

District Heating in Finland 2022



Energiateollisuus

Kaukolämpö

District heating in Finland 2022

© Energiateollisuus ry 2023
(Finnish Energy)
ISSN 0786-4809

Contents

1	DISTRICT HEATING 2022	1
1.1	General knowledge	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.....	4
1.6	Customers	5
1.7	Heat sales and sales proceeds	6
1.8	Specific heat consumption and heating degree day.....	6
2	DEFINITIONS AND COMMENTARIES	8
2.1	Symbols	8
2.2	Tables in the statistics	8

1. District heating 2022

Finnish Energy compiles district heating statistics based on the information 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 2022. Tables are available as Excel files at Finnish Energy website: <https://energia.fi/en/statistics/statistics-on-district-heating/>

1.1 General knowledge

Statistical tables contain information from those member companies of Finnish Energy that answered to the statistical survey. Information was also 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 77 wholesale companies.

Table 1. General information on district heating year 2022

	Year 2022	Change compared to 2021
Total supply	36 900 GWh	- 6,0 %
DH production by fuels	31 800 GWh	- 5,5 %
Net production of electricity in CHP production	8 100 GWh	- 18,8 %
Fuel energy consumed	48 600 GWh	- 6,5 %
Heat recovery and heat produced by heat pumps	4 900 GWh	- 9,1 %
DH consumption	33 000 GWh	- 6,6 %
of which the share of dwelling houses	54,1 %	+ 0,8 p.p.
Customers:		
❖ The contracted heat power	19 400 MW	+ 0,8 %
❖ Building volume	1030 million m ³	+ 0,8 %
❖ of which the share of dwelling houses	46,1 %	+ 0,1 p.p.
Average selling price		
❖ Arithmetic value	88,22 €/MWh	+ 6,6 %
❖ Weighted by sales	91,32 €/MWh	+ 10,2 %
Total length of DH networks	16 200 km	+ 0,9 %

1.2 Municipalities with district heating

The district heating companies included in this publication distributed district heat in 176 municipalities.

