District heating sector in numbers: latest URE report

The study provides a comprehensive overview of the current standing of the district heating sector in Poland

The Polish heat market faces a huge challenge of a transition process forced primarily by the climate policy, including stricter environmental requirements and the rising cost of CO_2 emission allowances. Without transformation and addressing challenges, specifically as regards measures to reduce gas emissions as well as the modernisation and modification of heat generation methods, we will experience permanent increases in heat prices resulting in a shrinking share of district heating networks in the supply of heat to consumers.

The condition of the Polish district heating sector in 2021 is presented in the just-published URE report entitled The District Heating Sector in Numbers. Based on the data collected by the Energy Regulatory Office from more than 400 licensed district heating companies it is possible to indicate the principal transformation directions in the Polish district heating sector and the necessary actions to be taken.

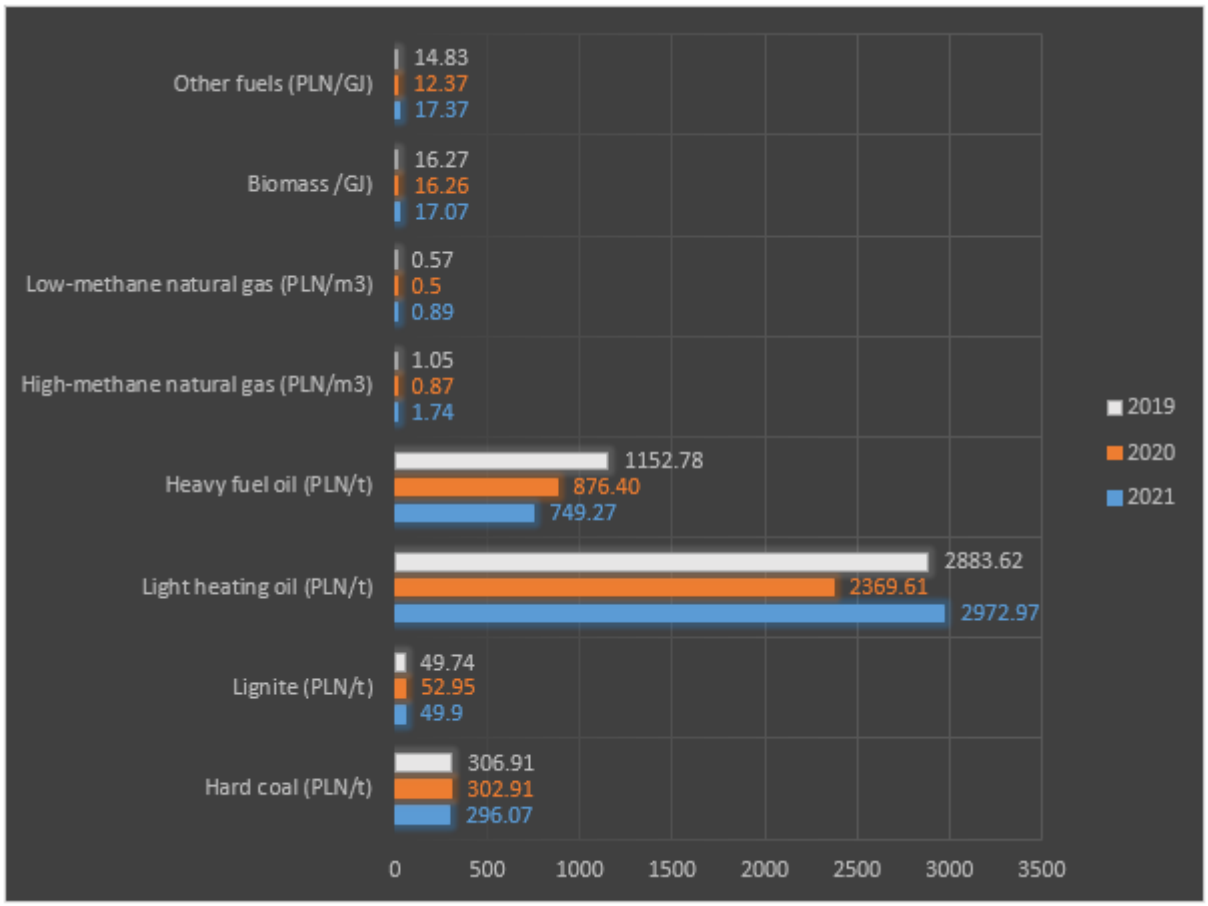
What is going on in the district heating industry?

