



NATIONAL AUDIT  
OFFICE OF LITHUANIA

# ASSESSMENT OF THE DISTRICT HEATING SUPPLY

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## SUMMARY

### The Relevance of the Assessment

The country's district heating system is an integral part of the overall energy sector, closely linked to the electricity system, fuel supply and other systems through technological and energy flow links.

Heating services are a daily and vital necessity for residents. The district heating system serves 716,000 consumers, who consumed 6.8 TWh in 2020.

The National Energy Independence Strategy sets ambitious targets for the heating sector to increase the use of renewable energy sources and the number of district heating consumers by 2050. This requires ensuring a long-term and sustainable heat planning process, improving the efficiency of maintenance of district heating supply systems and of domestic heating and hot water systems in multi-apartment buildings, and increasing the use of renewable energy sources to ensure the decarbonisation of heat systems.

The National Audit Office, aware of the importance of district heating and in order to encourage stakeholders to take action to address the current challenges in the organisation of district heating and the modernisation of these systems in order to meet the strategic objectives, carried out an assessment.

### Objective and Scope of the Assessment

The objective of the assessment is to assess whether the development of district heating supply is being ensured in order to meet the country's strategic objectives and to ensure a reliable supply of heat to consumers at competitive prices.

Key areas of assessment:

- heat energy production;
- heat energy supply;
- heat energy consumption.

The entity of the assessment is the Ministry of Energy.

Period assessed – 2019–2020. In order to assess changes, we have also used data from other years.

## Key Assessment Results

### Planning of the long-term development of district heating has room for improvement

The objective set for district heating is to increase the use of renewable energy sources. The strategic objectives of the national energy policy are implemented through the preparation of municipal specific heat management plans, which must be updated at least every 7 years. However, 33 out of 60 municipalities have not updated their plans at least once in 7 years and 16 municipalities have not updated their plans for more than 10 years. Failure to update plans in time may result in the failure to make the necessary investments to ensure a reliable supply of heat energy to consumers at a competitive price, or in the creation of surplus production facilities (Sub-section 1.1, p. 9).

The substitution of fossil fuels for heat production, in particular natural gas, by biofuels has made it possible to rapidly increase the share of renewable energy sources in the fuel balance of the heating sector to almost 75% and to reach the targets set (70% in 2020). However, in 6 municipalities the share of renewables was below 70%, ranging between 3% and 65%. In addition, the potential of local sustainable biofuels (logging residues) and alternative renewable energy sources (solar, heat pumps or residual energy) is not sufficiently exploited in heat production. This would allow to offer the most efficient way of producing heat and reduce price fluctuation (Sub-section 1.2, p. 13).

During the transition to biofuels, the installed thermal power of heat suppliers' facilities exceeded the maximum heat demand in Lithuania by more than 3 times. In 12 municipalities, the installed thermal power exceeded the maximum power demand by 5 and more times, and in 11 municipalities the installed power of biofuel facilities alone exceeded the maximum demand 2 times (Sub-section 1.1, p. 9).

In order to achieve a more uniform and efficient development of renewable energy sources throughout the country, and to plan for the rapid renovation of buildings and the reduction of heat energy demand, it is necessary to ensure adequate planning of district heating systems in order to assess future developments in the sector and to take technological and investment decisions in a timely manner in order to ensure the development of the use of alternative and indigenous renewable energy sources (Sub-section 1.2, p. 13).

### The efficiency of heat transmission needs to be increased

The number of district heating consumers and connected buildings is constantly growing: at the end of 2020, there were 716,000 consumers and 28.5 thousand connected buildings. While the strategic target of having at least 90% of buildings in urban areas supplied with district heating by 2050 is ambitious, however, with the total number of buildings connected to district heating systems reaching 4.3% and without knowing the number of not connected buildings in urban areas, this target may be irrational and its implementation not measurable (Sub-section 2.2, p. 19).

While 540.9 km of district heating pipelines were upgraded or newly built in 2014–2020, technological losses in the networks remain significant, amounting to 1.2 TWh in 2020 (15.2% of the total heat supplied to the networks), which is higher than the target of reducing losses to 14% in 2021 and the average share of heat lost in the Scandinavian countries (about 12%). Heat transmission losses vary across Lithuania's municipalities: for 62% of heat suppliers (28 out of 45), the share of heat lost in the networks is higher than the average in Lithuania (15.2%), ranging from 15.4% to 27.1% (Sub-section 2.1, p. 16).

In order to ensure a reliable and high-quality supply of heat energy to consumers at the lowest possible cost and to increase energy efficiency, it is necessary to implement existing and new measures to reduce heat losses in the transmission networks (Sub-section 2.2, p. 19).

### Reliable and efficient use of heat energy in buildings needs to be ensured

Multi-apartment buildings are being modernised to improve energy efficiency, reduce energy consumption and heat bills, but around 83% of multi-apartment buildings are still energy inefficient. In 2014–2020, 3,500 of the planned 4,000 multi-apartment buildings were modernised, and there are delays in the implementation of the recommendations of the National Audit Office's audit<sup>1</sup> to stimulate the involvement of the population and to accelerate the modernisation of multi-apartment buildings. There are maximum heat consumption targets for multi-apartment buildings, however, no entity is tasked with assessing whether actual energy consumption complies with them, thus there is no information on the worst-performance multi-apartment buildings (Sub-section 3.1, p. 22).

Building managers do not ensure proper maintenance of building heating systems: 28% of buildings connected to district heating systems do not have a statement of the building's preparedness for the new heating season, 41% of the declarations of conformity of heating and hot water systems in multi-apartment buildings inspected by the National Energy Regulatory Council revealed irregularities. The protracted takeover of heat substations (in 2019, 44% of heat substations were still owned by heat suppliers who were unable to maintain them) and the unfinished automation of heat substations (in 2020, 14% of heat substations were found not automated) have contributed to inadequate maintenance of the heating systems (Sub-section 3.2, p. 25).

As energy efficiency requirements become more stringent, the modernisation of the building stock and the upgrading of heating systems must be accelerated in order to make

<sup>1</sup> 2020 Public Audit Report "Multi-apartment Building Renovation (Modernisation)"

buildings energy-efficient by 2050 and to reduce heat bills by 2050 through a reduction in the amount of heat energy consumed (Sub-section 3.2, p. 25).