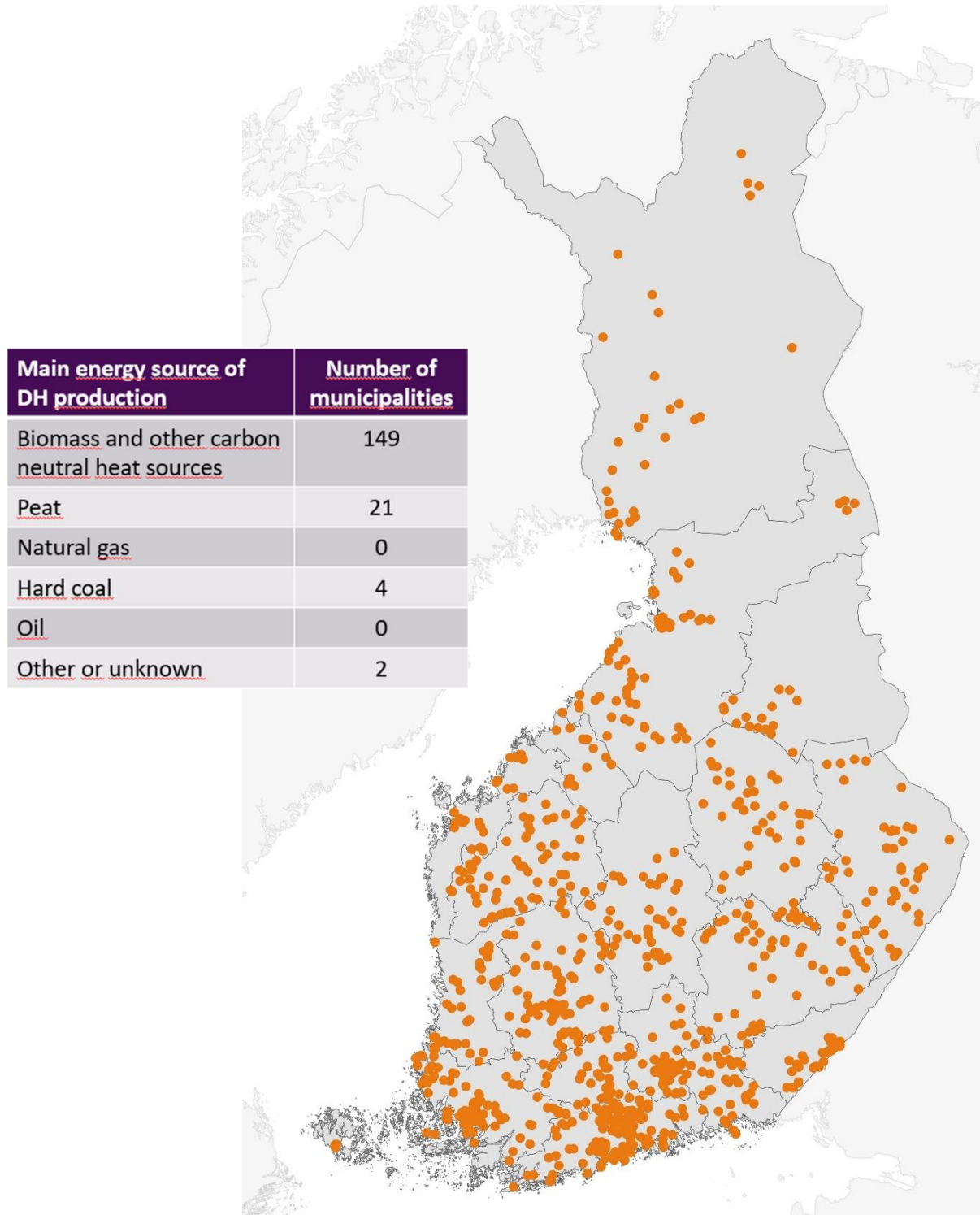


Figure 1 District heating production units at the end of year 2022. The locations are within the right municipalities but do not present the exact locations.

1.3 District heating networks and production units

The length of the district heating network at the end of year 2022 was 16 240 km which increased 140 km from the previous year. The development of the network length since 1970 is presented in Figure 2.