The heat sector in our country is extremely varied, as the companies differ significantly in terms of, among other things, size, generation and network infrastructure and their condition or customer profiles. Although the Polish district heating, with its local reach, has a much smaller impact on the economy than other energy sectors, the market was equally affected by the pandemic in 2021 as well as the symptoms of destabilisation in the market for fuels imported from the east in the second half of the year. The year 2021 saw a dramatic increase in the cost of CO_2 emission allowances, which, together with the increase in fuel prices, was reflected in the financial results of district heating companies and in the increase in the average price of heat sold to consumers.

Growing prices of fuels and CO_2 emission allowances

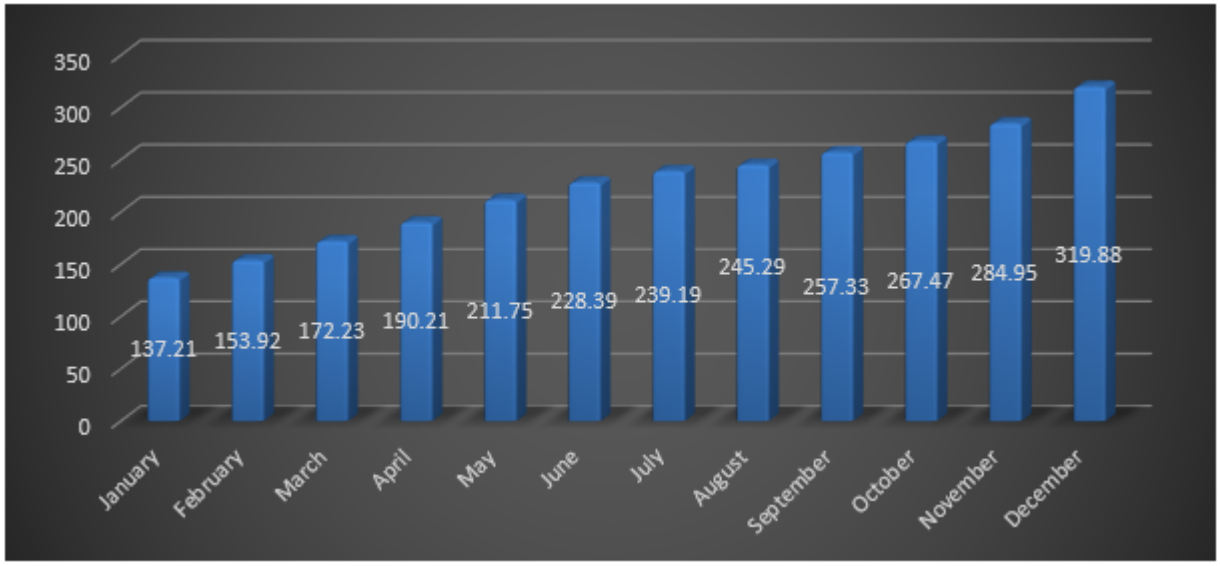
In 2021, for the first time in many years, district heating operators had to struggle with major destabilisation in the fuel supply market, which affected in particular gaseous fuels, the bulk of which was imported from the east. The increase of the cost per unit of natural gas was remarkable – in case of high-methane natural gas (GZ-50) the unit cost doubled while the price of low-methane natural gas increased by 78 per cent. On the other hand, the unit costs of coal, lignite and heavy fuel oil used in heat generation went down. These factors influenced the price of heat which is closely linked to the type of fuel used in generation and the cost of CO_2 emission allowances, which soared during last year.

