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333 **Report** by Sophie M. Behr and Till Köveker

# Heat Monitor 2024: Following the energy crisis, prices for heating energy sources are developing very differently

- Households in Germany heated their homes in 2024 at roughly the same rate as in 2023
- District heating prices rose by 27 percent and for gas by five percent, heating oil prices fell by ten percent
- The increase in district heating is due to the delayed passing on of gas and oil price increases from previous years

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DIW Berlin — Deutsches Institut für Wirtschaftsforschung e. V.
Anton-Wilhelm-Amo-Straße 58, 10117 Berlin
**www.diw.de**
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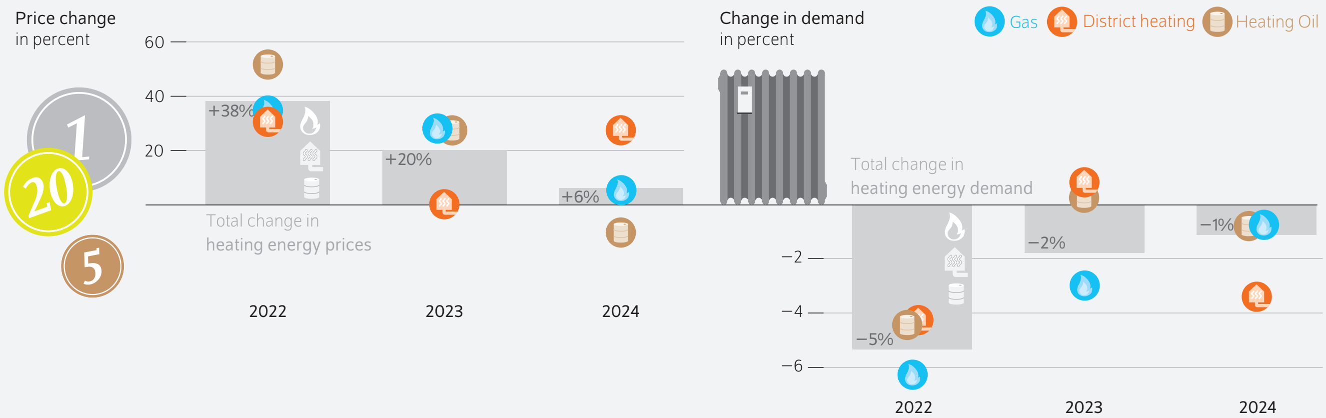
AT A GLANCE

# Heat Monitor 2024: Following the energy crisis, prices for heating energy sources are developing very differently

By Sophie M. Behr and Till Köveker

- According to data from real estate service provider ista, households in Germany heated their homes in 2024 at roughly the same rate as in 2023
- Compared to 2023, $CO_2$ emissions fell by three percent when adjusted for temperature
- Prices for district heating rose by 27 percent and for gas by five percent; prices for heating oil fell by ten percent
- The price increase for district heating is largely due to the delayed passing on of gas and oil price increases from previous years
- To promote the expansion of district heating for the heat transition, a stable regulatory framework and more price transparency are needed

**The rise in heating energy prices has slowed significantly, but households are still consuming less heating energy than before the energy price crisis**




Source: ista SE, authors' own calculations.

Notes: Changes compared to the previous years. Billed heating energy prices as a weighted average of natural gas, heating oil, and district heating prices. Demand adjusted for temperature. Values for 2024 are preliminary.



## FROM THE AUTHORS

*"For the heat transition, district heating should be greatly expanded and decarbonized. However, this will only succeed if there is acceptance on the part of both suppliers and consumers. This requires a reliable regulatory framework to create investment security for suppliers and price transparency for consumers."*
*— Till Köveker —*

## MEDIA

**Audio Interview** with Sophie M. Behr (in German)
**www.diw.de/mediathek**

# Heat Monitor 2024: Following the energy crisis, prices for heating energy sources are developing very differently

**By Sophie M. Behr and Till Köveker**

**ABSTRACT**

In 2024, the heating energy demand of households in Germany remained at a similar level as in 2023. Thus, the heating energy savings achieved during the energy crisis were maintained, as data from real estate service provider ista SE show. Compared to 2023, $CO_2$ emissions fell by three percent after adjusting for temperature. Although heating energy prices rose on average by only 6.2 percent in 2024, there were significant differences between the individual energy sources: heating oil prices fell by ten percent, while natural gas prices rose by five percent and district heating prices by 27 percent compared to 2023. The opposite was true in 2023, when gas and heating oil prices rose sharply in 2023, while the price of district heating remained constant. The price increase for district heating in 2024 is primarily due to a delayed passing on of gas and oil price increases. District heating plays an important role in achieving climate targets, but its acceptance could decline if prices were to remain higher permanently. To counteract this, a stable regulatory framework is needed to ensure greater investment security for households and energy suppliers, as well as greater transparency in pricing.

The impact of the energy price crisis remained noticeable in 2024: Heating energy prices remained high and demand constant after significant savings in recent years. These savings were partly due to various measures taken by the federal government during the energy price crisis to reduce energy consumption. In addition, the federal government provided financial relief to private households. One of these relief measures was the so-called gas and heating price brakes for private households as well as for small and medium-sized enterprises. These were in effect for the entirety of 2023, capping the price of gas and district heating at 12 and 9.5 cents per kilowatt-hour (kWh), respectively, for 80 percent of the annual consumption forecast in September 2022. For consumption deviating from this, the regular kilowatt-hour price of the respective contract applied.[1] These price brakes expired at the end of 2023, meaning that households once again paid market prices in 2024.

The energy price crisis led to major efforts to save energy, providing new impetus to become less dependent on fossil fuels. These efforts also benefit the emission targets agreed in the Paris Climate Agreement. Nevertheless, Germany again failed to meet the sector target[2] for the building sector in 2024. Although emissions fell from 102 to 100 million tons of $CO_2$ equivalents, the target of 97 million tons was not achieved.[3] This means that additional measures are necessary to achieve the interim target of emitting only 67 million tons of $CO_2$ equivalents by 2030. Otherwise, the building sector is likely to exceed the permissible cumulative annual

**1** The gas and heating price cap applied (i) to private households, (ii) to small and medium-sized enterprises consuming less than 1.5 million kilowatt-hours of gas and district heating per year, and (iii) associations. See the Gesetz zur Einführung von Preisbremsen für leitungsgebundenes Erdgas und Wärme (Erdgas-Wärme-Preisbremsengesetz – EWPBG) of December 20, 2022 (in German; available online, accessed on November 20, 2025. This applies to all online sources in this report).

**2** The sector targets were replaced in 2024 by a cross-sector and cross-year overall assessment, see Bundestag (2024): Bundestag ändert das Bundes-Klimaschutzgesetz (in German; available online). In order to still reflect the changes in emissions in the building sector, the emission pathway and emission targets of the Federal Climate Protection Act from 2021 are used.

**3** Umweltbundesamt (2025): Emissionsdaten 2024 (in German; available online); Press release from the Umweltbundesamt dated March 14, 2025: Klimaziele bis 2030 erreichbar. Gesetzliches Emissionsbudget wird eingehalten – weiter Handlungsbedarf bei Verkehr, Gebäuden und natürlichen Senken (in German; available online).


DOI: https://doi.org/10.18723/diw_dwr:2025-49-1

Box 1

## Database und methodology used for Heat Monitor 2024

In partnership with ista SE (former ista Deutschland GmbH), one of the largest energy service providers in Germany, the DIW Berlin has developed the Heat Monitor Germany in 2014. The Monitor reports annually regional and national trends in heating energy consumption, energy prices and heating expenditures for residential buildings on an annual basis. The calculations are based on (1) building-level heating bills from ista SE for almost 300,000 residential buildings with two or more apartments (more than two million apartments), (2) climate adjustment factors from the German Weather Service (Deutscher Wetterdienst), and (3) census survey results from the German Federal Statistical Office. The heating bills contain information on energy consumption, billing periods, heating fuel type, energy costs, and building location and size.

The heating bills capture residential buildings with two or multi apartments – i.e., the sample covers buildings, owned or rented, with at least two households. We further limit the sample of buildings to those with heated living space of between 15 and 250 square meters per apartment. Note that we do not have a random sample from the population of residential buildings in Germany. In comparison with the 2014 microcensus supplementary survey, buildings with three to six apartments and larger buildings (13 or more apartments) are overrepresented in the sample. We offset this by weighting average heating consumption according to the relative importance of each building size category in the statistical population. To accomplish this, we use results from the 2010 microcensus supplementary survey that indicate the shares of each building size category by spatial planning region (ROR).

