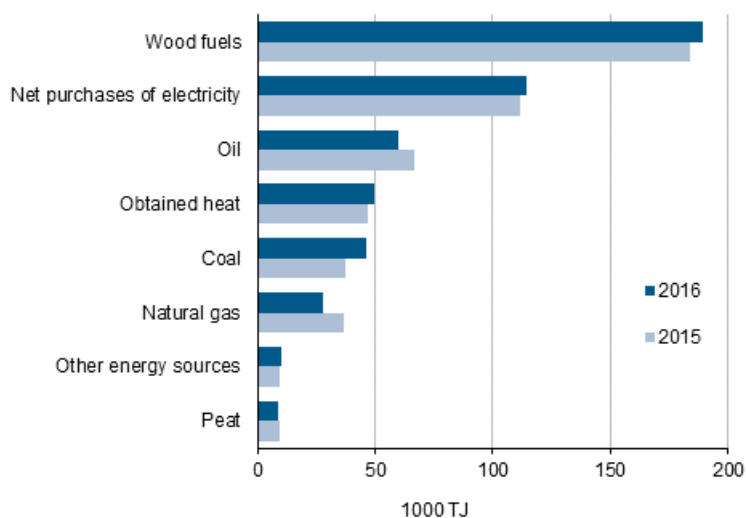


Energy use in manufacturing 2016

Energy use in manufacturing grew by close on one per cent in 2016

According to Statistics Finland, energy use in manufacturing grew by close on one per cent in 2016. Manufacturing consumed 507 petajoules (PJ) of energy, which was 0.8 per cent more than in the year before. Total use of electricity increased by 0.7 per cent from the previous year.

Use of energy in manufacturing



The decrease in industrial production that has continued since 2012 made an upturn last year, which was also visible as an increase in energy use in manufacturing. Energy use has not, however, grown at the same rate as industrial production as among energy-intensive industries, production decreased in the chemical industry year-on-year, which also meant that energy use in the industry continued declining. Despite the growth, energy used in all manufacturing was still far from the levels seen in the peak year 2007. In the ongoing decade, manufacturing has consumed less energy than in 2016 only in 2015.

Wood fuels were still the biggest source of energy in manufacturing with a 37 per cent share. The use of wood fuels went up by nearly three per cent. Just like in 2015, oil products were the second most important source of energy. However, the consumption of oil products decreased by around ten per cent. The consumption of natural gas also continued declining and dropped by more than 20 per cent year-on-year.

By contrast, the consumption of coal grew by as much. The growth in consumption of coal is caused by the use of hard coal being widened to a new use in the process industry.

In fuel use, the consumption of fossil fuels and peat continued to decrease. Last year, consumption of all fuels was still nearly 20 per cent lower than in 2007 prior to the financial crisis. Consumption of wood fuels has, however, remained almost at the same level. As consumption has decreased, the structure of consumption has shifted from fossil fuels and peat towards renewable energy sources.

Even though many factors affect the use of fuels, such as the relative prices of various fuels, it would seem that the change in the structure of consumption constitutes a permanent trend. The consumption of peat has almost halved, the consumption of natural gas has halved and nearly one third less oil is also consumed than in 2007. Despite the increase in the use of coal in 2016 its consumption was nonetheless close on twenty per cent lower than in 2007.

Total use of electricity increased in pace with other energy consumption, that is, by 0.7 per cent. Total use describes the total amount of electricity used in manufacturing. By contrast, net acquisition of electricity increased by 2.8 per cent. Net acquisition refers to the difference between the purchases and sales of electricity users. Only a few actors have their own production of electricity and, thus, sales or delivery of electricity. Big users can have very large volumes of electricity use (total use) but still net acquisitions can be negative if electricity from one's own use is left over to be sold on the market. When calculating the use of energy in manufacturing, the use of electricity is included as net acquisitions. The energy use of actors who produce electricity themselves is not excluded from the statistics, however, it is visible as fuels used in the production of electricity. Due to this conceptual difference, the use volumes of electricity differ from each other, for example, in Appendix tables 1 and 3.

