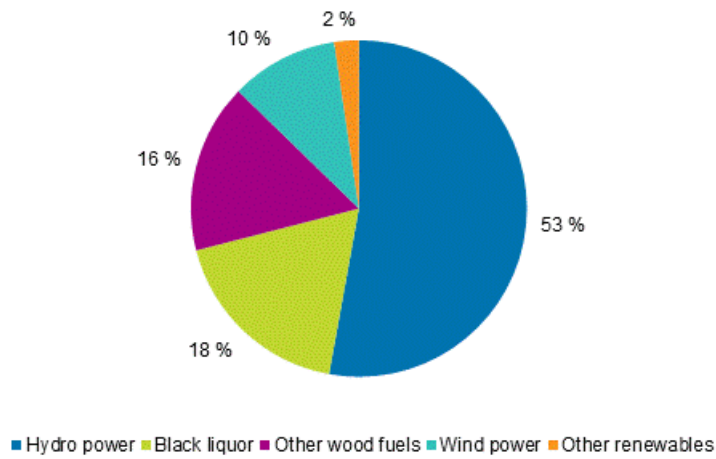
- 1) Condensate parts produced in connection with combined heat and power production were calculated with condensing power.
- 2) Mixed fuels (such as recycled fuel) are divided into renewable and fossil fuels in ratio to the fossil and biodegradable coal contained in them.
- 3) Other fossil fuels include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

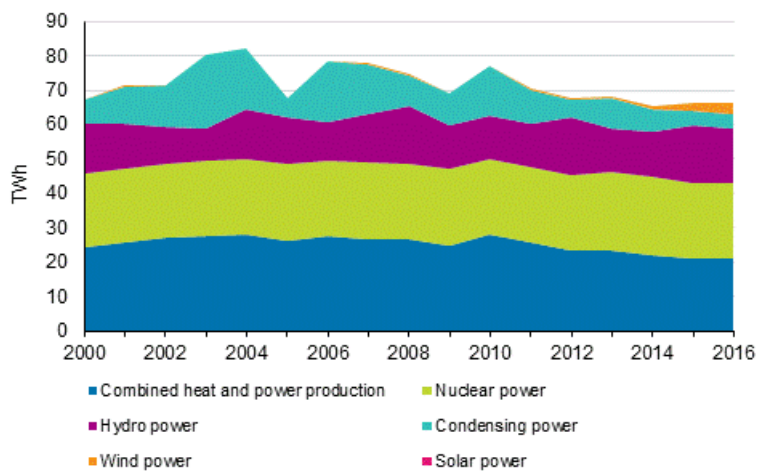
Appendix figure 1. Electricity generation by energy source 2016



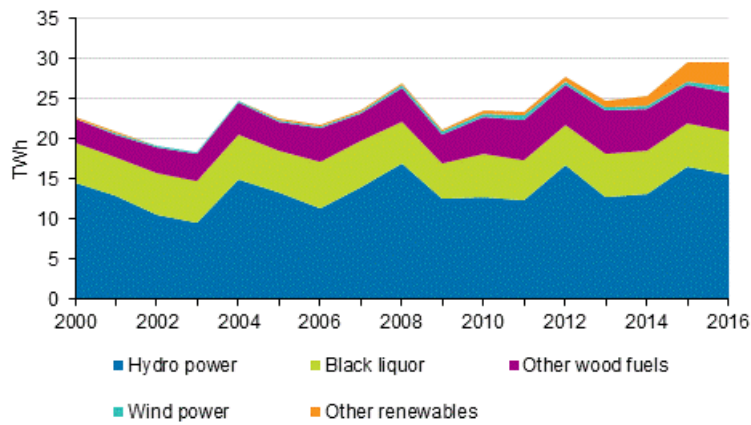
Appendix figure 2. Electricity generation with renewables 2016



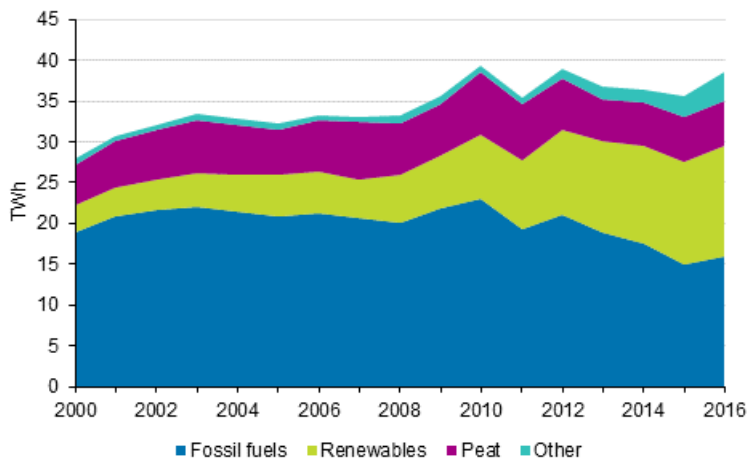
Appendix figure 3. Electricity generation by production mode 2000-2016