For each building, we calculate the temperature-adjusted heating energy consumption by adjusting total energy consumed for heating for local changes in the climate and weather. To ensure comparability across time and space, we use information from the German Weather Service. The available weighting factors normalizes heating consumption to climatic condition in Potsdam, the reference location.[1]

We calculate the annual quantity of heating energy demand in relation to the heated living space of a building. This is carried out in several steps: First, building-specific consumption values are limited to the amounts of energy used for heating space (excluding warm water). Second, the consumption value is multiplied by the heating value corresponding to the building's energy fuel type, giving us the absolute heating energy consumption in kilowatt-hours (kWh) for a building in a billing period. Third, the values are allocated to a specific heating year, since the closing date for measurement is not always December 31 of the relevant year. Fourth, we adjust the consumption values for the climatic conditions during the heating period in question and divide it by the amount of heating space in the building. The units are kilowatt-hours required per square meter of heated living space per year (kWh/sqm).

Lastly, average heating demand values at the regional level are computed as the weighted arithmetic mean for the overall building stock of a region – for weights, we use the proportion of buildings in each housing size category (two, three to six, seven to twelve, 13 to 20, and over 21 apartments) at the regional level.

Heating bills are created with a time lag. The values of the 2021 heating period are calculated based on a smaller sample than the values for earlier years. For 2024, around 60 percent of the homes are available, compared to 2023. The results for 20234 should therefore be regarded as preliminary. For heating consumption, a correction was made by calculating a hypothetical value for 2024 energy consumption and by correcting the energy consumption for 2023 with the national trend. It is possible, however, that an update may nevertheless result in retroactive corrections.

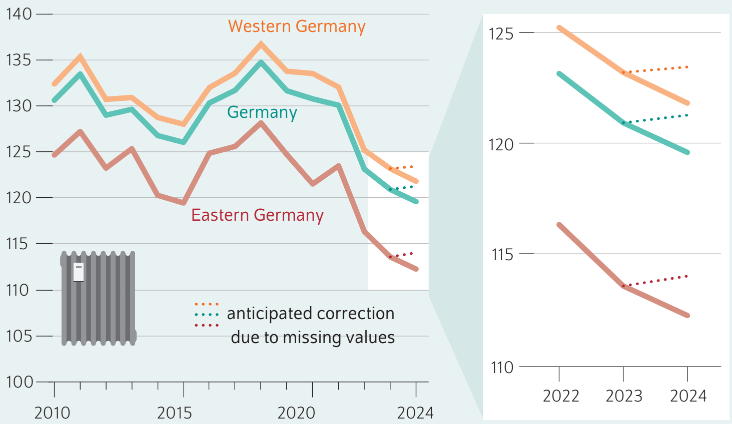
To calculate the price and consumption changes in the different regions, the prices for one kilowatt-hour of heating energy and the temperature-adjusted heating energy requirements per square meter in 2024 are compared with those from 2023. The prices observed are mixed prices, i.e., they consist of a base price and a price per kilowatt-hour. Energy prices also differ significantly from region to region. For these reasons, only the energy prices and requirements of buildings for which data is available in both 2023 and 2024 are compared. Buildings that appear in the data set for 2023 but for which no data is currently available for 2024 are not included in this analysis. Therefore, the changes in prices and requirements per federal state or region shown in Figure 5 and in the text cannot be directly compared with the figures in the table, which are based on all buildings available for the respective year.

1 A 2020 study determined the effect of different temperature adjustment methods. The study shows that the results of the temperature-adjusted values do not differ greatly. Peter Mellwig et al. (2022): Klimaschutz im Gebäudebereich: Erklärungen für stagnierende $CO_2$-Emissionen trotz erfolgreicher Sanierungsmaßnahmen. Kurzstudie im Auftrag von Agora Energiewende (in German; available online).

Figure 1

**Heating energy demand in two- or multi-apartment buildings**

Annual heating energy consumption in kilowatt-hours per square meter of heated living space; temperature-adjusted




Note: 2024 values are preliminary. The corrections shown on the graph are estimates of the correct figure for the complete dataset.

Source: ista SE, authors' own calculations.



Households in Germany heated their homes roughly as much last year as they did the year before.

emission levels by around 110 million tons of $CO_2$ equivalents between 2021 and 2030.[4]

The DIW Heat Monitor documents the annual progress of emission savings in the building sector and analyzes the development of heating energy demand, i.e., temperature-adjusted consumption, heating energy prices, and household costs. To this end, data from real estate service provider ista SE on nearly 300,000 residential buildings in Germany is evaluated.[5] For 2024, the billing data from approximately 173,000 buildings has been used. This data is weighted with information from the German microcensus to be representative of Germany (Box 1).

The 2024 Heat Monitor focuses primarily on the ongoing impact of the energy price crisis on household heating behavior and heating energy prices, particularly for district heating.[6]

## Heating energy savings remained unchanged, demand remained constant

The average temperature-adjusted heating energy consumption (heating energy demand) in the two- and multi-family homes available evaluated thus far fell by 1.1 percent in 2024 compared to 2023 (Figure 1). This equals an average heating energy demand of 120 kWh per square meter of heated living space. However, it can be assumed that, after correcting the data for the missing buildings, which generally have above-average demand the temperature-adjusted demand will have increased by 0.3 percent and will be around 121 kWh (Box 1). Even with this correction, households were able to maintain almost all of the heating energy savings of seven percent achieved compared to the pre-crisis year of 2021. In the year before the energy price crisis, the figure was 130 kWh.

The regional picture is similar to that of previous years, with a significantly higher heating energy demand in western Germany than in the east and south. At 103 kWh per square meter, demand is lowest in Thuringia, while it is highest in Saarland at 138 kWh (Table and Figure 2). Overall, demand in the eastern German states was 112 kWh per square meter, just under 10 kWh lower on average than in western German states (without correction). One reason for this is the higher retrofit rate of residential buildings in eastern German states in the 1990s, which resulted in better thermal insulation.[7] Another reason is the higher proportion of district heating, as this has a lower heating energy demand.[8]

At the regional level, Central Mecklenburg/Rostock had the lowest heating energy demand at 90 kWh per square meter on average, followed by Munich at 100 and Allgäu at 101 kWh per square meter. The highest average heating energy demand in 2024 were in southwestern Schleswig-Holstein with 150 kWh per square meter, East Frisia with 144 kWh per square meter, and the Saar region with 138 kWh per square meter.

## $CO_2$ emissions down

Emissions per square meter in the two- and multi-family buildings evaluated here continued to decline slightly (Figure 3, Box 2). $CO_2$ emissions from heating fell by four percent in 2024 compared to 2023, reaching 18.8 kilograms per square meter of heated living space. Adjusted for temperature, this corresponds to a reduction of 2.8 percent. This continued the trend of declining heating emissions.

## Price changes vary greatly by region and energy source

In 2024, heating energy prices averaged 12.33 cents per kWh (mixed price of basic and price per kilowatt-hour, Box 1). Overall, average prices in the eastern German states were significantly higher at 14.18 cents per kWh than in the

**4** Bundesministerium für Umwelt, Naturschutz, nukleare Sicherheit und Verbraucherschutz (2024): Das neue Klimaschutzgesetz – Jahresemissionsmengen nach Bereichen bis 2030 (in German; available online).

**5** ista SE is one of the two largest billing companies for heating and hot water costs, alongside its competitor Techem. Together, they have a market share of around 50 percent.

**6** The heat transition is primarily focused on district heating and heat pumps; however, heat pumps do not play a role in the two- and multi-family houses evaluated.

