

# Summary

District heating plays an important role in the Swedish energy system, with an output covering more than half of the heating demand and a turnover exceeding 40 billion SEK. Moreover, most of the fuel comes from renewable or recycled sources such as biofuels, waste, and industrial waste heat. At the same time, the market is characterized by local monopolies without price regulation, with many firms being privately owned. This creates a risk that prices exceed those that would prevail in a competitive market. In addition, electricity-based heating solutions have lost competitiveness since electricity prices began rising in 2021, which reduces the indirect competitive pressure. In 2023 and 2024, unusually large price increases for district heating were also recorded, raising questions about how firms set their prices.

The first part of the report examines the relationship between ownership structure and the recent years' price increases, as well as the extent to which these increases have been matched by rising costs. The results show that private firms increased prices by just over 30 percent between 2022 and 2024. The corresponding figure for municipal firms is just over 20 percent. The difference remains even when comparing companies within the same county, indicating that the differences are not driven by regional cost factors. Accounting data show that price increases up until 2023 can be explained by rising fuel costs, and on average, profit margins for both municipal and private companies decreased in 2022 and 2023. Accounting data for 2024 is not yet available.

A sub-analysis also includes a simplified comparison of the increase in prices for electricity-based heating. This comparison is particularly relevant since some district heating firms apply a form of "opportunity cost pricing", meaning that the customer's hypothetical cost for electricity-based heating is a central component of

the pricing model. Except for sharp price increases in 2022–23, the simplified comparison shows that the price of electricity-based heating from 2020 to 2024 has generally increased more than district heating prices. This is especially true for networks where the price increase corresponds to the average price increase for municipal networks. However, given a price increase corresponding to that of private networks in the northernmost three electricity price areas (SE1-SE3), the results are not as clear-cut. A conclusion, therefore, is that the relative competitiveness of district heating has decreased in these networks.

Although profit margins declined in absolute terms for both private and municipal firms in 2022 and 2023, private firms have consistently had higher prices and profit margins over the past decade. The second part of the report presents a more detailed econometric analysis of firms' pricing behavior between 2012 and 2023. Almost all district heating companies apply two-part tariffs, meaning that customers pay a fixed annual fee and a variable price per kWh consumed. In simplified terms, monopoly theory suggests that a profit-maximizing monopolist should set the variable price equal to the marginal cost of producing an additional kWh, similar to a competitive market. However, the monopolist will set the fixed fee high enough that customers are almost indifferent to switching heating alternatives, which would not be possible in a competitive market. The results indicate that the pricing differences between private and municipal firms are primarily due to variations in the fixed fees. This pricing behavior is consistent with economic theories on monopoly pricing, where profits are extracted through fixed fees rather than variable prices.

Regression analyses controlling for network characteristics further confirms these findings. Comparing networks within the same county helps address unobserved regional variation in costs, and the results remain consistent regardless of model specification. The findings also indicate that pricing differences have gradually increased over time, although this trend has not been verified statistically. Over the period 2012–23, private networks had prices approximately 7 percent higher than municipal networks, and this difference is almost entirely attributable to the fixed fees. For 2023, this corresponded to roughly 1,000 SEK (excluding VAT) for a typical stand-alone house consuming 15 MWh. Given that the

district heating market had a turnover of approximately 40 billion SEK in 2023, with private companies accounting for 14 billion SEK, a rough estimate suggests that the total annual wealth transfer from consumers to producers amounts to around one billion SEK (7 percent of 14 billion). Additionally, this estimate does not account for the fact that profits from municipal firms indirectly benefit local communities through increased municipal budgets.

A supplementary econometric analysis examines whether pricing varies depending on whether a company is a member of the Price Dialogue (“Prisdialogen”), a voluntary industry-initiated platform where customers and producers discuss pricing and contract terms. One-third of companies participate, most of which are municipal. While members do set lower prices, this difference can be explained by the fact that most members are municipally owned. Another analysis investigates whether pricing models influence price levels, but due to limited data, no statistically significant relationships are found.