The consumption of heat in manufacturing grew by five per cent from the year before. The consumption of district heat was boosted by cooler weather than in the year before and the amount of steam used in industrial processes increased due to the growth in production.

The industry-specific structure of energy use in manufacturing has remained almost unchanged. The forest industry still consumes nearly one-half of the energy used, and together with the chemical industry and manufacturing of basic metals it stood for 80 per cent of total use of energy in manufacturing. The forest industry is, besides a large energy consumer, also a considerable producer of energy. The forest industry produces a majority of the electricity and heat that it uses with its own fuels. These renewable fuels generated from production effluents create a considerable share of the use of renewable fuels in Finland.

Viewed by region, energy use in manufacturing was highest in South Karelia, while one year earlier most energy was consumed in Uusimaa. In total use of electricity, Lapland was clearly the biggest consumer of electricity, just like one year earlier. In energy consumption, regional distribution follows the geographical distribution of heavy, energy-intensive manufacturing.

Contents

Tables

Appendix tables

Appendix table 1. Energy use in manufacturing by energy source 2016.....	4
Appendix table 2. Energy use in manufacturing by industry 2016.....	4
Appendix table 3. Total electricity consumption in manufacturing 2016.....	6

Figures

Appendix figures

Appendix figure 1. Use of energy in manufacturing.....	7
Appendix figure 2. Energy use in manufacturing by energy source	7
Appendix figure 3. Energy use in manufacturing by industry.....	8
Appendix figure 4. Energy use in manufacturing by region.....	8
Appendix figure 5. Total electricity consumption in manufacturing	8
Appendix figure 6. Total electricity consumption by manufacturing branch.....	9
Appendix figure 7. Total electricity consumption in manufacturing by region.....	9

Appendix tables

Appendix table 1. Energy use in manufacturing by energy source 2016

Source of energy	TJ	GWh
Refinery gas	27 024	7 507
LPG (Liquefied petroleum gas)	9 459	2 627
Light fuel oil and Gasoil	4 402	1 223
Heavy fuel oils	8 007	2 224
Petroleum coke	6 085	1 690
Recycled and waste oils	377	105
Other petroleum products	4 657	1 294
Hard coal, bituminous	15 132	4 203
Coke	16 785	4 663
Blast furnace gas and Coke oven gas and CO gas	14 152	3 931
Natural gas	28 238	7 844
Milled peat	8 802	2 445
Sod peat and Peat pellets and briquettes	88	24
Forest chippings and other firewood	5 843	1 623
Bark	24 184	6 718
Sawdust, cutter shavings etc.	3 620	1 005
Other industrial wood residue	3 239	900
Black liquor and other concentrated liquors	146 307	40 641
Other by-products from wood processing industry	6 097	1 694
Wood pellets and briquettes	157	44
Biogas	256	71
Other biofuels	2 178	605
Recovered fuels	3 516	977
Waste and other non-specified energy sources	1 082	301
Hydrogen	287	80
Electricity	114 558	31 822
District heat	10 409	2 891
Heat used in production processes	39 026	10 841
Total	507 176	140 882

Appendix table 2. Energy use in manufacturing by industry 2016

Industries	Fuels, TJ	Electricity (nett), TJ	Heat (nett) TJ	Total, TJ
05 Mining of coal and lignite	.	.	.	.
06 Extraction of crude petroleum and natural gas	.	.	.	.
07 Mining of metal ores	316	4 010	82	4 409
08□09 Other mining and quarrying and mining support service activities	1 221	924	10	2 155
10 Manufacture of food products	3 472	6 349	5 522	15 343
11 Manufacture of beverages	252	892	1 057	2 200
12 Manufacture of tobacco products	.	.	.	.
13 Manufacture of textiles	176	290	144	610
14 Manufacture of wearing apparel	61	99	2	162
15 Manufacture of leather and related products	64	60	22	146
16 Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	8 850	5 198	7 835	21 883

