

District Heating in Finland 2023



Energiateollisuus

Kaukolämpö

District heating in Finland 2023

© Energiateollisuus ry 2024
(Finnish Energy)
ISSN 0786-4809

Contents

1.	District heating 2023.....	1
1.1	General information.....	1
1.2	Municipalities with district heating.....	2
1.3	District heating networks and production units.....	3
1.4	District heat production and fuel energy.....	3
1.5	Emissions.....	5
1.6	Customers.....	6
1.7	Heat sales and sales proceeds.....	7
1.8	Specific heat consumption and heating degree day.....	8

1. District heating 2023

Finnish Energy compiles district heating statistics based on the data collected from the companies. The objective is to reliably and transparently describe the district heating operations in Finland as well as serve as a foundation towards sustainable advocacy. These annually published statistical tables contain detailed and comprehensive information of the district heating operations in Finland in 2023. The statistical tables are available as Excel files on the Finnish Energy's website: <https://energia.fi/en/statistics/statistics-on-district-heating/district-heating-and-cooling/>

1.1 General information

The district heating statistical tables contain information of those member companies of Finnish Energy who have responded to the statistical survey. Data has also been collected from those wholesale companies that deliver district heat to companies already answering to the survey.

This publication contains statistics from 109 district heating companies and from 73 wholesale companies.

Table 1. General information on district heating year 2023

	Year 2023	Change compared to 2022
Total supply	36 700	-0,3 %
DH production by fuels	29 700	-6,4 %
Net production of electricity in CHP production	5 900	-26,8 %
Fuel energy consumed	43 200	-11,0 %
Heat recovery, and heat produced by heat pumps and electric boilers	7 000	40,2 %
DH consumption	33 200 GWh	0,8 %
of which the share of dwelling houses	53,6 %	- 0,5 p.p.
Customers:		
❖ The contracted heat power	19 500 MW	+ 0,7 %
❖ Building volume	1040 milj. m ³	+ 1,4 %
❖ of which the share of dwelling houses	46,2 %	+ 0,1 p.p.
Average selling price		
❖ Arithmetic value	96,26 €/MWh	+ 9,1 %
❖ Weighted by sales	100,69 €/MWh	+ 10,3 %
Total length of DH networks	16 500 km	+ 1,4 %

1.2 Municipalities with district heating

The district heating companies included in this publication distributed district heat in 177 municipalities.