A final sub-analysis divides private companies into Swedish-owned and foreign-owned entities. Although foreign-owned firms are relatively few, they operate in about 30 percent of all municipalities. The results indicate that foreign ownership leads to additional price markups, comparable to the difference between municipal and Swedish-owned private companies.

The study also highlights some of the challenges faced by other countries in enforcing regulations. For example, the review reveals that at least one company in Denmark attempted to circumvent the country’s cost-based pricing rules by using internal interest rate schemes and other transfer pricing tactics. As a result, municipalities and cooperatives repurchased several district heating networks. In Germany, where price regulations focus on rate changes rather than absolute price levels, there are indications that some companies reported inaccurate data to the regulatory authorities between 2021 and 2023. The German competition authority is currently investigating these firms for potential overpricing.

The third part of the report examines regulatory frameworks for district heating markets in 23 European countries, with detailed case studies of Denmark, Finland, and Estonia. Sweden stands out as having one of the least regulated pricing systems among countries where district heating plays a major role, especially given its high

level of private ownership. Finland has similarly low levels of price regulation but has traditionally had less private ownership.

Based on the findings of the report, the final section discusses ways to improve the institutional framework of the Swedish district heating sector. It presents six key policy recommendations.

### **1. Municipal district heating networks should not be sold.**

Research suggests that the positive economic effects of privatization mainly work through efficiency gains, which ideally should result in at least somewhat lower consumer prices. However, the report's findings indicate the opposite: private networks, especially those owned by foreign investors, tend to charge higher prices. Moreover, profits from foreign-owned companies do not stay in Sweden (except for corporate taxes). While selling a municipal network may provide a short-term financial relief for budget constrained municipalities, it ultimately leads to higher prices and a long-term wealth transfer from future generations to the current residents.

### **2. Abolish the District Heating Board (Fjärrvärmenämnden).**

The board has no authority to regulate prices or assess whether prices are fair. From a consumer perspective, its function is therefore limited. Additionally, since price increases cannot take effect while mediation is ongoing, the board also creates uncertainty for district heating providers. In its current form, the board serves no meaningful purpose.

### **3. Experience from the Swedish electricity distribution sector suggests that price regulation should be avoided.**

Economic theory, as well as common practice, suggests that markets consisting of private local natural monopolies should be subject to price regulation. However, experiences from price regulation in the electricity distribution sector show that the challenges associated with price regulation are so extensive that it is unlikely that a similar type of regulation of the district heating market would function satisfactory.

#### **4. An impending technological shift also suggests that price regulation should be avoided**

The district heating market is likely approaching a major technological transition, often referred to as the shift to “fourth-generation” district heating. This includes low-temperature distribution, integration of new energy sources, smart grid management, and thermal storage. While many existing Swedish networks are already quite efficient, digitalization, smart control systems, and more sophisticated tariff structures will likely become increasingly common. This shift complicates price regulation, as it increases the number of factors that regulators must track and analyze. Furthermore, if price controls were introduced, authorities would need to determine the types of investments that should be allowed within the regulated capital base.

#### **5. Develop the Price Dialogue (“Prisdialogen”) with a standardized price calculation model.**

The pricing models reported in the Price Dialogue lack a standardized framework, and in some cases, only the underlying assumptions are provided without detailed calculations. A standardized price calculation algorithm, where firms supply key parameters, would improve transparency for customers. It would also facilitate sensitivity analyses regarding assumptions about e.g. electricity prices and allow for historical price comparisons.

#### **6. Introduce a price comparison tool under the Energy Markets Inspectorate.**

Sweden is one of many countries that have struggled with price regulation, particularly in the electricity grid sector. In response, less intrusive regulatory interventions have emerged in recent years to discourage excessive pricing. These approaches rely on regulators continuously collecting data on market conditions, costs, and prices, and then making this information publicly available. Sweden has excellent conditions for implementing such a system, especially since the Energy Markets Inspectorate already collects the majority of the necessary data to conduct such analyses.