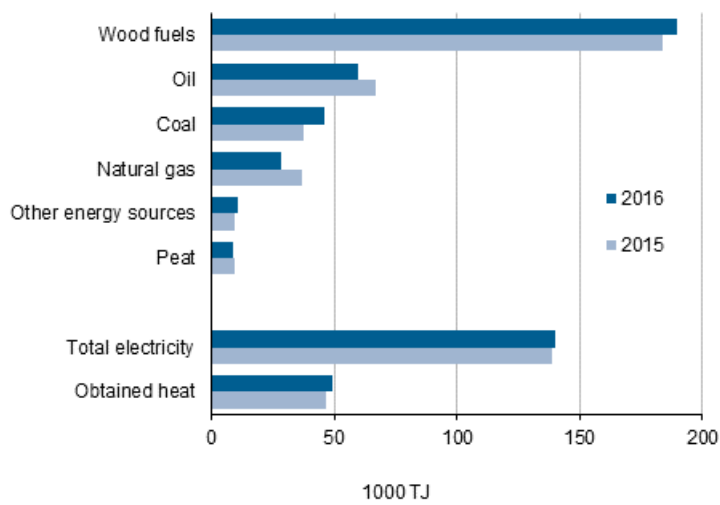
Industries	Fuels, TJ	Electricity (nett), TJ	Heat (nett) TJ	Total, TJ
17 Manufacture of paper and paper products	219 742	39 959	12 575	272 276
18 Printing and reproduction of recorded media	127	1 656	594	2 376
19 Manufacture of coke and refined petroleum products	32 025	4 076	749	36 849
20 Manufacture of chemicals and chemical products	17 345	14 866	8 996	41 207
21 Manufacture of basic pharmaceutical products and pharmaceutical preparations	24	339	361	724
22 Manufacture of rubber and plastic products	761	3 273	1 072	5 106
23 Manufacture of other non-metallic mineral products	8 865	2 529	525	11 919
24 Manufacture of basic metals	47 624	20 524	4 827	72 975
25 Manufacture of fabricated metal products, except machinery and equipment	725	2 763	897	4 385
26 Manufacture of computer, electronic and optical products	24	910	352	1 286
27 Manufacture of electrical equipment	67	1 162	516	1 745
28 Manufacture of machinery and equipment n.e.c.	792	2 394	1 645	4 831
29 Manufacture of motor vehicles, trailers and semi-trailers	146	536	500	1 182
30 Manufacture of other transport equipment	203	642	533	1 378
31 Manufacture of furniture	185	335	94	613
32 Other manufacturing	24	343	131	498
33 Repair and installation of machinery and equipment	92	431	395	917
Total	343 183	114 558	49 435	507 176

Appendix table 3. Total electricity consumption in manufacturing 2016

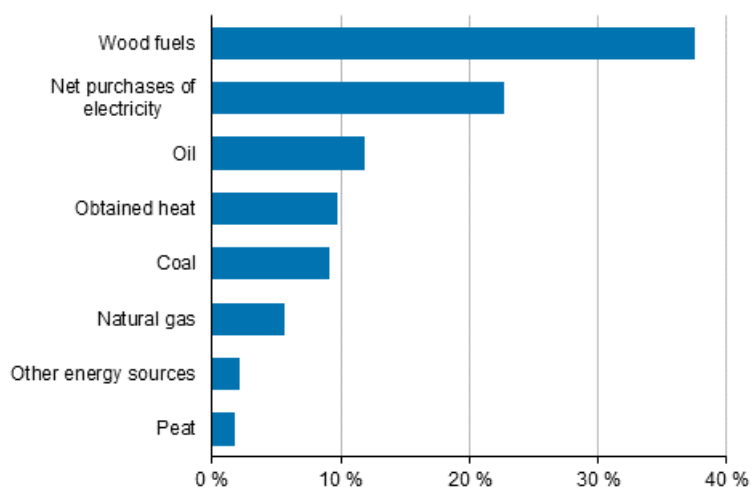
Industries	GWh
07 Mining of metal ores	1 114
08□09 Other mining and quarrying and mining support service activities	257
10 Manufacture of food products	1 776
11 Manufacture of beverages	267
12 Manufacture of tobacco products	.
13 Manufacture of textiles	80
14 Manufacture of wearing apparel	26
15 Manufacture of leather and related products	17
16 Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	1 481
17 Manufacture of paper and paper products	17 212
18 Printing and reproduction of recorded media	460
19 Manufacture of coke and refined petroleum products	1 132
20 Manufacture of chemicals and chemical products	4 437
21 Manufacture of basic pharmaceutical products and pharmaceutical preparations	89
22 Manufacture of rubber and plastic products	910
23 Manufacture of other non-metallic mineral products	703
24 Manufacture of basic metals	6 181
25 Manufacture of fabricated metal products, except machinery and equipment	788
26 Manufacture of computer, electronic and optical products	253
27 Manufacture of electrical equipment	311
28 Manufacture of machinery and equipment n.e.c.	683
29 Manufacture of motor vehicles, trailers and semi-trailers	151
30 Manufacture of other transport equipment	178
31 Manufacture of furniture	93
32 Other manufacturing	95
33 Repair and installation of machinery and equipment	120
Total	38 816