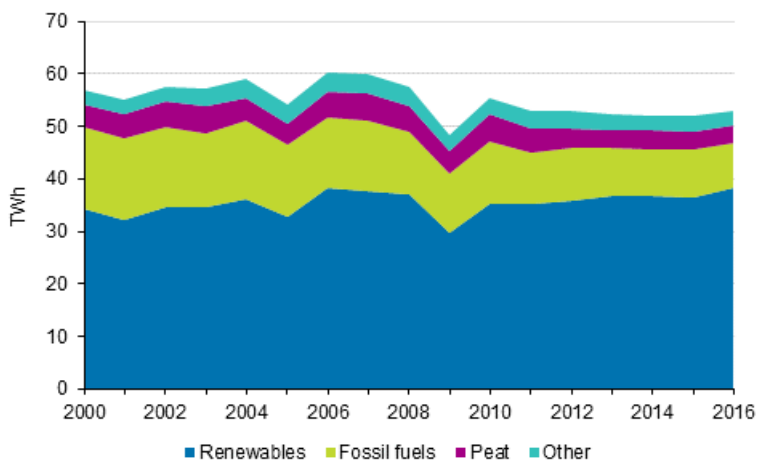
Appendix figure 4. Electricity generation with renewables 2000-2016



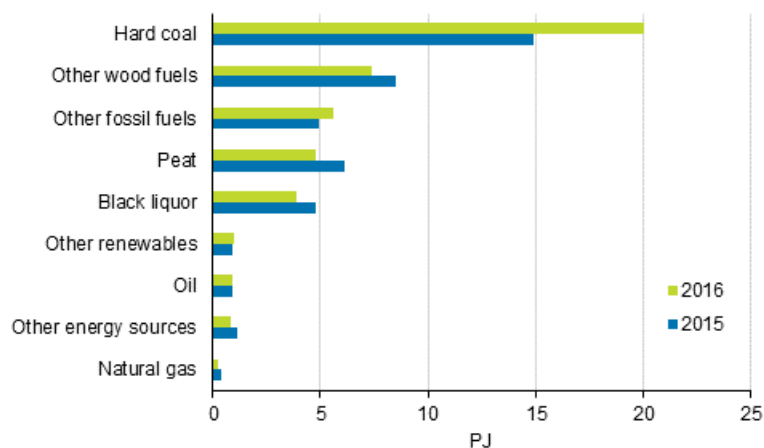
Appendix figure 5. District heat production by fuels 2000-2016



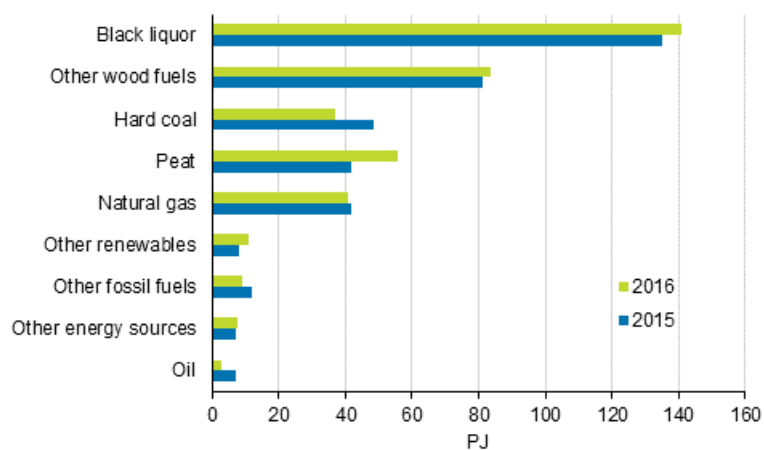
Appendix figure 6. Industrial heat production by fuels 2000-2016



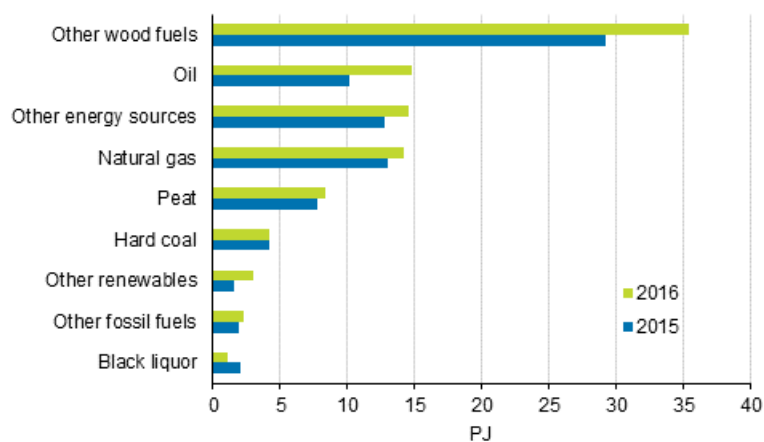
Appendix figure 7. Fuel use in separate electricity production 2015-2016



Appendix figure 8. Fuel use in combined heat and power production 2015-2016



Appendix figure 9. Fuel use in separate heat production 2015-2016



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