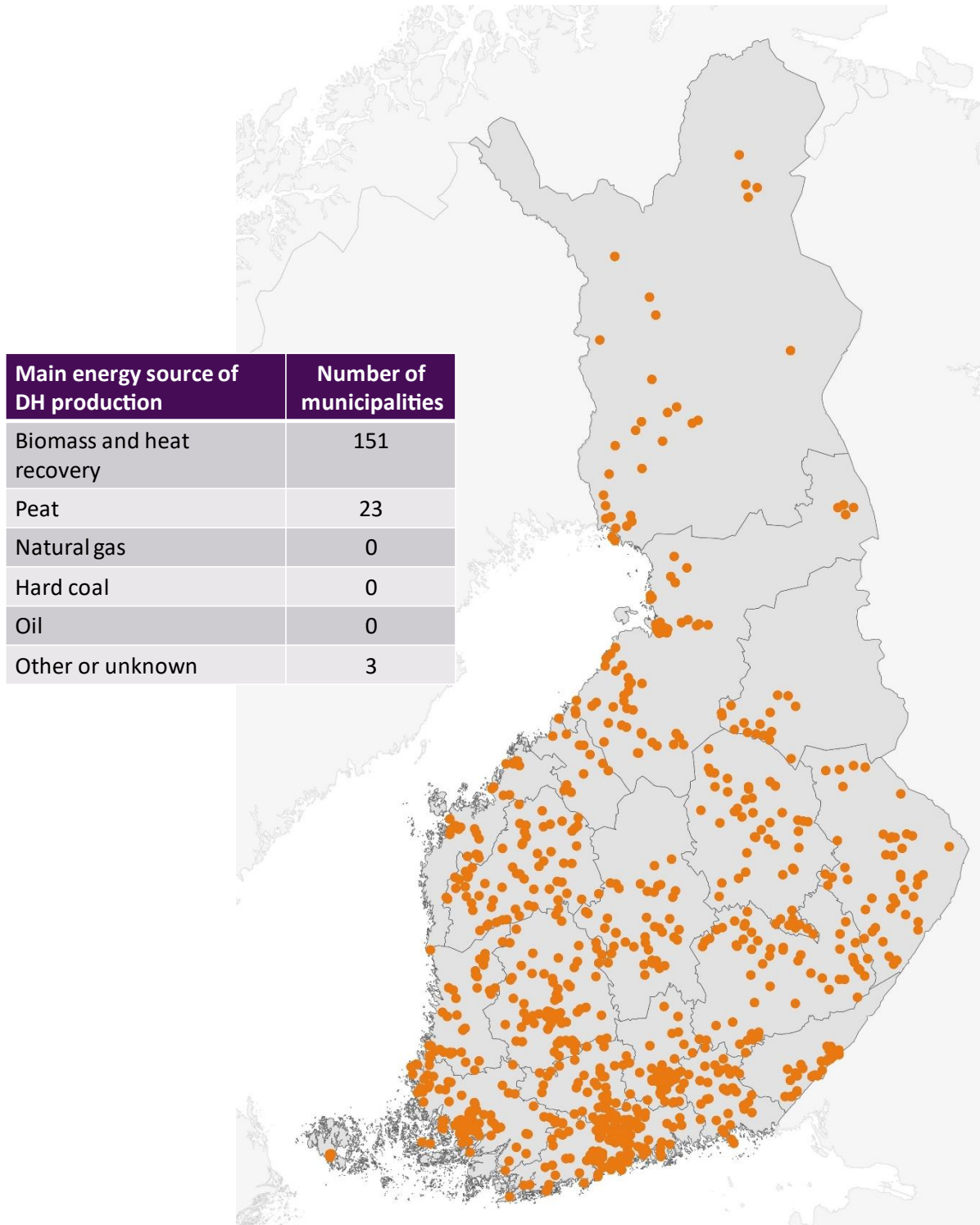


Figure 1 District heating production units at the end of 2023. The locations are within the right municipalities but do not present the exact locations.

1.3 District heating networks and production units

The length of the district heating network at the end of 2023 was 16 465 km. The length increased 230 km from the previous year. The development of the network length since 1970 is presented in Figure 2.

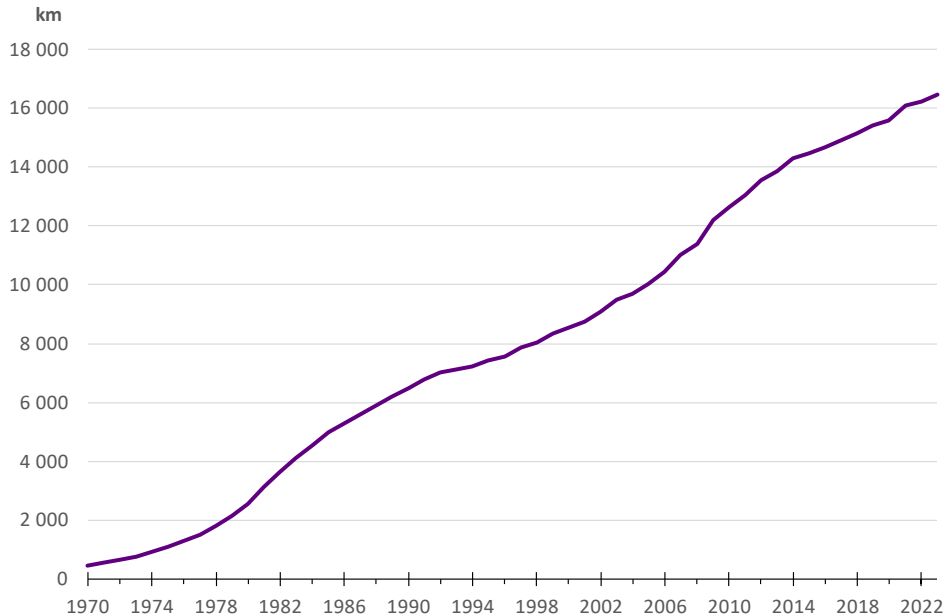


Figure 2. Total length of the DH networks

There were 105 power plants with a district heating capacity of 9 300 MW. Power output of these CHP plants totaled 5 400 MW. Moreover, there were 868 stationary heating plants as well as 46 separate heat recovery or heat pump units. The aggregated heat capacity of the above-mentioned was 14 700 MW. The companies also had 277 transportable heating plants with an overall capacity of 1 000 MW.