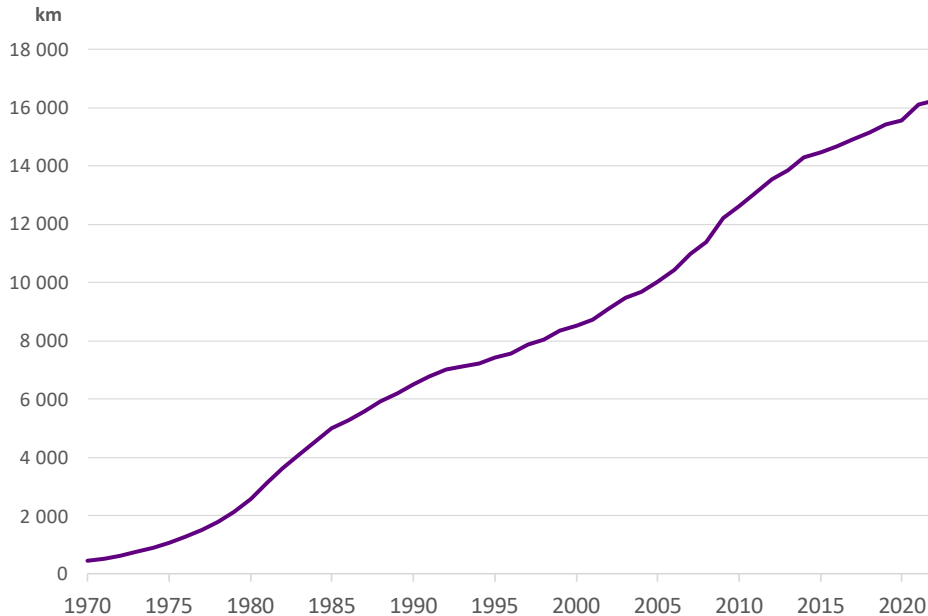


Figure 2. Total length of the DH networks

There were 107 power plants with a district heating capacity of 9 000 MW. Power output of these CHP plants totaled 5 600 MW. Moreover, there were 853 stationary heating plants as well as 35 separate heat recovery or heat pump units. The aggregated heat capacity of the above-mentioned was 14 600 MW. The companies also had 273 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 36 900 GWh whereof 31 800 GWh was produced with fuels and 4 900 GWh was produced with heat recovery and heat pumps. Heat recovery and the production of the heat pumps increased by 49 % during the past five years. 54,2 % of the total supply was produced in CHP plants or comparable cogeneration heat from gas turbines, gas engines or diesel engines. The electricity produced in the CHP plants was 8 100 GWh.

In total, 48 600 GWh of fuels were used to produce district heat and CHP electricity. The share of fuels used for separate DH production was 13 600 GWh. The percentage distribution of the fuels in 2022 is presented below in Figure 3. The energy sources of the district heat supply in 2021 and in 2022 are presented in Figure 4.

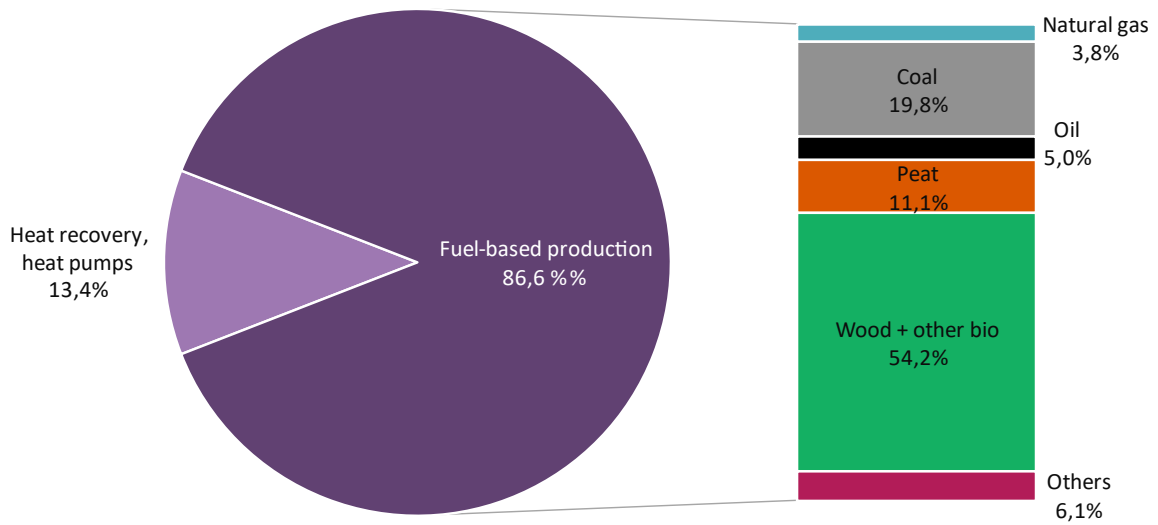


Figure 3. Fuels used to produce district heat and CHP electricity in year 2022.