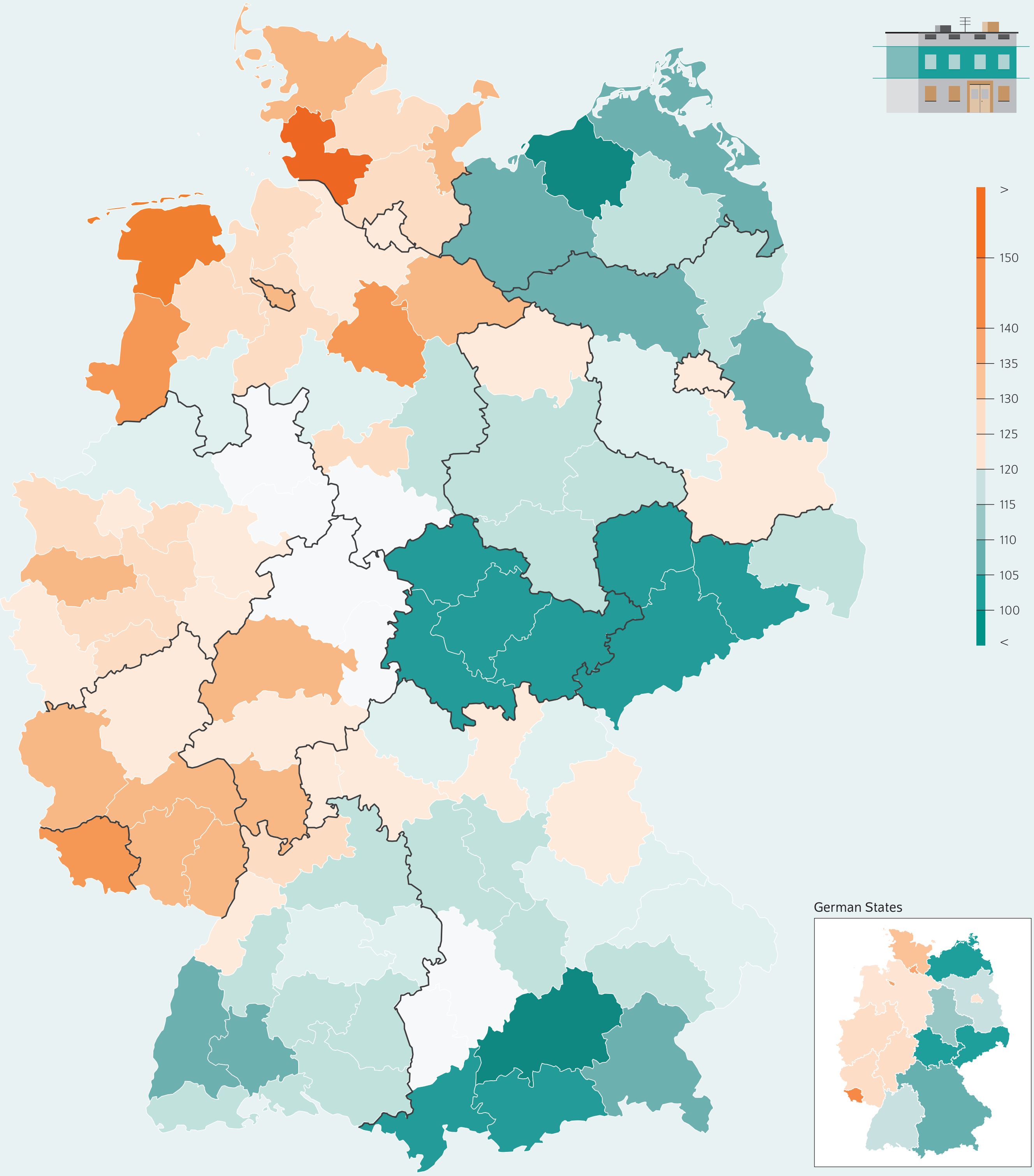
**7** See Sophie M. Behr, Merve Kücük und Karsten Neuhoff (2023): Energetische Modernisierung von Gebäuden sollte durch Mindeststandards und verbindliche Sanierungsziele beschleunigt werden. DIW aktuell 87 (in German; available online).

**8** Buildings heated by district heating have, among other things, a lower kWh heating energy demand than gas or heating oil, as district heating involves conversion losses in heat generation before delivery and consumption measurement.

Figure 2

**Heating energy demand in two- or multi-apartment buildings by region (ROR)**

Annual heating energy consumption in kilowatt-hours per square meter of heated living space; temperature-adjusted




Note: Also available online as an interactive graphic on heating energy prices, demand and expenditure at https://www.diw.de/waermemonitor_2022-2024.

Source: ista SE, authors' own calculations.



As in previous years, less heating is used in eastern and southern Germany than in the west.