1.4 District heat production and fuel energy

The total supply of the district heat was 36 700 GWh of which 29 700 GWh was produced with fuels and 7 000 GWh was produced with heat recovery, heat pumps and electric boilers. Heat recovery and the heat production of the heat pumps and electric boilers have increased by 107 % over the past five years. 42,7 % of the total supply was produced in CHP plants or comparable cogeneration heat from gas turbines, gas engines or diesel engines. The amount of electricity produced in the CHP plants was 5 900 GWh.

In total, 43 200 GWh of fuels were used to produce district heat and CHP electricity, of which 17 200 GWh was used for separate DH production. The percentage distribution of the fuels used in 2023 is presented below in Figure 3. The energy sources of the district heat supply in 2022 and 2023 are presented in Figure 4.

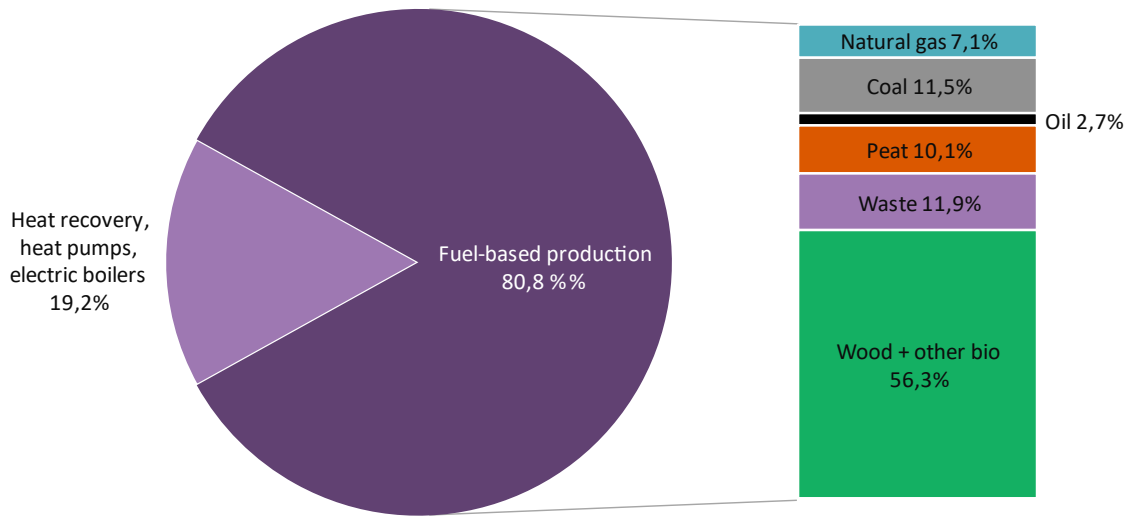


Figure 3. Fuels used to produce district heat and CHP electricity in year 2023.