Appendix figures

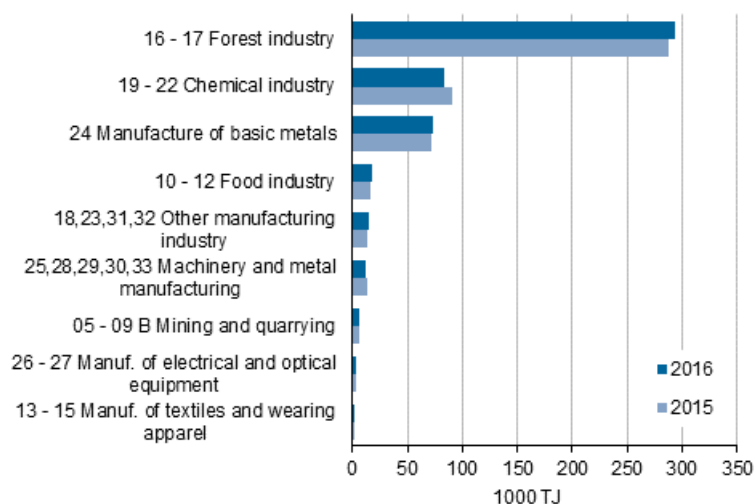
Appendix figure 1. Use of energy in manufacturing



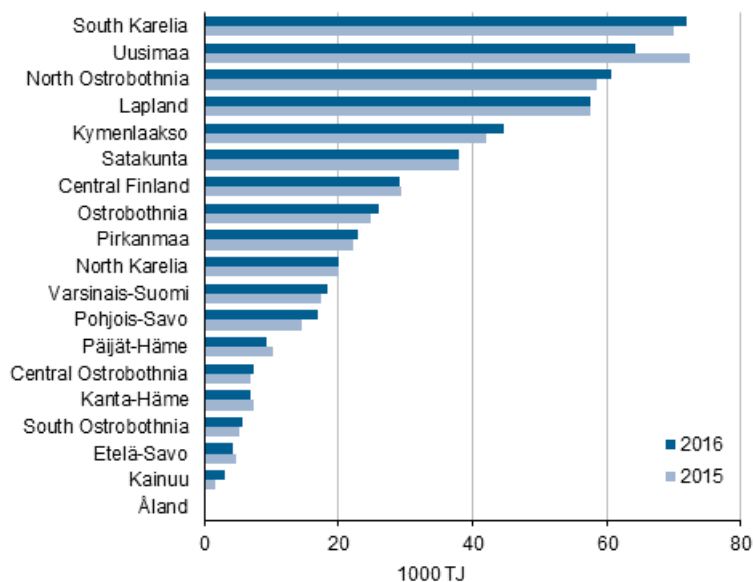
Appendix figure 2. Energy use in manufacturing by energy source