Fig. 1. Unit cost of fuels consumed in heat generation sources in 2019-2021



Source: Own analysis of URE.

Fig. 2. Average price of CO_2 emission allowances in 2021 calculated based on 30 quotations [PLN/MGCO_2]

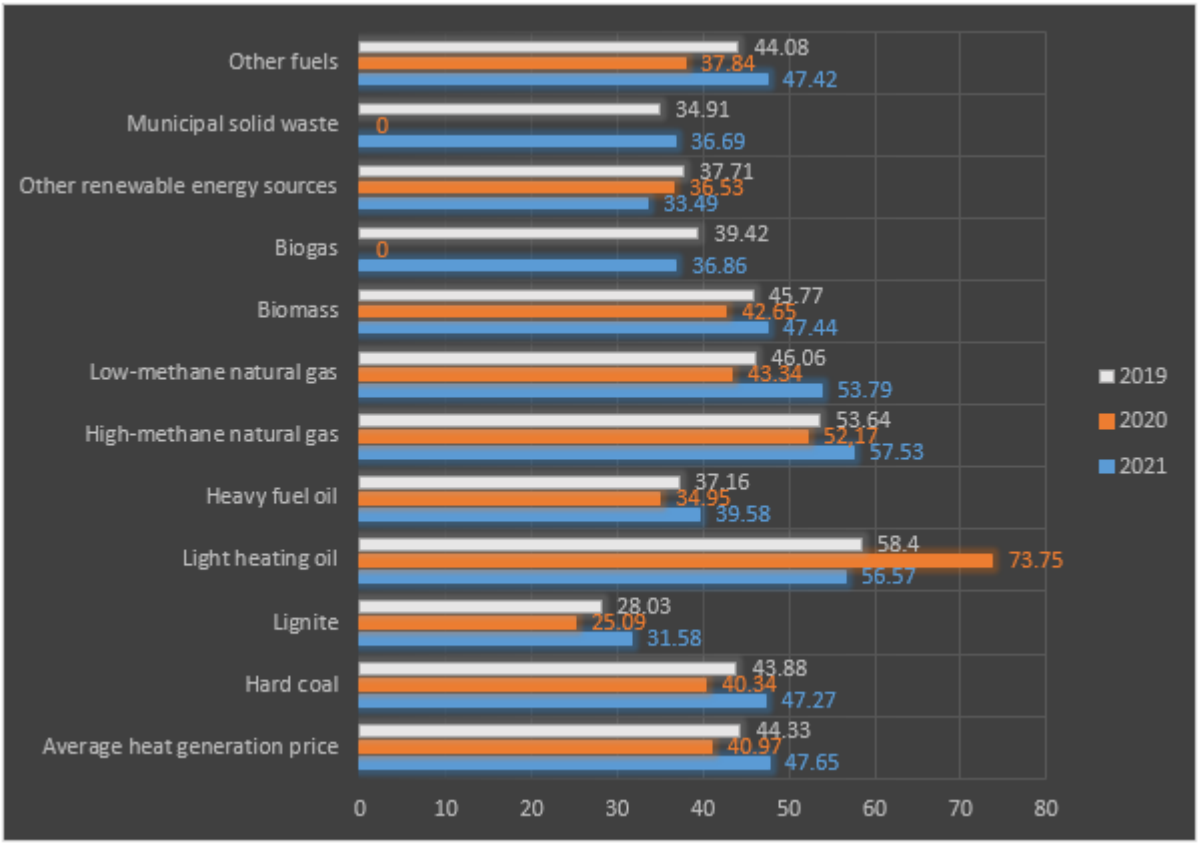


Source: Own analysis of URE.

Higher fuel costs reflected in tariffs approved by URE

The rise in fuel prices and the cost of carbon emission allowances observed in 2021 impacted the level of tariff prices and charges approved by the President of URE for heat generated from non-CHP sources only by the end of the year.