Table

## Results of Heat Monitor 2024

| Spatial planning region (ROR) | ROR Nr. | Annual heating energy use (kilowatt-hour per square meter heated living space) Average | | | Billed heating prices (euro cents per kilowatt-hour) Average | | | Annual heating expenditure (euros per square meter) Average | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 2022 | 2023 | 2024 | 2022 | 2023 | 2024 | 2022 | 2023 | 2024 |
| Schleswig-Holstein Mitte | 101 | 124.14 | 126.32 | 128.14 | 11.07 | 13.64 | 14.22 | 12.40 | 16.74 | 17.46 |
| Schleswig-Holstein Nord | 102 | 129.45 | 128.63 | 133.41 | 10.25 | 11.84 | 14.41 | 12.16 | 15.15 | 18.68 |
| Schleswig-Holstein Ost | 103 | 132.75 | 130.98 | 134.17 | 9.71 | 11.52 | 12.18 | 11.48 | 14.10 | 14.84 |
| Schleswig-Holstein Süd | 104 | 127.53 | 125.43 | 127.21 | 10.05 | 11.89 | 12.47 | 11.36 | 14.43 | 14.30 |
| Schleswig-Holstein Süd-West | 105 | 153.21 | 157.79 | 150.13 | 8.09 | 9.82 | 11.67 | 12.62 | 15.38 | 18.36 |
| Hamburg | 201 | 126.85 | 124.29 | 123.59 | 11.48 | 11.71 | 12.32 | 12.20 | 13.43 | 13.85 |
| Braunschweig | 301 | 116.12 | 115.54 | 114.38 | 10.15 | 12.21 | 12.86 | 10.35 | 13.27 | 13.65 |
| Bremen-Umland | 302 | 135.64 | 130.99 | 127.49 | 7.94 | 11.06 | 10.83 | 9.93 | 14.00 | 13.41 |
| Bremerhaven | 303 | 130.58 | 130.86 | 128.48 | 8.60 | 10.86 | 10.82 | 10.47 | 13.79 | 13.51 |
| Emsland | 304 | 139.12 | 133.39 | 135.80 | 8.12 | 11.15 | 10.94 | 9.84 | 14.07 | 13.68 |
| Göttingen | 305 | 119.26 | 119.64 | N/A | 7.85 | 10.96 | N/A | 8.63 | 12.92 | N/A |
| Hamburg-Umland-Süd | 306 | 130.91 | 128.71 | 123.69 | 8.48 | 10.53 | 10.70 | 10.63 | 13.54 | 13.14 |
| Hannover | 307 | 117.83 | 115.00 | 115.46 | 9.78 | 11.84 | 11.95 | 10.67 | 13.57 | 13.68 |
| Hildesheim | 308 | 125.48 | 120.60 | 125.56 | 8.93 | 11.33 | 11.27 | 10.34 | 13.50 | 13.45 |
| Lüneburg | 309 | 130.58 | 127.33 | 132.56 | 8.12 | 11.74 | 11.37 | 9.97 | 14.63 | 14.52 |
| Oldenburg | 310 | 129.45 | 128.09 | 126.39 | 9.15 | 10.51 | 10.80 | 10.41 | 12.72 | 13.06 |
| Osnabrück | 311 | 118.38 | 120.08 | 117.62 | 8.85 | 11.23 | 11.25 | 9.82 | 13.01 | 12.89 |
| Ost-Friesland | 312 | 144.46 | 141.05 | 144.22 | 8.33 | 11.45 | 11.39 | 10.32 | 14.97 | 15.46 |
| Südheide | 313 | 134.56 | 137.52 | 136.52 | 8.57 | 11.37 | 10.92 | 10.92 | 15.34 | 14.27 |
| Bremen | 401 | 132.12 | 129.91 | 130.31 | 9.10 | 10.80 | 11.90 | 10.31 | 13.29 | 14.50 |
| Aachen | 501 | 131.76 | 129.96 | 124.93 | 9.41 | 11.30 | 11.62 | 11.41 | 14.38 | 14.21 |
| Arnsberg | 502 | 121.16 | 118.32 | 120.32 | 8.71 | 11.38 | 11.14 | 9.73 | 13.23 | 12.94 |
| Bielefeld | 503 | 132.13 | 129.22 | N/A | 8.25 | 11.08 | N/A | 9.93 | 13.77 | N/A |
| Bochum/Hagen | 504 | 131.64 | 129.55 | 127.85 | 9.47 | 11.59 | 12.41 | 11.08 | 14.42 | 15.06 |
| Bonn | 505 | 134.14 | 130.36 | 127.85 | 9.52 | 11.42 | 12.20 | 11.79 | 14.67 | 15.12 |
| Dortmund | 506 | 129.20 | 128.00 | 125.94 | 10.03 | 11.45 | 12.44 | 11.63 | 14.18 | 15.13 |
| Duisburg/Essen | 507 | 132.98 | 131.40 | 129.91 | 9.97 | 12.05 | 13.24 | 11.80 | 15.02 | 16.16 |
| Düsseldorf | 508 | 136.58 | 133.03 | 130.00 | 9.08 | 11.37 | 11.96 | 11.41 | 14.87 | 15.17 |
| Emscher-Lippe | 509 | 127.42 | 124.28 | 120.45 | 10.86 | 11.94 | 13.23 | 12.31 | 14.28 | 15.25 |
| Köln | 510 | 133.04 | 129.05 | 126.96 | 9.30 | 11.49 | 12.25 | 11.39 | 14.54 | 15.08 |
| Münster | 511 | 120.82 | 120.11 | 118.58 | 8.19 | 10.84 | 11.26 | 9.08 | 12.60 | 12.87 |
| Paderborn | 512 | 120.38 | 121.20 | N/A | 8.30 | 10.69 | N/A | 9.58 | 12.93 | N/A |
| Siegen | 513 | 126.03 | 121.84 | 124.15 | 8.47 | 11.13 | 10.67 | 10.16 | 13.27 | 13.00 |
| Mittelhessen | 601 | 124.58 | 120.10 | 130.07 | 8.69 | 11.34 | 11.54 | 9.90 | 13.28 | 14.36 |
| Nordhessen | 602 | 122.20 | 117.84 | N/A | 8.98 | 11.39 | N/A | 10.26 | 13.17 | N/A |
| Osthessen | 603 | 113.31 | 113.13 | N/A | 8.00 | 11.25 | N/A | 8.46 | 11.99 | N/A |
| Rhein-Main | 604 | 127.49 | 124.50 | 122.78 | 8.80 | 11.26 | 11.54 | 10.14 | 13.64 | 13.59 |
| Starkenburg | 605 | 137.05 | 135.24 | 134.00 | 9.02 | 11.43 | 11.50 | 11.25 | 14.95 | 14.62 |
| Mittelrhein-Westerwald | 701 | 128.83 | 125.87 | 122.83 | 8.61 | 11.47 | 11.49 | 10.24 | 13.96 | 13.52 |
| Rheinhessen-Nahe | 702 | 135.38 | 131.42 | 132.92 | 8.94 | 11.41 | 11.42 | 11.31 | 14.90 | 14.82 |
| Rheinpfalz | 703 | 136.62 | 133.91 | 133.01 | 8.92 | 11.34 | 11.86 | 10.92 | 14.57 | 15.05 |
| Trier | 704 | 139.52 | 134.44 | 130.33 | 8.74 | 11.30 | 10.89 | 11.62 | 14.84 | 13.61 |
| Westpfalz | 705 | 142.16 | 136.41 | 132.16 | 8.13 | 11.54 | 10.85 | 10.46 | 15.20 | 13.75 |
| Bodensee-Oberschwaben | 801 | 114.49 | 119.71 | 112.40 | 7.72 | 10.55 | 10.69 | 8.59 | 11.99 | 12.04 |
| Donau-Iller (BW) | 802 | 117.40 | 115.60 | 110.65 | 8.63 | 11.31 | 11.23 | 9.77 | 13.27 | 12.28 |
| Franken | 803 | 119.99 | 117.79 | 113.59 | 8.59 | 11.60 | 10.87 | 10.09 | 13.97 | 12.63 |
| Hochrhein-Bodensee | 804 | 121.24 | 117.50 | 114.98 | 8.23 | 10.61 | 11.13 | 9.38 | 12.34 | 12.49 |
| Mittlerer Oberrhein | 805 | 124.06 | 124.61 | 121.13 | 8.91 | 11.35 | 11.71 | 10.31 | 13.76 | 13.41 |
| Neckar-Alb | 806 | 122.12 | 119.19 | 114.96 | 8.84 | 12.14 | 12.14 | 9.42 | 13.42 | 12.46 |
| Nordschwarzwald | 807 | 116.16 | 115.96 | 112.92 | 8.60 | 11.43 | 10.94 | 9.80 | 13.18 | 12.41 |
| Ostwürttemberg | 808 | 126.36 | 125.25 | 115.57 | 8.27 | 11.06 | 11.64 | 9.99 | 13.63 | 13.64 |
| Schwarzwald-Baar-Heuberg | 809 | 112.48 | 110.92 | 107.89 | 8.31 | 10.96 | 10.53 | 9.11 | 12.36 | 11.03 |
| Stuttgart | 810 | 121.76 | 120.24 | 118.29 | 9.08 | 11.48 | 11.85 | 10.22 | 13.46 | 13.45 |
| Südlicher Oberrhein | 811 | 114.29 | 113.46 | 109.07 | 8.31 | 10.77 | 10.79 | 9.36 | 12.35 | 11.80 |
| Unterer Neckar | 812 | 125.54 | 126.15 | 125.35 | 10.01 | 12.19 | 12.68 | 11.54 | 15.01 | 15.28 |
| Allgäu | 901 | 101.13 | 105.48 | 100.71 | 8.54 | 10.63 | 10.16 | 8.30 | 10.75 | 9.66 |
| Augsburg | 902 | 117.38 | 118.34 | N/A | 9.10 | 10.76 | N/A | 10.02 | 12.35 | N/A |
| Bayerischer Untermain | 903 | 131.68 | 125.77 | 121.08 | 8.27 | 11.15 | 10.95 | 10.30 | 13.77 | 13.14 |
| Donau-Iller (BY) | 904 | 121.00 | 115.39 | N/A | 8.54 | 11.18 | N/A | 10.01 | 13.06 | N/A |

