



Untapped potential and challenges in heating supply

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Audit report

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Performance audit “Do investments in improving heating systems and energy efficiency of buildings ensure sustainable and economically sound heating?”

The audit was conducted based on audit schedule No 2.4.1-69/2024 of the First Audit Department of the State Audit Office of Latvia of 1 August 2024.

The audit report enters into force at the moment of the decision of the First Audit Department of the State Audit Office of Latvia on the approval of the interim audit report.

The cover design includes a photo taken by auditors.

Dear Readers,

Heat in Latvia is a basic need that every resident needs for approximately 200 days a year. Therefore, it is in the public interest for heat supply to be safe, sustainable and available at the lowest possible price. In the audit, we have assessed whether the prerequisites for effective heat supply have been created in Latvia and Riga by analysing both heat production and the procurement mechanism established by JSC “*Rīgas Siltums*” (Riga Heat), as well as the tariff calculation methodology and technological aspects of the operation of heat supply systems.

After the audit, we have concluded that a long-standing and known, but unresolved situation has existed in Riga for several years while useful heat is released from JSC “*Latvenergo*” CHP into atmosphere, heat produced in wood chip boiler houses is also purchased, thus not contributing to the effective use of energy resources.

The calculations by the State Audit Office of Latvia show that Riga residents overpaid almost 8 million euros for heat energy for this reason in the 2024–2025 heating season while JSC *Latvenergo* did not receive more than 6 million euros in potential revenue. We also concluded that JSC *Latvenergo* had limited opportunities to offer Riga cheaper heat in larger quantities on days when the CHP plants were operating in the electricity market.

It was caused by the lack of cooperation among the parties involved and different understandings of the application of laws and regulations.

Unfortunately, the situation in the Riga thermal energy market is characterized by institutional inertia and lack of initiative. Although the problems are recognized, the institutions and enterprises involved refrain from active action by waiting for the initiative from others and often justifying the lack of action with competition regulations and decisions of the Competition Council.

In the 2025-2026 heating season, JSC “*Rīgas Siltums*” improved its procurement model, and the price of heat energy has decreased. However, the new market mechanism and limited competition do not ensure that the benefits from lower heat energy production costs of independent producers are fully reflected in the bills of residents.

Progress has been made in the field of heat supply in Latvia, especially in the transition from natural gas to biomass fuels. However, heat energy tariffs vary significantly and they are higher than in Riga in many places.



Particular challenges remain in smaller settlements, where outdated and small-scale systems with questionable long-term viability are in operation. The audit concluded that there was a lack of a clear approach to the development of these systems and the introduction of alternative solutions. At the same time, the potential of waste heat is underutilized in Latvia, as it is not developed purposefully and there are no clear guidelines for its integration into heating supply systems.

Based on the audit conclusions, we provided recommendations to the Ministry of Climate and Energy, the Ministry of Economics, the Public Utilities Regulatory Commission and JSC “*Rīgas Siltums*”. Their implementation will facilitate more active use of waste heat, ensure that heat energy is purchased at the lowest possible price in Riga, and will also provide support to local and regional governments in planning investments in the modernization of heating supply.

In conclusion, we would like to express our gratitude for the contribution to the preparation of the audit to JSC “*Rīgas Siltums*”, JSC “*Latvenergo*”, the Ministry of Climate and Energy, the Ministry of Economics and the Public Utilities Regulatory Commission, as well as to local and regional governments and other organizations that provided information and opinions. We would like to express our special gratitude to Mr Imants Urtāns and Ms Elena Vilsonē-Bērziņa for their contribution to the preparation of the audit.

Respectfully
Mr Mārtiņš Āboliņš
Department Director

Summary

In this audit, we assessed whether investments made in the development of heating supply contributed to sustainable, safe and economically sound heating supply in Latvia. During the audit, we analysed whether Riga's heating supply development plans were aligned with the national climate and energy objectives by paying particular attention to the use of renewable energy resources, the effectiveness of heating networks and the integration of waste heat. In the audit, we also assessed how JSC "Rīgas Siltums" organised the procurement of thermal energy, to what extent the procurement model of thermal energy developed by JSC "Rīgas Siltums" promoted compliance with the principle of economic gradualism (primarily heating energy is purchased at the lowest available price), and what the main obstacles were to the procurement of the cheapest possible thermal energy. We also assessed whether policymakers had created a sufficiently clear, predictable and effective regulation that facilitated lower thermal energy tariffs and competition in the market.

Waste heat is unavoidable heat generated as a by-product in industrial installations or power plants, or in the tertiary sector, and which would be lost to air and water, without a district heating or cooling system, if not used.

The heating system is not homogeneous in Latvia, and there are fragmented systems with a small number of users and low heat consumption alongside viable and effective district heating systems in large cities. Therefore, we have also assessed the extent during the audit to which local and regional governments are able to ensure sustainable, safe and economically justified heating supply while meeting national climate and energy targets. In the audit, we examined how local and regional governments planned and justified investments by paying particular attention to indicators such as linear heat density, capacity factor used and the structure of existing tariffs. The report describes problems that affect the ability of local and regional governments to provide sustainable heating supply solutions significantly, as well as complicate investment assessment and development planning by making national-level support and clear guidelines for municipal decision-making particularly important.