Fig. 3. Prices for heat generated from different types of fuel in 2019-2021 (PLN/GJ)



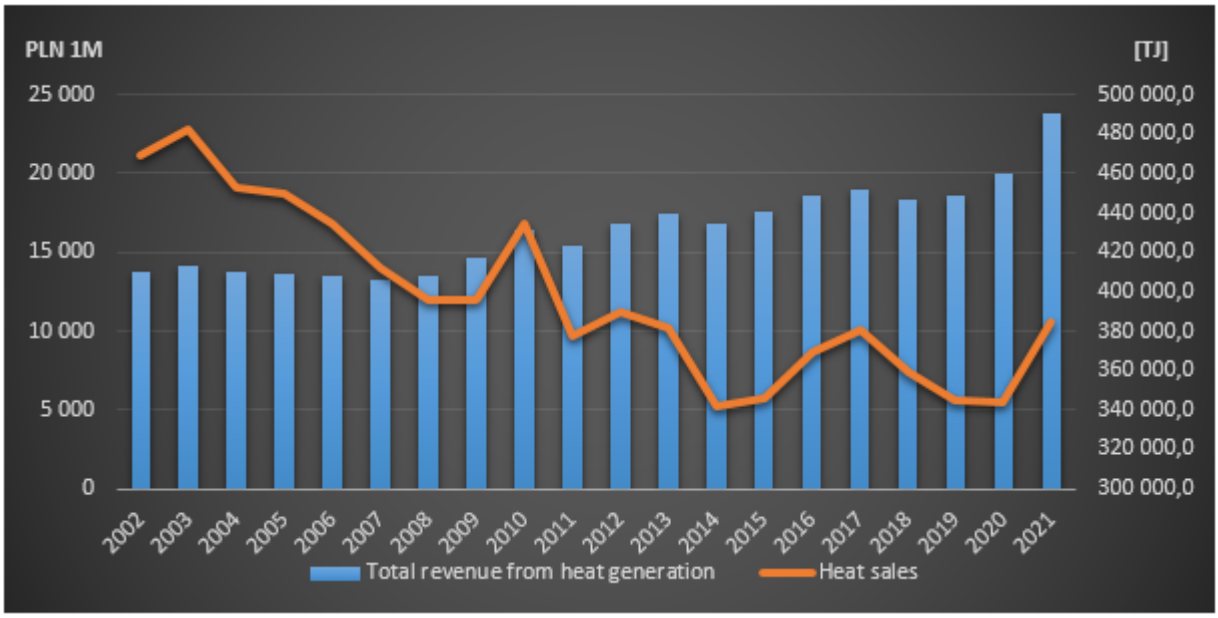
Source: Own analysis of URE.

Is district heating profitable or not?

The overall profitability (year-on-year) of all licensed district heating companies has continued to be negative since 2019. This is due to the low profitability of CHP sources using simplified tariffs that do not reflect market volatility and actual operating costs. The already negative profitability of such sources nearly doubled in 2021.

The increase in costs associated with the purchase of CO_2 emission allowances and the rise in fuel prices was also reflected in the profitability of district heating companies calculating tariffs on the basis of scheduled costs. The profitability of these companies is close to zero. The companies in this group did not report negative profitability, meaning that the tariffs approved by the regulator ensured the recovery of costs associated with their operations.

Fig. 4. Heat sales and revenues of the licensed heating sector from 2002 to 2021



Source: Own analysis of URE.

The Regulator's response to the sector's problems

> *Recognising the need for change and accelerating the process, the regulator is paying particular attention to the heating industry. The Office has put a lot of effort over past months to adapt the regulatory model to the dynamic changes in the market environment* - says Rafał Gawin, President of URE

In mid-2021, the President of URE modified the regulatory model for district heating to support investment and transformation in the sector. The changes aimed to adapt the regulatory model for district heating to the market situation and to ensure an adequate return on capital for those companies which are willing to undertake investments supporting the energy and climate policy objectives.

> *Our focus is on improving the regulatory conditions for companies to invest, and on promoting specific outcomes resulting from such investments. This involves adding a qualitative dimension to the regulatory policy in the heating sector* - said Rafał

Gawin, President of URE commenting on the introduction of the new guidelines shaping the tariff approval process.