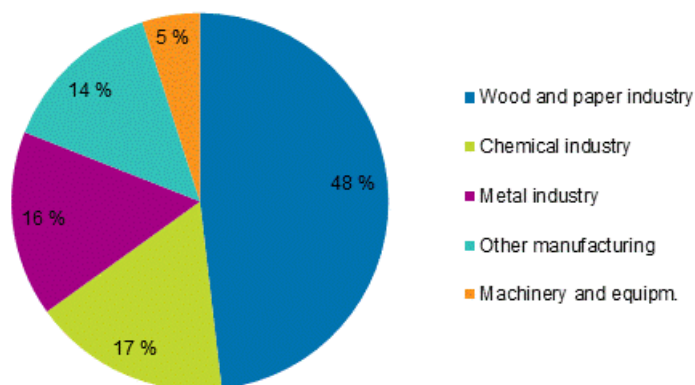
Appendix figure 3. Energy use in manufacturing by industry



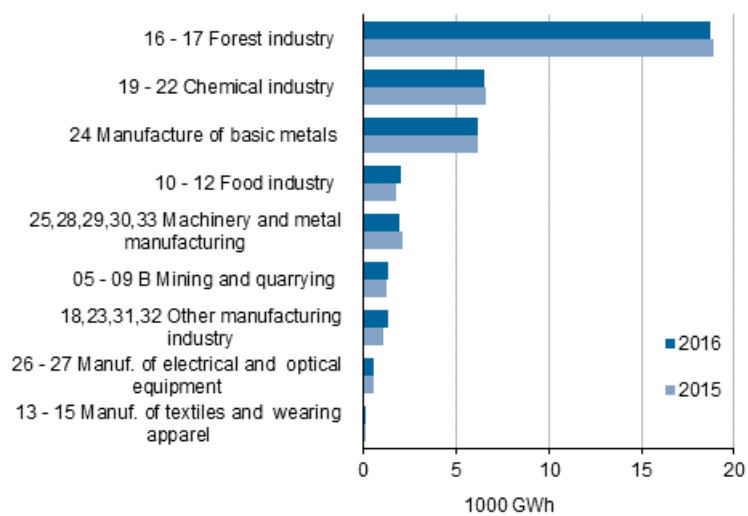
Appendix figure 4. Energy use in manufacturing by region



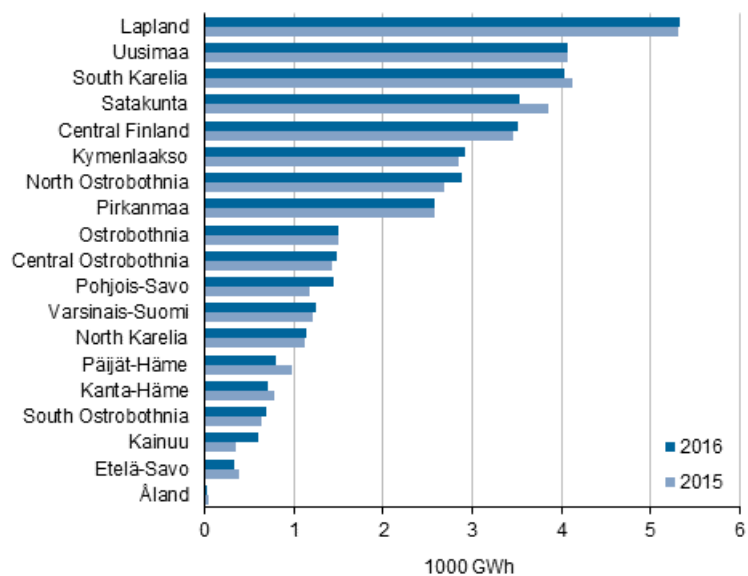
Appendix figure 5. Total electricity consumption in manufacturing



Appendix figure 6. Total electricity consumption by manufacturing branch



Appendix figure 7. Total electricity consumption in manufacturing by region



Inquiries

Anssi Vuorio 029 551 3668
Director in charge:
Ville Vertanen

energia@stat.fi
www.stat.fi
Source: Energy use in manufacturing, Statistics Finland