| Spatial planning region (ROR) | ROR Nr. | Annual heating energy use (kilowatt-hour per square meter heated living space) Average | | | Billed heating prices (euro cents per kilowatt-hour) Average | | | Annual heating expenditure (euros per square meter) Average | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 2022 | 2023 | 2024 | 2022 | 2023 | 2024 | 2022 | 2023 | 2024 |
| Donau-Wald | 905 | 114.58 | 117.97 | 115.52 | 8.31 | 11.26 | 10.51 | 9.28 | 12.93 | 11.92 |
| Industrieregion Mittelfranken | 906 | 119.74 | 115.73 | 114.56 | 8.88 | 11.56 | 11.91 | 9.60 | 12.90 | 12.89 |
| Ingolstadt | 907 | 115.34 | 113.35 | 112.13 | 8.67 | 11.10 | 10.74 | 9.31 | 12.28 | 11.87 |
| Landshut | 908 | 112.85 | 112.19 | 112.15 | 8.10 | 11.00 | 10.70 | 8.90 | 12.36 | 11.84 |
| Main-Rhön | 909 | 118.63 | 119.21 | 117.68 | 8.08 | 11.05 | 11.25 | 9.01 | 12.61 | 12.51 |
| München | 910 | 103.50 | 101.44 | 99.76 | 10.43 | 11.57 | 11.91 | 9.98 | 11.73 | 11.61 |
| Oberfranken-Ost | 911 | 119.51 | 116.28 | 117.20 | 8.30 | 11.32 | 10.26 | 9.23 | 12.72 | 11.58 |
| Oberfranken-West | 912 | 123.05 | 121.40 | 122.37 | 8.27 | 11.02 | 10.59 | 9.73 | 12.89 | 12.04 |
| Oberland | 913 | 108.15 | 107.11 | 101.95 | 8.63 | 11.17 | 10.77 | 9.12 | 11.81 | 11.10 |
| Oberpfalz-Nord | 914 | 119.46 | 117.52 | 120.74 | 8.87 | 10.97 | 10.60 | 10.48 | 12.95 | 12.24 |
| Regensburg | 915 | 116.26 | 114.69 | 116.75 | 8.43 | 11.03 | 10.63 | 9.46 | 12.34 | 12.17 |
| Südostoberbayern | 916 | 110.32 | 110.51 | 106.95 | 8.48 | 11.16 | 10.77 | 9.06 | 12.22 | 11.18 |
| Westmittelfranken | 917 | 122.10 | 120.53 | 113.52 | 8.54 | 11.61 | 11.22 | 10.17 | 13.78 | 12.50 |
| Würzburg | 918 | 121.28 | 120.37 | 122.07 | 8.37 | 10.77 | 11.58 | 9.49 | 12.49 | 13.48 |
| Saar | 1001 | 140.68 | 137.87 | 137.75 | 10.19 | 12.10 | 12.09 | 12.95 | 15.83 | 15.91 |
| Berlin | 1101 | 127.67 | 125.97 | 124.23 | 11.40 | 12.42 | 13.49 | 12.32 | 14.42 | 15.15 |
| Havelland-Fläming | 1201 | 114.56 | 113.79 | 118.60 | 10.76 | 12.64 | 15.46 | 10.08 | 13.00 | 15.62 |
| Lausitz-Spreewald | 1202 | 122.07 | 120.36 | 122.34 | 10.63 | 12.07 | 14.63 | 10.00 | 12.13 | 14.10 |
| Oderland-Spree | 1203 | 118.23 | 113.79 | 109.07 | 11.14 | 12.26 | 15.27 | 10.16 | 12.61 | 14.56 |
| Prignitz-Oberhavel | 1204 | 119.74 | 118.52 | 109.85 | 12.71 | 14.44 | 15.77 | 11.55 | 13.93 | 15.00 |
| Uckermark-Barnim | 1205 | 118.33 | 118.66 | 114.72 | 11.75 | 11.18 | 17.59 | 9.38 | 9.92 | 14.64 |
| Mecklenburgische Seenplatte | 1301 | 110.53 | 109.98 | 111.53 | 10.80 | 11.90 | 15.44 | 8.89 | 10.71 | 13.84 |
| Mittleres Mecklenburg/Rostock | 1302 | 90.68 | 89.18 | 90.49 | 11.02 | 13.09 | 16.55 | 7.87 | 10.42 | 13.24 |
| Vorpommern | 1303 | 107.42 | 103.24 | 107.62 | 13.25 | 13.68 | 15.72 | 10.52 | 12.61 | 14.24 |
| Westmecklenburg | 1304 | 109.13 | 108.83 | 108.10 | 11.15 | 12.38 | 14.23 | 9.24 | 11.16 | 12.90 |
| Oberes Elbtal/Osterzgebirge | 1401 | 110.11 | 105.38 | 104.35 | 13.18 | 13.09 | 15.77 | 10.52 | 11.55 | 13.58 |
| Oberlausitz-Niederschlesien | 1402 | 115.11 | 112.61 | 112.17 | 9.88 | 11.60 | 13.25 | 8.80 | 11.26 | 12.39 |
| Südsachsen | 1403 | 112.15 | 105.90 | 104.22 | 9.89 | 11.01 | 12.89 | 8.71 | 10.38 | 11.52 |
| Westsachsen | 1404 | 107.32 | 103.38 | 101.32 | 10.28 | 12.33 | 15.45 | 8.42 | 10.99 | 13.05 |
| Altmark | 1501 | 121.67 | 121.78 | 122.41 | 11.20 | 10.86 | 10.90 | 11.88 | 11.82 | 11.66 |
| Anhalt-Bitterfeld-Wittenberg | 1502 | 127.16 | 119.71 | 114.23 | 11.40 | 12.89 | 14.05 | 10.57 | 13.04 | 14.09 |
| Halle/Saale | 1503 | 117.10 | 115.91 | 114.99 | 10.00 | 11.69 | 13.53 | 9.82 | 12.27 | 13.71 |
| Magdeburg | 1504 | 118.41 | 115.25 | 113.38 | 12.38 | 12.58 | 14.01 | 10.92 | 12.20 | 13.10 |
| Mittelthüringen | 1601 | 103.85 | 105.81 | 104.13 | 14.35 | 12.34 | 13.78 | 10.45 | 10.99 | 11.75 |
| Nordthüringen | 1602 | 111.84 | 109.26 | 101.30 | 9.71 | 11.22 | 15.23 | 9.28 | 11.51 | 14.76 |
| Ostthüringen | 1603 | 104.85 | 101.56 | 102.51 | 9.40 | 11.05 | 13.16 | 8.06 | 10.09 | 11.52 |
| Südthüringen | 1604 | 115.31 | 108.44 | 102.66 | 8.82 | 11.44 | 13.63 | 8.28 | 11.19 | 12.22 |
| Schleswig-Holstein | 1 | 129.56 | 129.38 | 131.25 | 10.18 | 12.17 | 13.16 | 11.89 | 15.20 | 16.24 |
| Hamburg | 2 | 126.85 | 124.29 | 123.59 | 11.48 | 11.71 | 12.32 | 12.20 | 13.43 | 13.85 |
| Lower Saxony | 3 | 124.29 | 122.48 | 122.60 | 9.06 | 11.46 | 11.63 | 10.22 | 13.60 | 13.67 |
| Bremen | 4 | 132.12 | 129.91 | 130.31 | 9.10 | 10.80 | 11.90 | 10.31 | 13.29 | 14.50 |
| Northrhein-Westfalia | 5 | 131.30 | 128.72 | 126.63 | 9.33 | 11.46 | 12.26 | 11.14 | 14.33 | 14.95 |
| Hesse | 6 | 127.27 | 124.22 | 126.31 | 8.80 | 11.31 | 11.53 | 10.22 | 13.66 | 13.93 |
| Rheinland-Palatinate | 7 | 135.24 | 131.46 | 129.64 | 8.70 | 11.42 | 11.40 | 10.82 | 14.59 | 14.21 |
| Baden-Wuerttemberg | 8 | 120.53 | 119.68 | 116.40 | 8.82 | 11.37 | 11.54 | 10.02 | 13.39 | 13.07 |
| Bavaria | 9 | 113.43 | 111.97 | 109.96 | 9.06 | 11.25 | 11.12 | 9.63 | 12.35 | 12.16 |
| Saarland | 10 | 140.68 | 137.87 | 137.75 | 10.19 | 12.10 | 12.09 | 12.95 | 15.83 | 15.91 |
| Berlin | 11 | 127.67 | 125.97 | 124.23 | 11.40 | 12.42 | 13.49 | 12.32 | 14.42 | 15.15 |
| Brandenburg | 12 | 118.35 | 116.78 | 116.35 | 11.18 | 12.51 | 15.50 | 10.20 | 12.48 | 14.84 |
| Mecklenburg-Western-Pomerania | 13 | 103.83 | 102.04 | 103.74 | 11.65 | 12.86 | 15.51 | 9.17 | 11.29 | 13.55 |
| Saxony | 14 | 110.81 | 105.97 | 104.51 | 10.85 | 11.94 | 14.30 | 9.12 | 10.94 | 12.53 |
| Saxony-Anhalt | 15 | 119.68 | 116.73 | 114.78 | 11.29 | 12.19 | 13.61 | 10.55 | 12.34 | 13.37 |
| Thuringia | 16 | 107.58 | 105.37 | 102.88 | 10.91 | 11.56 | 13.75 | 9.04 | 10.80 | 12.19 |
| Eastern Germany | 18 | 116.33 | 113.58 | 112.27 | 11.17 | 12.21 | 14.18 | 10.29 | 12.25 | 13.67 |
| Western Germany | 19 | 125.15 | 123.13 | 121.78 | 9.20 | 11.43 | 11.77 | 10.55 | 13.68 | 13.86 |
| Germany | 17 | 123.10 | 120.91 | 119.57 | 9.66 | 11.61 | 12.33 | 10.49 | 13.35 | 13.82 |

Notes: Heating energy use is adjusted for changes in temperature; billed heating costs are a weighted average of natural gas, heat oil, and district heating prices.

Source: ista SE; authors' own calculations.

Box 2

## Calculation of $CO_2$ emissions

To calculate a building's $CO_2$ emissions, the heating energy consumption per square meter is multiplied by the emission factors of each energy carrier (Table). To allow for a comparison with emissions in the building sector for the whole of Germany, only direct $CO_2$ emissions are calculated. Upstream emissions resulting from energy extraction, transport, and transformation (for example when generating electricity and district heating) are not taken into account.