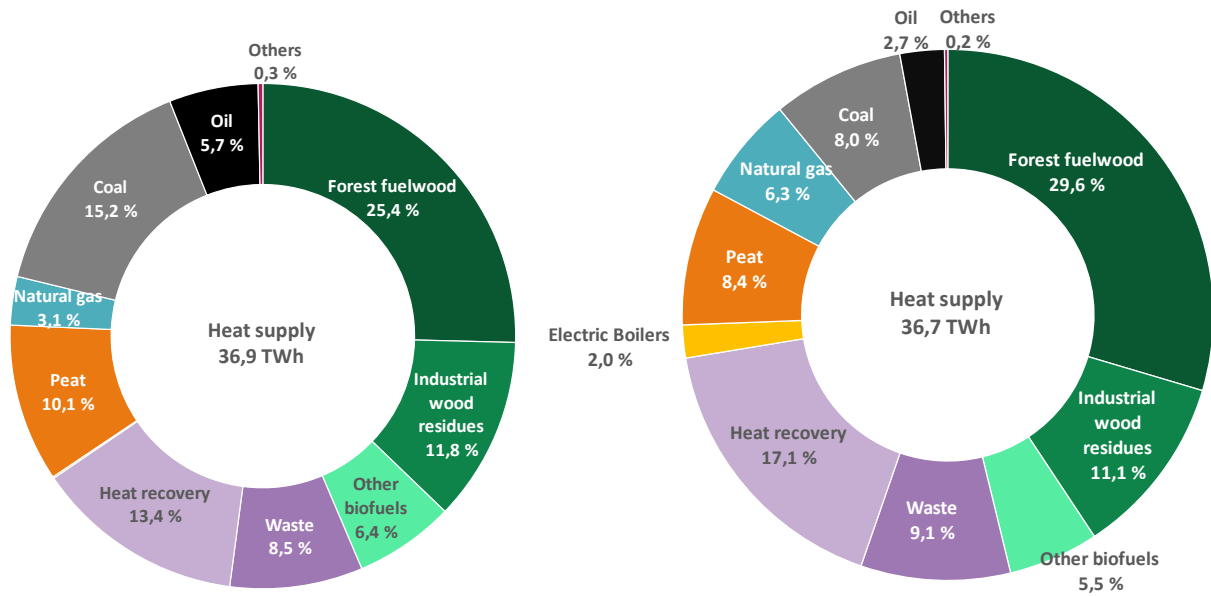


Figure 4. Energy sources of district heating supply in 2022 (left) and in 2023 (right)

1.5 Emissions

The specific emissions of district heating were 85 gCO₂/kWh which is 26 % less than in 2022. The fuels used in combined heat and power production have been allocated to district heat according to the benefit allocation method.

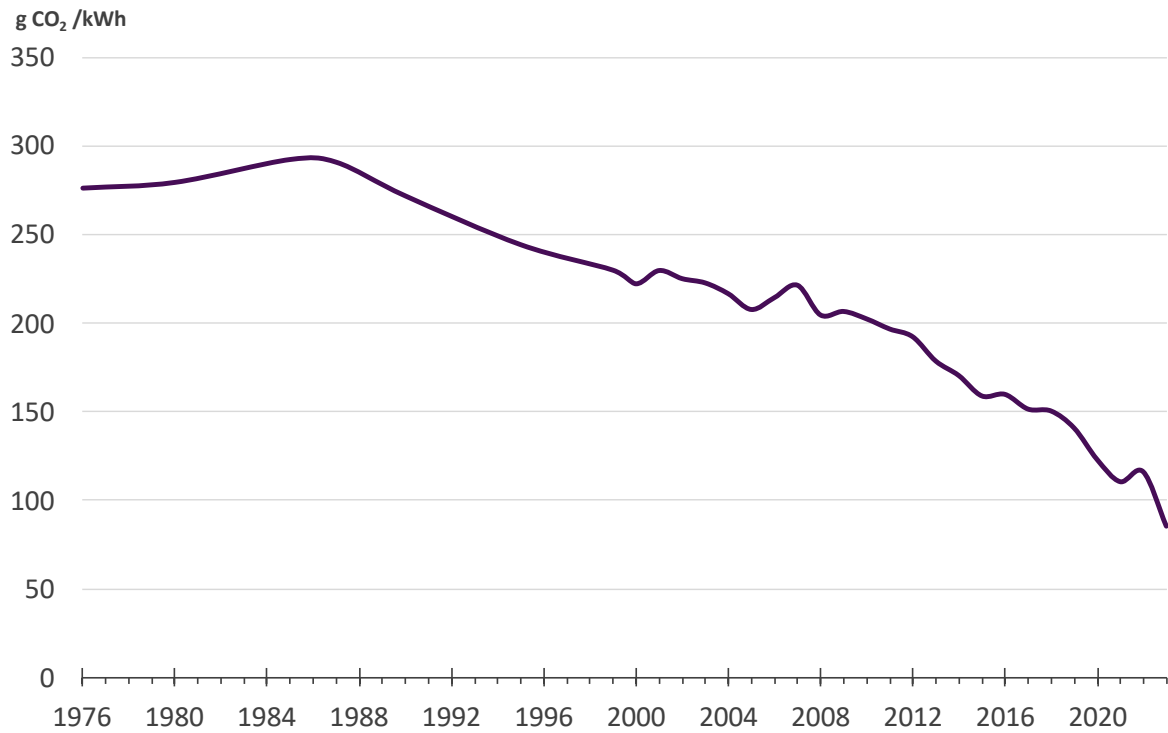


Figure 5. Specific emissions of district heating production (Sources: Statistics Finland, Finnish Energy)

1.6 Customers

At the end of 2023, the connected heat load of customers was 19 500 MW (+ 0,7 %). The number of customers by sector was distributed as follows: residential buildings 80 %, industry 4 % and other customers 16 %.

The heat delivery to the customers was 33 200 GWh in 2023 which was 0,8 % more than in 2022. Temperature corrected heat consumption decreased by 0,3 %. The measured heat consumption as well as the temperature corrected heat consumption is presented below in Figure 6. The heat consumption was divided among sectors as follows: residential buildings 54 %, industry 9 % and other customers 37 %.

