



## Vilnius district heating sector is among the most advanced in Europe

Vilnius – the capital of Lithuania – is the largest, a fast-developing and innovative city with a **population of 570,000**. Construction of buildings, transport, technology, industry, waste – each of these sectors has been growing rapidly over the past years. Therefore, environmental protection and reduction of air pollution are among the priority goals of **Vilnius Municipality**.

In terms of the best opportunities for decarbonization Vilnius can be proud of having a well-developed district heating (DH) system as a progressive solution of heat and hot water production and supply, which enables the city to provide high quality heat with the lowest impact on environment. The history of Vilnius DH dates back more than **60 years**, when the first district heating system was launched. Currently the total length of the DH network is **733 km** and it is the largest DH system operated in our country with low heat transmission losses, which amounted to **13,5 %** in 2018 while the average of the country was 15 %.



Over the past few years, Vilnius has employed a number of technologies to upgrade the heating sector, which have benefitted DH customers of the city. The largest part of the investments focused on the upgrade of heat generation plants, renovation of the network, installation of automated heat substations, development of biomass consumption, connection of new customers and implementation of modern IT solutions. The annual heat demand is **2916 GWh**, **72 %** out of which is produced in heat generation facilities of Vilnius DH company and the rest is purchased from independent heat producers. In 2018 around **45 %** of heat transferred to the DH network was produced from biomass, and the rest from fossil fuels (mainly natural gas).

In order to increase the share of renewables in energy generation as well as to reduce greenhouse gas emissions, Vilnius is implementing one of the largest energy projects in Lithuania – construction of the modern high-efficiency waste to energy and bio CHP plant. The total investment is 350 million euro. The project was also granted over 139 mln. euro funding from the European Union. It is anticipated that upon completion in 2020, the heat production from biomass and municipal waste will increase from 45 **to 70 %**. In 2021, when the CHP plant will operate at full capacity, this share will reach almost **90 %**. Vilnius will become one of the greenest DH cities in Lithuania. It is important to note that the efficiency of the new CHP

plant will be at least 101 %. Modern technologies will be in place for flue gas treatment: selective non-catalytic reduction, a semi-dry-cleaning system, and bag filters. The plant will meet the highest air pollution reduction standards. The city will contribute to the decarbonization process not only by producing green energy but also due to waste management. Conversion to biomass and municipal waste will bring a triple advantage: it will cut down emissions, dependence on imported natural gas (coming at a higher price than biofuel), as well as reduce the price for heating for residents.

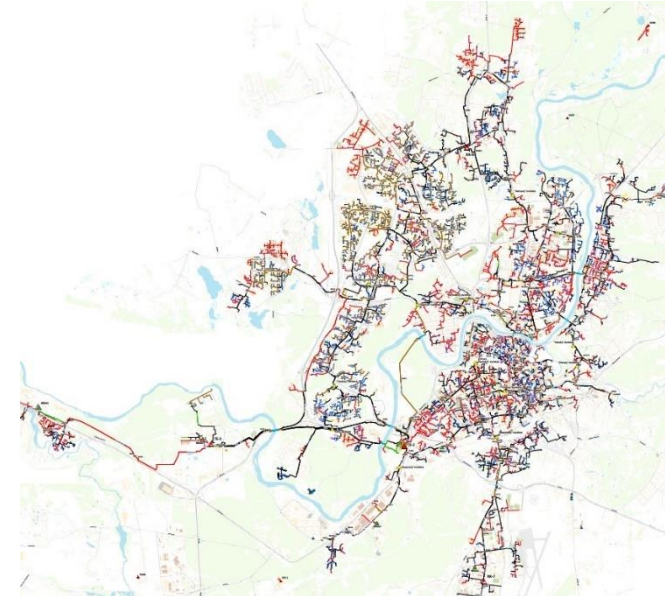
Vilnius DH company successfully provides district heating to **204,000 households**. Most residents (about 2/3) live in multifamily apartment houses. Around **70 %** of these buildings receive heat from the district heating network. Thus, inhabitants are the main DH consumers accounting for 68 % of the total amount of consumed heat. The remaining users are state and municipal institutions and business organizations. Vilnius is one of the fastest growing DH cities in the country. About **4 km** of pipes are replaced and about 2 km of new ones are installed annually. During the last 2 years more than **2500 new consumers** (70 MW) were connected to the DH network, which accounts for about a 1,2 % increase in the total number of heat consumers.

The development of the heating sector is greatly influenced by reduced heat prices mostly due to the replacement of expensive natural gas with cheaper local biomass and improved energy efficiency. In 2014–2019 the average heat price in Vilnius dropped by **29 %**.

Vilnius DH company follows the environmental regulatory requirements and applies the best available techniques. In order to increase the efficiency of energy production and supply and the use of renewable energy sources, the company applies pollution prevention, reducing the use of fossil fuels, environmental pollution and the impact on the climate. Lithuania's National Energy Independence Strategy stated that DH supply from renewables will be **100 % by 2050** and at least **90 %** of buildings in cities will receive heating from the DH network.

Following this goal, Vilnius City will start a further development phase introducing flexible complex energy systems that help accumulate excess and cheap heat flows, move to a lower temperature mode, modernize heat stations, allowing consumers to supply not only heat but also cooling, exchanging energy with consumers, installing smart networks and devices.

Vilnius is always seeking for new uses of renewables for energy generation. In the future Vilnius DH company is also planning to increase the efficiency of existing boilers, to install heat pumps and storage tanks thus contributing to reduction of the use of fossil fuels and increasing the reliability of heating supply. In the long run, the use of heat pumps will also allow the development of district cooling supply.



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