To calculate representative average annual $CO_2$ emissions per square meter, the annual $CO_2$ emissions per square meter are weighted for each property according to the share of the building category in the statistical population. The weighting is similar to the calculation for temperature-adjusted heating energy consumption (Box 1). In other words, the different building size categories are calculated into the average based on their specific weighting or share in the microcensus.

Table

### Heating energy consumption per square meter by energy source

Energy source-specific $CO_2$ emission factor

| Energy source | $CO_2$ emission factor |
|---|---|
| Natural gas H | 0.201 |
| Natural gas L | 0.201 |
| Oil | 0.266 |
| Heavy oil | 0.293 |
| Lignite | 0.359 |
| Coke | 0.389 |
| Hard coal | 0.345 |
| Liquefied pe-troleum gas | 0.236 |
| District heat-ing | 0 |
| Electricity | 0 |
| Pellets | 0 |
| Air-dried wood | 0 |
| Wood chips | 0 |

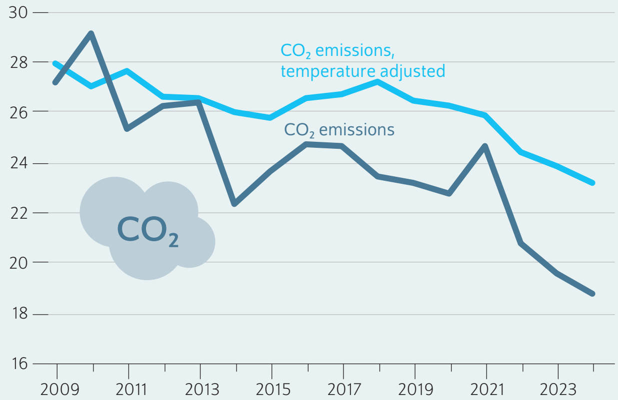
Source: Umweltbundesamt 2014.



Figure 3

### Development of $CO_2$ emissions in the residential building sector

In kilograms of $CO_2$ per square meter of heated living space




Source: ista SE, authors' own calculations.



$CO_2$ emissions are falling steadily, albeit too slowly to meet climate targets.

western German states, where the average price per kWh was 11.77 cents. Prices were lowest in Allgäu (10.16 cents), eastern Upper Franconia (10.26 cents), and Donau-Wald (10.51 cents). Prices were highest in Central Mecklenburg/Rostock (16.55 cents), Prignitz-Oberhavel, and Upper Elbe Valley/Eastern Ore Mountains (15.77 cents each). Between 2010 and 2022, prices in the eastern German states were generally around 20 percent higher than in western Germany. In 2023, prices converged, but by 2024 the gap had reappeared, widening to its previous level.

After the extreme price increases of 2022 and 2023, prices in 2024 continued to rise by an average of 6.2 percent compared to 2023, but the increase slowed significantly on average across Germany despite the expiry of price brakes (Figure 4). Thus, compared to the pre-crisis year of 2021, prices are 76.5 percent higher on average.

Even though there are signs of a slowdown in price increases on average, there were extreme regional differences. In some eastern German states, such as Mecklenburg-Western Pomerania, Saxony, and Brandenburg, prices rose significantly in 2024 compared to 2023, by around 20 percent. Prices fell most sharply in Bavaria, at 1.7 percent, which could be due to, among other things, the high proportion of oil heating systems. In Saarland, they fell by 0.7 percent and in Rhineland-Palatinate by 0.4 percent (Figure 5). While price increases were similar between the old and new federal states in previous years, trends are now diverging.

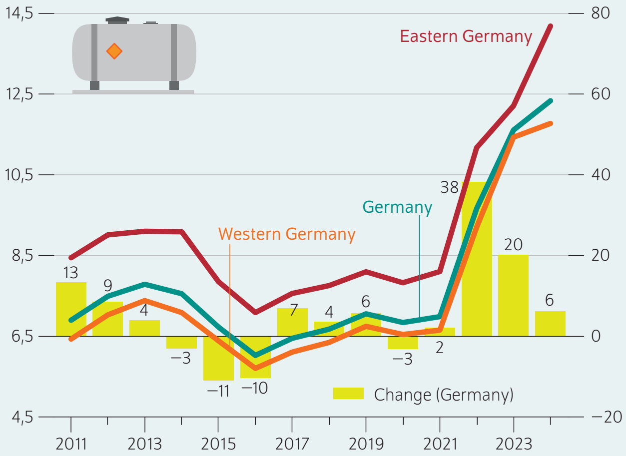
The fact that prices in the eastern German states rose so much more sharply in 2024 than in 2023 is probably partly due to the fact that the share of district heating in eastern Germany is significantly higher and the share of heating oil is significantly lower than in western Germany.

While the price of heating oil fell by 10.1 percent in 2024 compared to the previous year, the price of gas rose by a moderate 5.4 percent and the price of district heating by 27.4 percent (Figure 6). The expiry of the gas and heating price brakes at the end of 2023 is one reason why prices for gas and district heating have risen, unlike oil prices. The differences in the magnitude of the price increases for gas and district heating can be explained, among other things, by the fact that the difference between the price per kilowatt-hour in 2023 and the

Figure 4

**Energy prices**

Weighted average of natural gas, oil prices, and district heating in euro cents per kilowatt-hour (left axis), change in percent (right axis)




Source: ista SE, authors' own calculations.

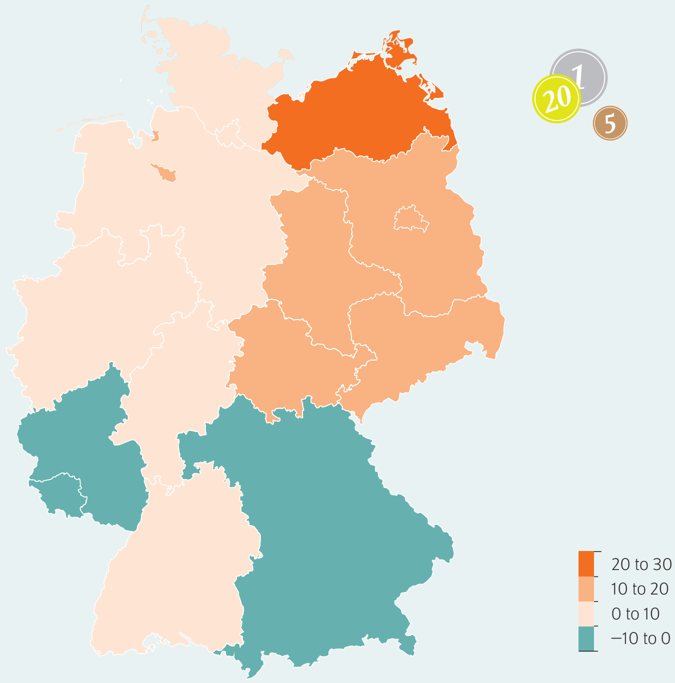


After prices in eastern and western Germany had converged in 2023, they diverged again in 2024.

Figure 5

**Change in heating energy prices in two-family and multi-family homes in 2024 compared to 2023**

In percent




Note: To calculate the changes, only buildings that are observed in both 2023 and at the time of calculation in 2024 are used as a basis and weighted using the microcensus. For this reason, this figure is not compara-ble with the values in the table. Billed heating energy prices as a weighted average of natural gas, heating oil, and district heating prices.

Source: ista SE; authors' own calculations.



In some eastern German states, prices rose sharply in 2024 due to the high proportion of district heating.

level of the price brake was much greater for district heating than for gas. After the price brakes expired, district heating prices rose much more sharply. In addition, price increases in the wholesale energy market for district heating are passed through to households with a greater delay than for gas. Based on 2021 price levels, district heating prices increased less than prices for other energy sources since the energy crisis: while heating energy prices rose by an average of 77 percent, the price of district heating increased by only 67 percent.

## Heating costs rose by 3.5 percent

Prices per kWh alone are not indicative of heating costs, as the heating energy demand of the energy sources also varies greatly. For example, the heating energy demand for district heating in 2024 was 100 kWh per square meter, while it was more than 20 percent higher for gas (121 kWh) and heating oil (127 kWh) (Figure 7). In addition, district heating demand fell by 3.4 percent in 2024 compared to the previous year, while demand for other energy sources remained virtually unchanged.