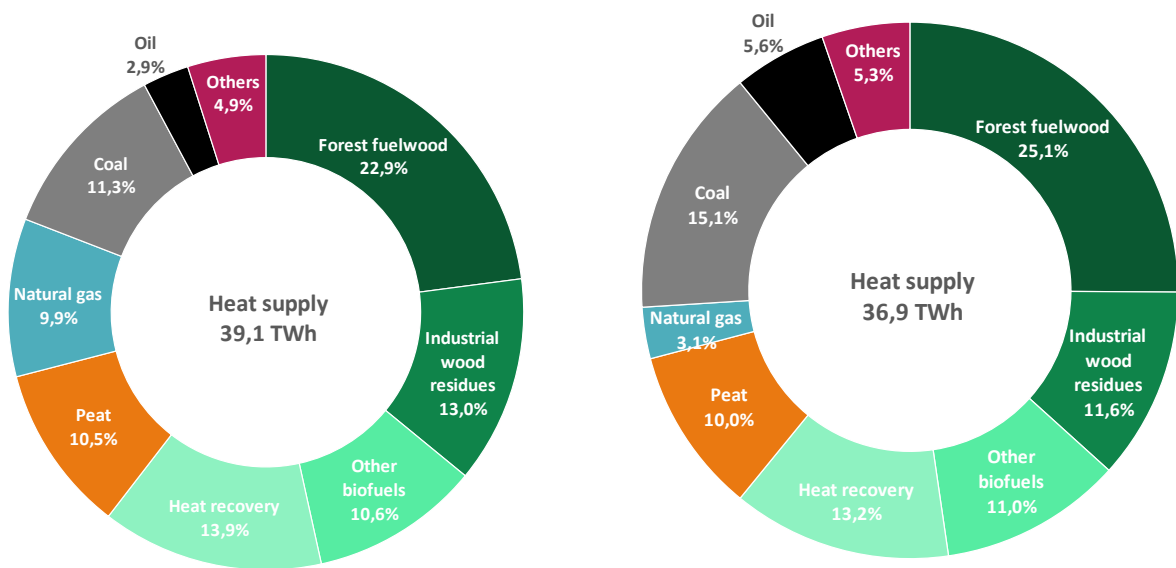


Figure 4. Energy sources of district heating supply in 2021 (left) and in 2022 (right)

1.5 Emissions

The specific emissions of district heating were 109,9 gCO₂/kWh which is 0,4 % less than in 2021. The fuels used in combined heat and power production have been allocated to district heat according to the benefit allocation method.