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- The first study dedicated to the heating sector was undertaken by URE in 2002. Since that time, the structure of companies covered by the study has changed significantly. The changes in the legal status testify to the degree of ownership and organisational transformation in the Polish heating sector.
- The first monitoring indicated that in 2001 80.5 per cent of licensed companies were operating in the form of a limited liability company; in 2020 their share already accounted for 95.49 per cent, growing up to 96.1 per cent in 2021.
- URE has been monitoring district heating companies for 20 years. During this period, their generation efficiency has increased by more than 7 per cent, while transmission efficiency has hardly changed. The level of harmful emissions to the atmosphere decreased significantly: most notably for dust (by 89 per cent), sulphur dioxide (by almost 81 per cent) and nitrogen oxides (by more than 59 per cent). CO2 emissions decreased by around 15.5 per cent.
- In 2021, licensed district heating companies had networks with a total length of 22,200 km (2020: 22,100 km), and this figure includes district heating networks connecting heat sources to substations as well as low-capacity networks operated as external consumer installations.
- During the 20-year period of the monitoring of licensed district heating companies, the length of the network increased from 17,312.5 km to 22,223.0 km. A gradual increase in the length of the district heating network has been observed in recent years. The length of the network per (network) company increased from 23.81 km to 61.22 km (60.6 km of networks in 2020 vs. 58.7 km in 2019).
- In 2021, around 93 per cent of all surveyed district heating companies (407) were engaged in heat generation. With process heat recovery included, they generated over 425,000 TJ of heat, which represents a volume increase of nearly 8 per cent over the previous year.
- The total heat capacity installed at licensed heat generators in the period 2002-2021 fell from 70,952.8 MW to 54,109.6 MW.
- Companies generated heat in sources of various sizes with small sources up to 50 MW being most prevalent (218 operators). Only ten licensed companies could boast generating capacity exceeding 1,000 MW, and their combined generating capacity accounted for more than a third of the capacity of all licensed sources. These players were also active in electricity generation.

- In 2021, the number of companies engaged in co-generation increased from 128 to 133 entities. Of the 378 heat generators, 133 also produced heat through co-generation (35.1 per cent), which means that their share grew by 1.4 per cent compared to the previous year.
- The share of co-generated heat in total heat production volume was 63.2 per cent and decreased by 2 percentage points compared to the previous year.
- The diversification of fuels used for heat generation has been progressing rather slowly. Coal fuels continue to prevail accounting for 69.5 per cent of fuels consumed in heat sources in 2021 (in 2020 – 68.9 per cent, in 2019 – 71 per cent, in 2018 – 72.5 per cent, and in 2017 – 74.0 per cent).
- Since 2002, the share of coal fuels has decreased by 12.2 percentage points.
- In 2021, the total volume of heat sales by licensed district heating companies (including resale to other companies) was approximately 385 TJ and was 11.86 per cent higher than in 2020.
- The average price of heat sold from all licensed heat-generating sources was 47.65 PLN/GJ (an increase by 7.49 per cent compared to 2020), while the average price of heat sold from licensed heat-generating sources without co-generation was 53.31 PLN/GJ (an increase by 2.78 per cent) and the average price of heat sold from licensed heat-generating sources with co-generation was 45.27 PLN/GJ (up by 9.56 per cent).
- The average price of heat sold from licensed sources producing heat without co-generation in 14 voivodeships (out of 16) was higher than the average price of heat sold from licensed sources producing heat with co-generation.
- The average single-component heat price in 2021 was 59.56 PLN/GJ and was higher by 6.45 per cent than in 2020.
- In 2021, the overall debt ratio increased to 0.52 and liquidity decreased by 13.41 per cent compared to the previous year.
- There was also a significant increase in the fixed asset replacement ratio between 2002 and 2021. Its value went up by 70.46 per cent, indicating a high level of investment outstripping the depreciation of fixed assets.

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