Taking these two factors into account, district heating customers paid an average of 15.64 euros per square meter in 2024, while gas and heating oil customers paid 13.26 euros and 13.51 euros per square meter, respectively (Figure 8). Overall, households in Germany spent an average of 13.82 euros per square meter per year on heating. This represents an average cost increase of 3.5 percent compared to 2023.

## District heating is subject to different pricing factors than other energy sources

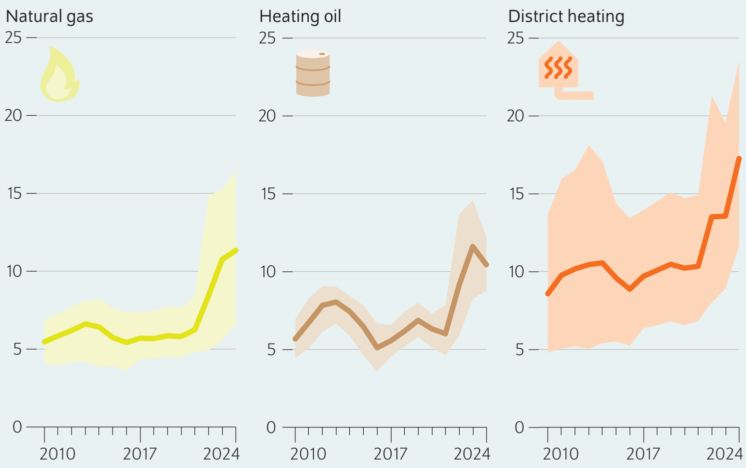
In the buildings examined, district heating costs per square meter were around ten percent higher than heating costs for buildings heated with gas until the mid-2010s. In the years before the energy price crisis, this difference rose to around 20 percent. In 2023, partly due to gas and heat price brakes, district heating costs were lower than the costs in gas-heated buildings for the first time. In 2024, district heating costs were then 18 percent higher than gas again.

Various factors can contribute to the observed differences in heating costs. First, district heating is billed based on the heat supplied, so the costs of conversion losses in heat generation are reflected in a higher price per kilowatt-hour. With gas and heating oil, conversion losses occur after energy is purchased, which contributes to higher demand per square meter but lower prices per kilowatt-hour.

Figure 6

**Heating energy prices in two- and multi-apartment buildings by energy source**

Euro cents per kilowatt-hour




Note: The shaded areas indicate the confidence interval at the 95 percent level. This means that in 95 per-cent of cases, the price was within this range.

Source: ista SE; authors' own calculations.

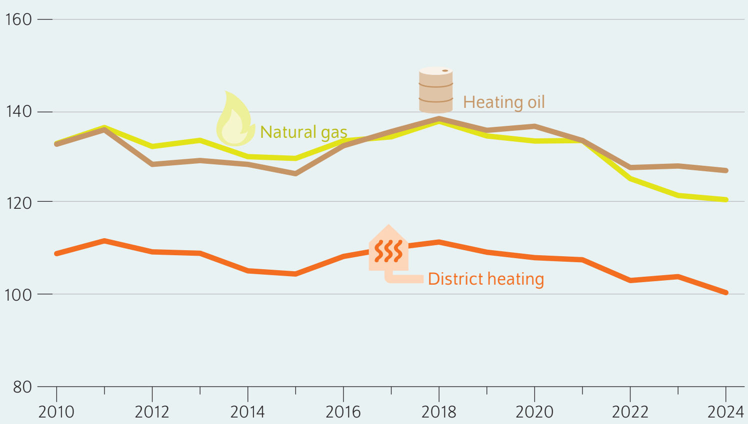


District heating prices in particular rose significantly last year after remaining constant in the previous year.

Figure 7

**Heating energy demand in two- and multi-apartment buildings by energy source**

Annual heating energy consumption in kilowatt-hours per square meter of heating living space; temperature-adjusted




ista SE; authors' own calculations.



District heating requires far less heating energy than natural gas and heating oil.

Secondly, the generation of district heating incurs investment, operating, and maintenance costs, which are reflected in the district heating price. In contrast, the on-site generation of heat using gas or heating oil incurs costs for purchase and maintenance, such as chimney sweeping. However, these are not reflected in the corresponding prices for gas or oil purchases, but are billed separately in the ancillary costs.

Thirdly, however, there is also the possibility that some district heating providers set prices above their production costs.[9]

Finally, it is possible that some district heating providers have higher production costs than other heating energy sources due to structural factors. District heating becomes more expensive if the networks are not used efficiently. For example, in regions where the population has declined, networks are now oversized.[10] In addition, they have a very high flow temperature because, historically, the network also supplied heat to industry.

Investment costs in generation plants and networks are generally passed on to district heating customers over the depreciation period, which can lead to higher costs compared to gas. In the case of gas, only investments in the networks are passed on to customers. In addition, in recent years, initial decarbonization investments have been passed on to consumers as part of the basic costs.[11] However, based on the available data, it is not possible to quantify exactly how great the influence of the aforementioned factors is on the observed difference in heating costs between district heating, gas, and heating oil.

The majority of price changes in the district heating market are driven by price adjustments via price change clauses in existing contracts (Box 3). The market element contained in the price change clauses often uses the heat price index, which is primarily based on the price of gas. Since the heat price index only reflects current market developments with a delay, district heating prices lag behind market movements on the spot markets for energy sources. In addition, some district heating providers use the previous year's fuel indices for the cost element of the price adjustment clause, which also leads to district heating prices reacting to spot market movements with a delay.[12]

**9** In 2024, the Monopolies Commission investigated the district heating market and concluded that system competition is weak and is likely to decline further in the course of the heat transition, which will strengthen the market position of district heating companies, Monopolies Commission (2024): Competition 2024. Biennial Report XXV (available online).

**10** The same problem will also arise to a lesser extent in the future for gas networks, see Isabell Braunger et al. (2024): Heat Transition: Municipalities Need Federal Support in Decommissioning Natural Gas Networks. DIW Weekly Report Nr. 13/14, 109–116 (available online).

**11** Agora Energiewende, Prognos, GEF (2024), ibid.

**12** Verbraucherzentrale Bundesverband (2024): Bezahlbarkeit von Fernwärme langfristig sichern (in German; available online).

Box 3

## District heating structures and prices and their role in the heat transition

District heating is a type of heat and hot water supply in which water is heated centrally and transported to residential buildings and industry via a pipe system. There are around 3,800 district heating networks in Germany.[1] The heat generation, infrastructure, and distribution of district heating are combined in a single company. District heating companies with a thermal output of more than 25 megawatts are predominantly publicly owned and, as part of the municipal utilities, are owned by the local municipalities.[2] District heating can be generated, for example, by combined heat and power plants or block-type thermal power stations with cogeneration, i.e., the waste heat from electricity production. Currently, 80 percent of heating networks are powered by fossil fuels such as coal or natural gas, but biomass, geothermal energy, and waste are also used.[3]

District heating plays a central role in the heat transition, i.e., the transformation to a climate-neutral heat supply, and accordingly also in the Heat Planning Act (WPG, 2023). A report by Prognos on behalf of the energy efficiency association AGFW estimates that the number of residential buildings connected to district heating will triple to 3.6 million by 2045.[4] A tripling of connections is also stated as a target by the Federal Ministry of Economics.[5] District heating is to be expanded, particularly in cities and conurbations, which are densely populated and have high heating requirements.[6] At the same time, the district heating networks themselves must be decarbonized by replacing fossil fuel heat generators with a combination of climate-neutral technologies such as solar or geothermal systems, large heat pumps, or other non-fossil heat sources, such as waste heat from industry and data centers.[7]

### Pricing

District heating providers have a local monopoly due to network-based heat supply and the vertical integration of generation, network operation, and distribution.[8] However, there may be a certain degree of competition between district heating and other energy sources (system competition), particularly in the case of new construction or heating system renovation. At this point, building owners can choose between district heating and other energy sources. However, in some regions there are obligations to connect to the district heating network, which restricts system competition. Since district heating contracts generally have very long terms of up to ten years and switching energy sources incurs high costs for existing district heating connections, competition is significantly reduced once the system has been chosen.[9] In addition, 81 percent of households supplied with district heating are tenant households.[10] In most cases, it is the landlords who make the decision and not the tenants who bear the heating costs.