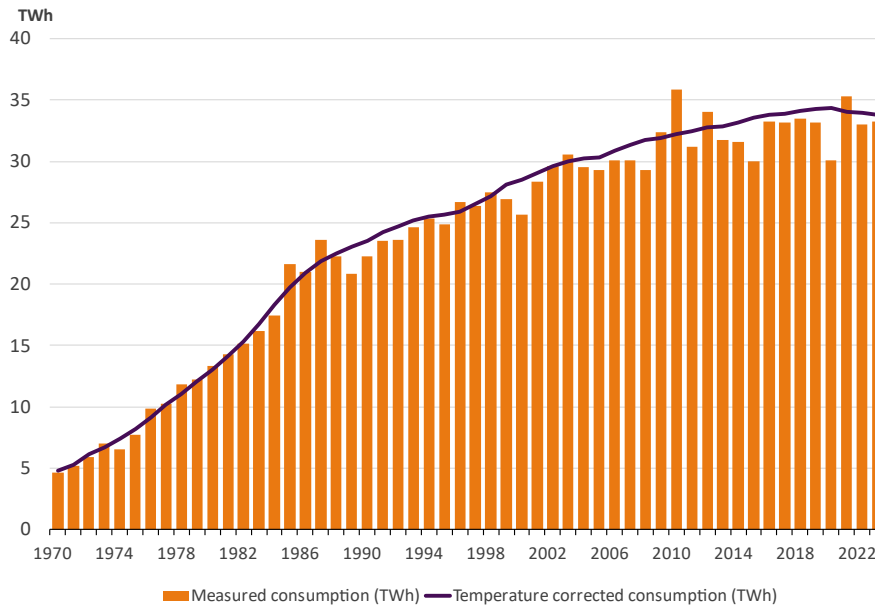


Figure 6. Measured DH consumption and temperature corrected consumption

The building volume of the customers was 1040 million m³ of which the share of residential buildings was 46 %, industry 13 % and other customers 41 %. The number of inhabitants living in the buildings heated by district heating was 2,9 million. The share of inhabitants living in buildings heated by district heat in each municipality is presented in the statistical Excel files in table 8.

1.7 Heat sales and sales proceeds

The heat sales to customers in 2023 was 33 200 GWh. The arithmetical average price for heat sales was 96,26 €/MWh. The average price weighted by the heat sales of each district heating company was 100,69 €/MWh. The arithmetical average price increased by 9,1 % and the weighted price increased by 10,3 % compared to the previous year. The share of district heating companies according to the average heat sales price (incl. VAT 24 %) is presented in Figure 7.