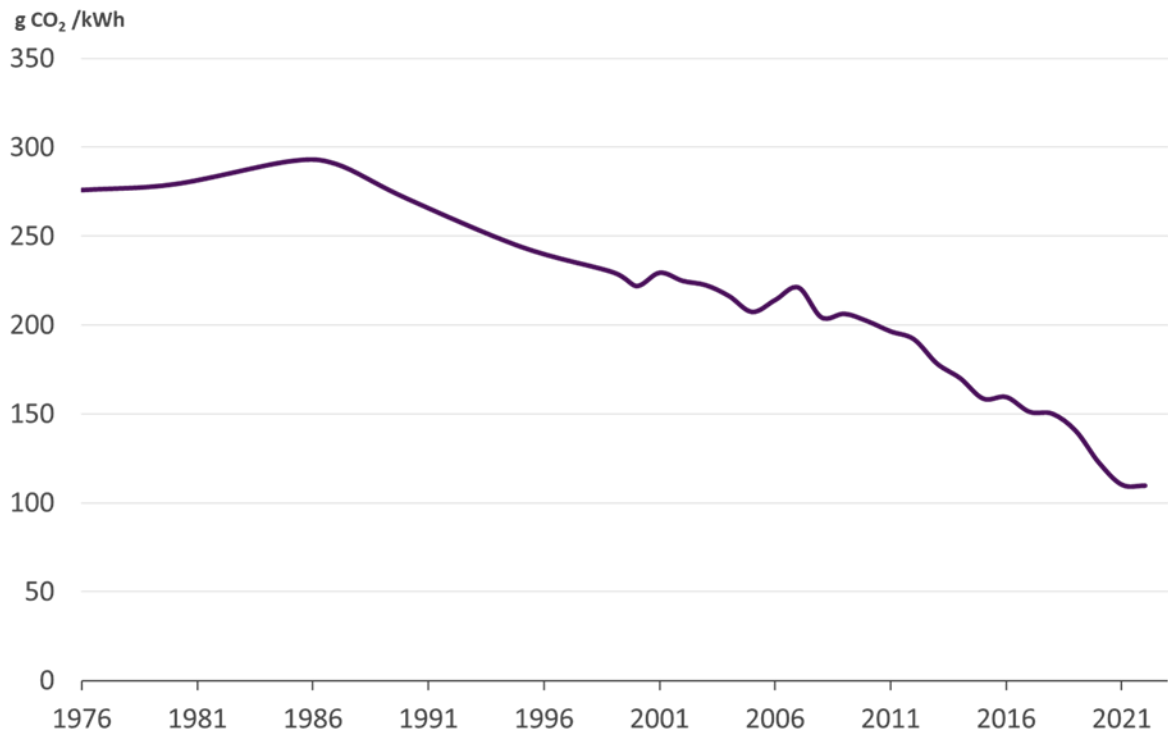


Figure 5. Specific emissions of district heating production (Sources: Statistics Finland, Finnish Energy)

1.6 Customers

The connected heat load of customers was 19 400 MW (+ 0,8 %). The number of customers was divided among sectors as follows: dwelling houses 80 %, industry 4 % and other customers 16 %.

The heat delivery to the customers was 33 000 GWh in 2022 which was 6,6 % less than in 2021. Temperature corrected heat consumption decreased by 0,6 %. 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: dwelling houses 54 %, industry 9 % and other customers 37 %.

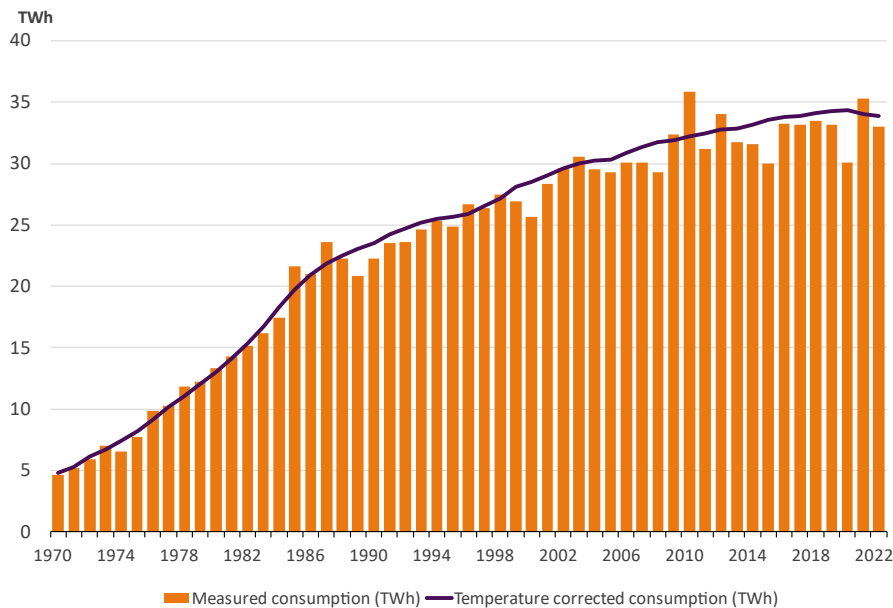


Figure 6. Measured DH consumption and temperature corrected consumption

The building volume of the customers was 1030 million m³ of which the share of dwelling houses 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 statistical table 8 in Excel files

1.7 Heat sales and sales proceeds

The heat sales to customers during 2022 was 33 000 GWh. The arithmetical average price for heat sales was 88,22 €/MWh. The average price weighted by the heat sales of each district heating company was 91,32 €/MWh. The arithmetical average price was increased by 6,6 % and the weighted price increased by 10,2 % 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.