The District Heating Ordinance (AVBFernwärmeV) specifies how prices may be adjusted. District heating prices consist of a base price and a price per kilowatt-hour consumed. The base price depends on the connected load and passes on investment costs and fixed costs such as maintenance and operating costs to customers. It can also be adjusted via a base price change clause, which may include a wage and capital goods index.[11] Since district heating providers have higher fixed costs than gas suppliers, the base price accounts for a significantly higher proportion of the district heating price than for gas, averaging 25 percent.[12]

The price per kilowatt-hour is adjusted via price change clauses. According to the District Heating Ordinance (AVBFernwärmeV) § 24 (4), price change clauses must contain a market element that reflects general developments on the heating market (the prices of alternative technologies such as heat pump electricity or price developments at other district heating companies). In addition, they must contain a cost element that reflects the district heating producer's production costs for energy procurement and heat generation.

**1** See the website of AGFW, Energieeffizienzverband für Wärme, Kälte und KWK e.V.: Fakten und Antworten zu Fernwärme. (in German; available online, accessed on October 22, 2025).

**2** Sara Ortner, Martin Pehnt und Susanne Ochse (2022): Drittzugang bei Wärmenetzen. Climate Change Nr. 32 (in German; available online).

**3** WWF Deutschland (2024): Heißes Rennen: Das große Bundesländer-Ranking zur Fernwärme (in German; available online).

**4** Prognos (2024): Perspektive der Fernwärme. Aktualisierung des Gutachtens „Perspektive der Fernwärme – Aus- und Umbau städtischer Fernwärme als Beitrag einer sozial-ökologischen Wärmepolitik" aus dem Jahr 2020 im Auftrag von AGFW und VKU (in German; available online).

**5** Bundeswirtschaftsministerium (2023): Mehr Tempo bei der Transformation der Wärmeversorgung Wärmenetze klimaneutral um- und ausbauen (in German; available online).

**6** Agora Energiewende, Prognos, GEF (2024): Wärmenetze – klimaneutral, wirtschaftlich und bezahlbar. Wie kann ein zukunftssicherer Business Case aussehen? (in German; available online)

**7** WWF Deutschland (2024), ibid.

**8** Locally, there is always only one district heating provider that can supply the building.

**9** Monopolies Commission (2024), ibid.

**10** Zensus Datenbank (2022): Haushalte: Art der Wohnungsnutzung – Energieträger der Heizung. Code 5000H-2021 (in German; available online)

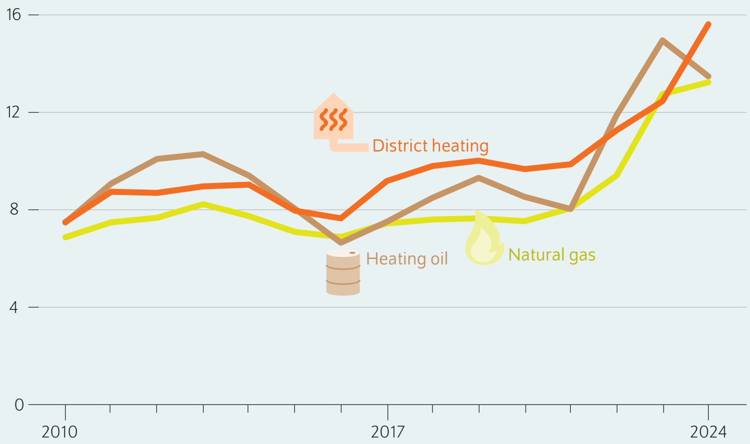
**11** AGFW (2022): BGH entscheidet erneut zu Fernwärme-Preisgleitklausel und bestätigt Branchenpraxis (in German; available online) and, as an example, Schenefeld heat supply (2017): Wärmeversorgung Schenefeld (2017): Erläuterungen zur Preisgleitklausel (in German; available online).

**12** Verbraucherzentrale (2025): Fernwärme: Kosten sparen und gleichzeitig das Klima schonen (in German; available online).

Figure 8

**Heating energy costs in two- and multi-apartment buildings by energy source**

In euros per square meter of heated living space




Quelle: ista SE; authors' own calculations



After the price brakes expired, heating costs for heating oil and gas converged again.

## Stakeholders call for more transparency and competition

District heating plays an important role in the heat transition. If the significant price differences compared to other energy sources continue even after the current price movements caused by the energy price crisis, the acceptance of district heating could be undermined. Many stakeholders are calling for greater transparency and an amendment to the District Heating Ordinance (AVBFernwärmeV). In their reform proposals, the Federation of German Consumer Organizations[13] and the Monopolies Commission (Monopolkommission) stress the importance of system competition between different energy sources. In its 10th sector report on energy, the Monopolies Commission recommends, among other things, that district heating providers be required to disclose their tariffs and other information on the existing transparency platform. It also proposes a basic supply tariff with a price cap to enable effective and inexpensive price limitation.[14] The energy efficiency association AGFW, on the other hand, is explicitly opposed to a basic supply tariff with a price cap, as this would jeopardize investment and planning security as well as network expansion.[15]

The Federal Cartel Office also considers price regulation to be virtually impossible to implement due to the large number and heterogeneity of district heating networks. Instead, the Cartel Office calls for a strengthening of antitrust abuse supervision and, in addition to greater transparency of prices and production costs in order to better identify providers who abuse their market power.[16]

If district heating prices permanently remain above the prices for alternative heating technologies (gas heating, heat pumps), it will be difficult to motivate citizens to switch. Conversely, the expansion of district heating networks is particularly cost-effective if as many households as possible in an area connect to district heating.

Municipal utilities and local authorities, which often own district heating providers, as well as their associations such as AGFW and the German Energy Agency DENA, are calling for the cost component in price adjustment clauses to be strengthened in order to create more investment security for climate-neutral heat generation.

## Conclusion: Use momentum from the crisis to drive the heating transition

The heating energy demand of the homes considered remained relatively constant in 2024 compared to 2023, meaning that the heating energy savings achieved in the energy crisis years of 2022 and 2023 were maintained. At the same time, $CO_2$ emissions in the buildings considered fell by three percent.

After the energy price brakes expired, heating energy prices rose quite significantly in 2024, by an average of six percent. Compared to the pre-crisis year of 2021, prices have thus increased by around 77 percent. There were significant differences between the various energy sources. District heating prices rose significantly more than gas prices compared to the previous year, at 27 percent. Heating oil prices actually fell. This reversed the trend seen in 2023, when gas and heating oil prices rose by 28 and 27 percent, respectively, while the price of district heating remained constant.

In addition to the expiry of energy price brakes, the high price increases for district heating are probably due to the delayed passing on of high energy prices from the energy crisis. As gas prices for households have now stabilized, it can be assumed that this will also be the case for district heating from 2025 on.

In order not to jeopardize acceptance among households, district heating prices must remain comparable to the prices of alternative heating systems. So far, oil and gas heating have been the two most important alternatives to district heating. In the course of the heating transition, heat pumps are likely to become the relevant reference technology against which district heating prices are compared. To enable households to make comparisons, greater transparency is needed

**13** Verbraucherzentrale Bundesverband (2025): Wärmenetze wettbewerblich fördern (in German; available online).

**14** See Monopolies Commission (2025): Competition and Efficiency for a Sustainable Energy System. 10th Sector Report Energy ( available online).

**15** See AGFW (2025): Alter Wein in neuen Schläuchen – Wärmewende braucht verlässliche Rahmenbedingungen statt Überregulierung (in German; available online).

**16** Bundeskartellamt (2025): Ongoing district heating proceedings – suspicion of unlawful price adjustment clauses substantiated. Press release of March 20, 2025 (available online).

regarding district heating pricing, for example through mandatory participation in the price transparency platform. This would also help antitrust authorities identify district heating providers who exploit their monopoly position to charge excessive prices. In view of the important role of district heating in the heat transition, a stable regulatory framework is also important, enabling district heating producers to make the necessary investments in climate-neutral heat generation.

**Sophie M. Behr** is a Research Associate in the Climate Policy Department at DIW Berlin | sbehr@diw.de

**Till Köveker** is a Ph.D. Student in the Climate Policy Department at DIW Berlin | tkoeveker@diw.de

**JEL:** R31, Q21, Q40

**Keywords:** Heating demand, heating costs, building energy efficiency, residential buildings, gas prices, price breaks