Main conclusions

Although the investments made by local and regional governments to date have contributed to significant progress in the modernization of heating supply and the transition to renewable energy resources, they are not yet sufficient to ensure sustainable and economically justified heating supply throughout the country. For the return on investment to be stable and economically justified in the long term, the Ministry of Climate and Energy must ensure a coordinated policy for the thermal energy sector at the state and municipal levels, clear regulation of waste heat, and targeted support for local and regional governments for the transition to energy-efficient solutions that support the goals of the National Energy and Climate Plan.

Heating is a necessity for every resident of Latvia for approximately 200 days a year, and it accounts for the largest portion of the monthly utilities bill most often. According to auditors' estimates based on 2025 energy prices, population of Latvia spend approximately 550–600 million euros on heating energy annually, including 360–390 million euros for residents of apartment buildings on district heating.

The sustainability and tariff levels of municipal district heating systems vary significantly due to the age of the infrastructure, fuel choice, number of users, and insufficient investment planning. Therefore, the Ministry of Climate and Energy should ensure a targeted and data-based heat development policy.

The organization of heating supply in Latvia is an autonomous function of local and regional governments. They organise district heating supply by establishing municipal enterprises or by agreeing with private enterprises on the provision of heating supply services, or by heating their own buildings individually. In such circumstances, the assessment of the efficiency of investments in the modernization of heating supply systems becomes part of a broader task of municipal management and energy planning.

By using the support of European Union funds, Latvia has facilitated the transition to a relatively energy-efficient heating supply, as old and inefficient Soviet-era boiler houses and equipment have been replaced and thermal energy transmission networks have been reconstructed by reducing losses. For the most part, a transition from natural gas to biomass boilers has also been made, thus increasing the share of renewable energy in heating supply and contributing to the reduction of CO₂ emissions. It also corresponds to the goals set in the National Energy and Climate Plan of Latvia in the field of heating supply.

At the same time, we have established during the audit that there is a significant difference among economically viable large-scale systems and small-scale systems in Latvian regions. While the heating systems are effective and are being developed in a planned manner in populated areas with a relatively larger number of district heating users, then the initial infrastructure has become a financial challenge for municipal budgets in small towns and villages, where the number of consumers is small (up to 20 consumers, for example, municipal institutions, apartment buildings) and the demand for thermal energy has decreased.

Although local and regional governments of Latvia have made significant investments in improving and modernizing the effectiveness of heating supply, Latvia still has district heating systems, in which boilers are operating that are more than 20 years old without replacement or modernization. Their renovation and replacement will require investments, for which financing from the European Union funds might not be available. During the audit, we identified certain settlements with a small number of district heating users, but where investments were made in the modernization of heating without attracting European Union funds and without assessing the impact of these investments on the heating tariff. For instance, in Stiklu village, Ventspils Region, where the heating tariff was 167.53 euros/MWh in October 2025, or in Užava where the heating tariff was 171.25 euros/MWh in October 2025.

Although the heating supply in Latvia is generally “green” given that 70% of all district heating energy was produced from biomass in 2024, we found during the audit that a high dependence on natural gas remained in some settlements (for example, in Ādaži Regional Government),

which increased the heating tariff significantly as the price of natural gas increased.

When assessing the heating tariffs of the local and regional governments included in the audit sample, the auditors concluded that the greatest impact on the tariff size was the type of fuel and the amount of labour required to service a heating boiler, namely, the most expensive heating tariffs were in local and regional governments that used natural gas as fuel (fuel costs accounted for an average of 83% to 91% of the tariff in these local and regional governments) or firewood (labour costs accounted for an average of 47% to 51% of the tariff in these local and regional governments). At the same time, gas or firewood heating boilers were very common (there are 102 firewood heating boilers and 61 gas heating boilers in total in the local and regional governments included in the sample), but their average age was 16 and 17 years, respectively. Therefore, now is the right time to think about replacing a boiler and invest in modern, energy-efficient technologies because such solutions meet national climate and energy goals and ensure a sustainable, safe and economical heating system in the future.

To safeguard sustainable development and economic viability of district heating systems, one needs to identify those district heating systems or their parts that are not sufficiently loaded and whose modernization is not economically justified. It may be evidenced by such system indicators as low linear heat density, insufficiently assessed future load, high costs per consumer or significant heat losses. Identifying such areas allows an impartial assessment of where the existing infrastructure does not meet the criteria of technical and economic effectiveness and where there is a risk that maintaining the system might become financially unprofitable or even impossible in the long term.

Although investments have been made in the modernization of heating supply and the development of renewable energy capacities in Latvia, the sustainable development of the heating supply systems in Latvia and Riga is hampered by insufficient coordination among Riga and national goals as well as long-standing unresolved housing energy performance issues.

The development goals of Latvia's heating supply are decarbonization, energy efficiency and increasing the share of renewables. Although the European Union funding has provided significant support (555 MW of capacity was modernized in 2007–2020), future development requires both significant funding and targeted direction, as the amount of support in 2021–2027 is more than four times less than before.