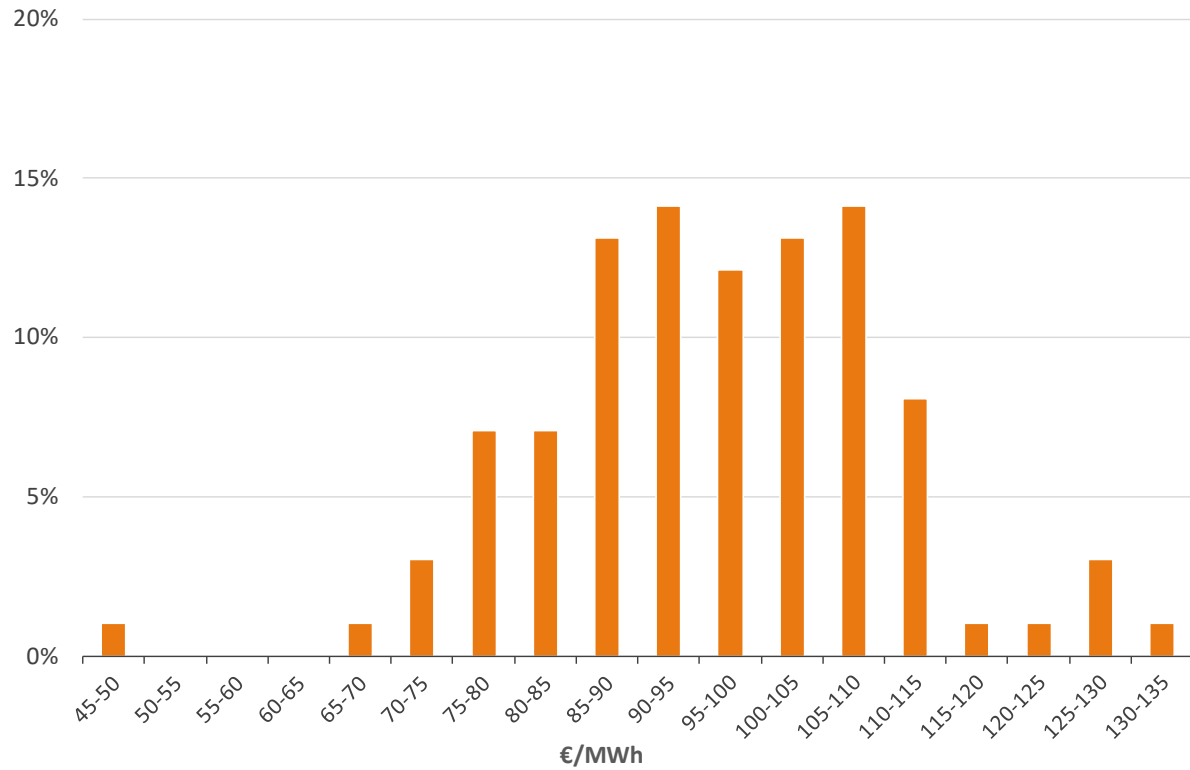


Figure 7. The share of district heating companies according to the average heat sales price (incl. VAT 24 %)

1.8 Specific heat consumption and heating degree day

The specific heat consumption in district heated buildings in 2023 was 33,8 kWh/m³ or 108,1 kWh/m². This value includes also heating of the hot tap water. Temperature corrected specific heat consumption decreased by 0,3 % compared to the previous year and it has decreased by 25 % since 2000. (Figure 8).

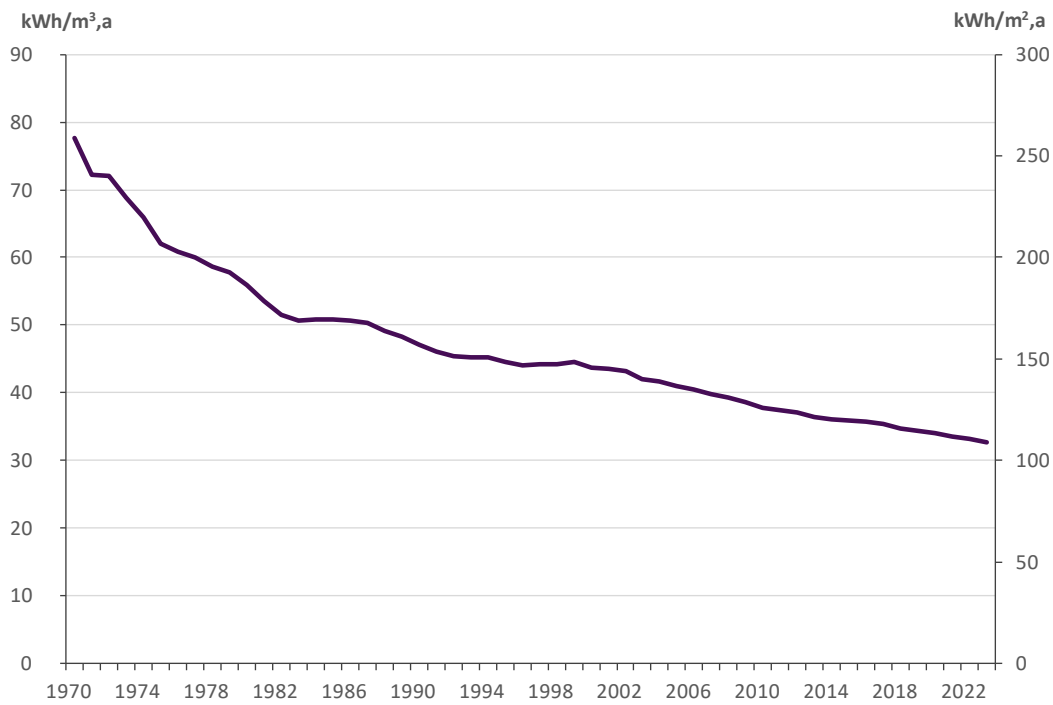


Figure 8. Specific heat consumption in district heated buildings

Year 2023 was slightly warmer than the normal period of 1991...2020. The heating degree days (describing the heating requirement) for 2023 were 3 % lower than the average during the years 1991...2020.



Energiateollisuus ry
Eteläranta 10, 00130 Helsinki
www.energia.fi