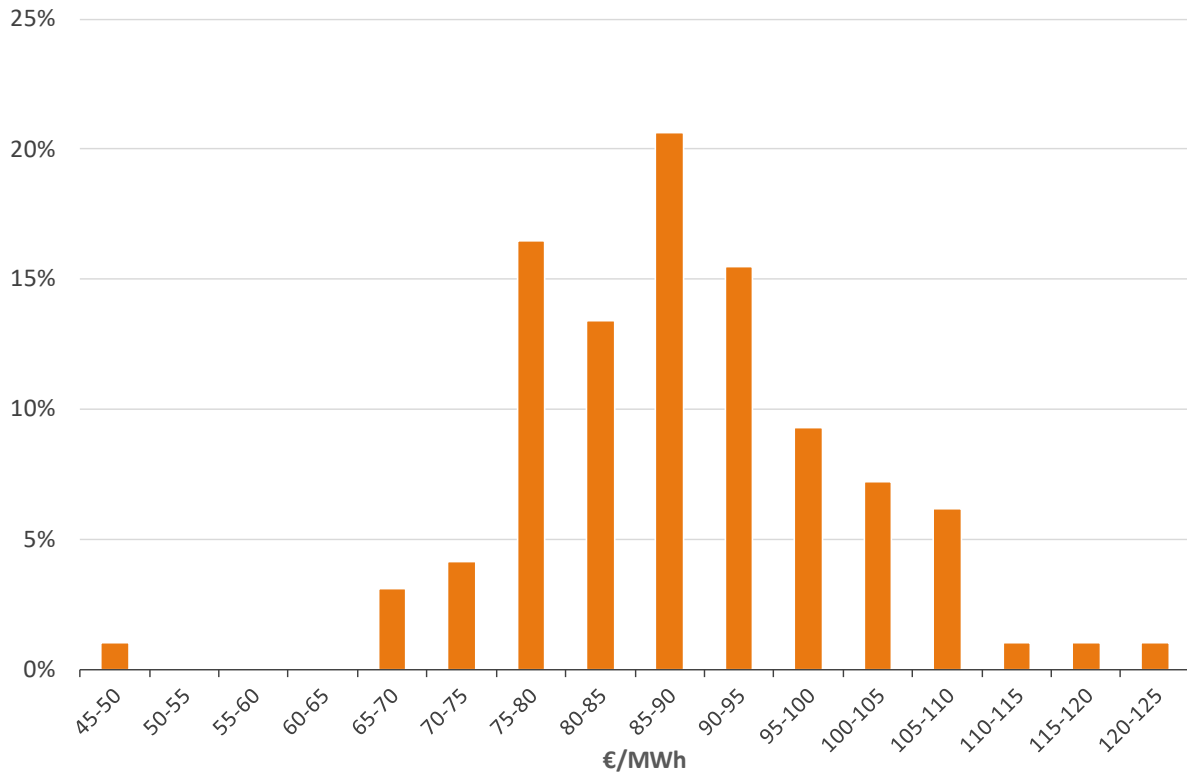


Figure 7. The share of district heating companies according to the average heat sales price (incl. VAT 24 %)

1.8 Specific heat consumption and heating degree day

The specific heat consumption in district heated buildings in 2022 was 33,9 kWh/m³ or 109,3 kWh/m². This value also includes heating of the hot tap water. Temperature corrected specific heat consumption decreased by 0,6 % compared to the previous year and it has decreased by 24,3 % since year 2000. (Figure 8).

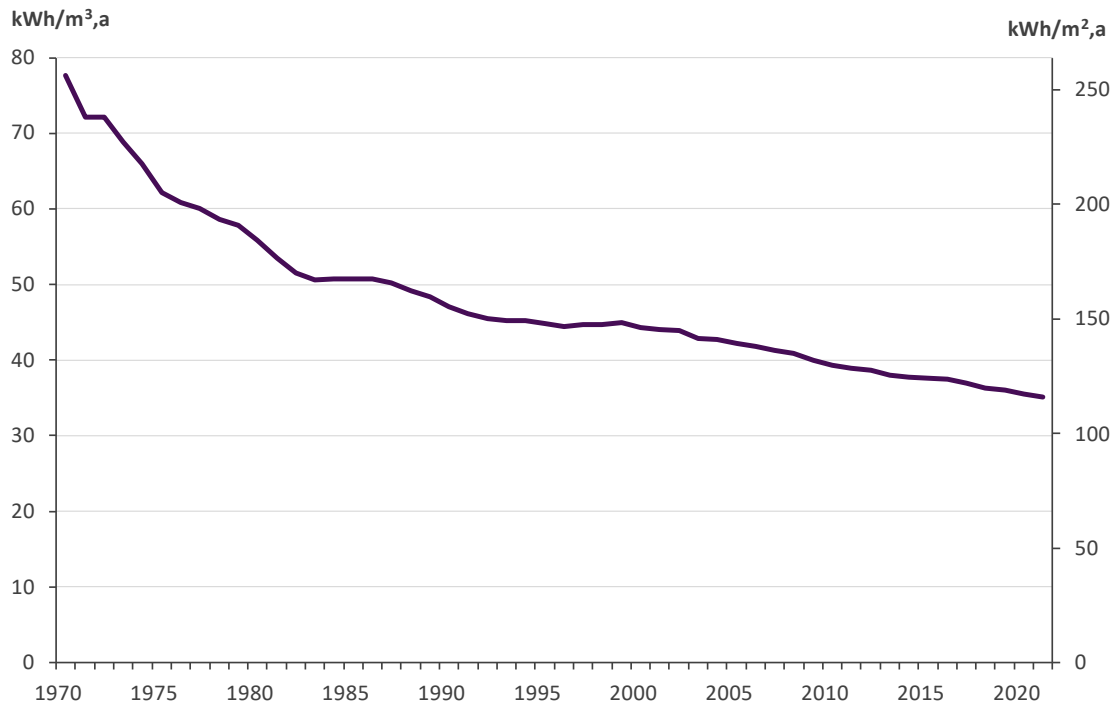


Figure 8. Specific heat consumption in district heated buildings

Year 2022 was warmer than the normal period of 1991...2020. The heating degree day (describing the heating requirement) in 2022 was 3 % lower than the average during the years 1991...2020.

2 Definitions and commentaries

2.1 Symbols

Notations used in the tables mean the following:

Symbol	Explanation
-	No action exists
..	Quantity was missing or was too uncertain to be reported
0	Quantity equals to zero

2.2 Tables in the statistics

These statistics include only those member undertakings that have answered to the survey. The following member undertakings have not answered:

Lapuan Energia Oy
Ähtärin Energia ja Vesi Oy

These statistics include only those wholesale companies that have answered to the survey. The following wholesale companies selling district heat to district heating companies have not answered:

Akonkosken Saha Oy, Alavus
Biotermo Oy, Kuusamo
Boliden Kokkola Oy
ER-Saha, Viitasaari
Fine Pine Oy, Lapinlahti

Jeld-Wen Suomi Oy, Asikkala
Jätevesilaitos, Hämeenlinna
Kaipola Recycling Oy
Keitele Energy Oy
Kierrätys Kangas Oy

Lahti Aqua Oy
Lapuan Saha Oy, Lapua
Pohjanmaan Biolämpö Oy, Alavus
Rovaniemen kaupunki
UPM-Kymmene Oyj, Jämsänkoski

UPM-Kymmene Oyj, Kaipola
Varmalämmitys Oy

The heat sales of the above mentioned in 2022 was 139,5 GWh and the corresponding amount of fuels and production capacity is missing from the statistics.



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