When analysing the goals set in the joint planning documents of the Riga City and Latvia, the auditors conclude that the strategic direction is similar because both Latvia and Riga strive for decarbonization and increasing renewables in heating supply. However, the level of ambition of Riga City is higher and the timeline is faster than that set in the National Energy and Climate Plan. It creates disagreements in some aspects. For example, the goal of heating supply development in Riga City to increase the share of renewables significantly is inconsistent with the role of natural gas (CHP plants of JSC Latvenergo) in ensuring the stability of Latvia's electricity supply, as determined in the planning documents of Latvia.

In previous planning periods of the European Union funds, significant new renewable capacities have been developed in Riga with the support of public funding (196 MW and 134 million euros), which reduced the demand for cogeneration heat from JSC "Latvenergo" predictably.

In their turn, the amendments to the Energy Law have expanded the definition of waste heat to also include cogeneration heat by determining its priority. Thus, the implemented energy policy motivates the use of cogeneration and highlights insufficient planning focus simultaneously.

The national targets for heating supply reveal that there are still coordination gaps in the development of the sector. The target of reducing heating network losses to 10% is optimistic, as the average heating network loss rate is 12% in Latvia and only about 15% of networks have been renovated with the support of EU funds. The achievement of this target in Latgale in particular is assessed as overly optimistic because heating network losses are 15% there, but the planning documents do not specify targeted support for improving the energy efficiency of heating networks specifically in the Latgale Region. In its turn, the planned electrification of heating supply accounts for only about 4% of the total capacity, so it cannot be considered a comprehensive solution.

There are still structural problems in the area of energy consumption, as investments in the retrofitting of housing have stagnated for years, as indicated in the interim audit report of the State Audit Office of Latvia¹, and this hinders the increase in the overall effectiveness of the heating supply system and also reduces the overall impact of measures implemented in production.

The heat energy procurement mechanism established by JSC “*Rīgas Siltums*” and the methodology used by the Public Utilities Commission to determine the heat energy tariff for JSC “*Latvenergo*” limit the possibility of purchasing the most economically advantageous thermal energy for the needs of Riga residents, as the chosen approach does not allow for the potential for reducing the price of cogeneration heat energy.

Although the principle of economic gradualism is observed in the procurement of JSC “*Rīgas Siltums*”, a large part of the thermal energy is purchased outside the approved daily market and therefore not the cheapest possible thermal energy is purchased in Riga. Any guarantee of a minimum or fixed volume, regardless of whether it applies to the monopoly part of JSC “*Latvenergo*” or to the part of the market in which both independent producers and JSC “*Latvenergo*” operate, reduces the flexibility of the thermal energy market significantly and creates conditions in which part of the heat is released into the atmosphere inevitably.

Considering that the operation of JSC “*Latvenergo*” CHP plants is determined by the demand of electricity market, the amount of cogeneration thermal energy generated in both CHP plants cannot coincide with the demand of JSC “*Rīgas Siltums*”. During the audited period (from 1 July 2024 to 30 June 2025), JSC “*Latvenergo*” emitted 532,052 MWh into the atmosphere, which was determined by both the specifics of the thermal energy procurement mechanism established by JSC “*Rīgas Siltums*” and the fact that the amount of thermal energy produced by JSC “*Latvenergo*” exceeded the total demand of the Riga heating system significantly on the relevant days.

According to the auditors’ estimates, even the complete exclusion of independent heat producers from the thermal energy market of JSC “*Rīgas Siltums*” would reduce the amount of cogeneration heat released into the atmosphere by only 51%. It would allow JSC “*Rīgas Siltums*” to save 7.8 million euros during the audited period (from 1 July 2024 to 30 June 2025)

on days when cogeneration heat was available to JSC “Latvenergo”, which could reduce the final heat supply tariff of JSC “Rīgas siltums” by approximately 2.6% or 2.1 euros/MWh. However, without the participation of independent heat producers in the Riga thermal energy market, JSC “Latvenergo” would have to provide a significant amount of heat by operating natural gas boilers. It would create additional costs of 25.2 million euros for JSC “Rīgas Siltums” each year. The auditors concluded that for the effective operation of thermal energy market, maintaining the operation of existing market participants was essential while reducing obstacles to purchasing the cheapest heat available on the market at the same time.

According to the auditors, the relatively high natural gas prices and the costs of CO₂ emission quotas, which have been included in the tariff since 2020, are still the main reason for the high heat prices in Riga. It makes natural gas an energy resource approximately 2.5 times more expensive than wood chips. Simultaneously, the market mechanism established by JSC “Rīgas Siltums” and limited competition in the market share do not ensure that the lower costs of wood chips are fully reflected in end-user tariffs by creating prerequisites for additional profit generation for market participants.

The market improvements introduced by JSC “Rīgas Siltums” are to be welcomed, as they address the most significant problems identified in the procurement system partially and ensure a lower price for purchased thermal energy. In the auditors’ opinion, the model implemented from November 2025 confirms that JSC “Rīgas Siltums” has the necessary tools at its disposal to create a more effective thermal energy market, however, the division of the thermal energy market into a market part and a monopoly market part creates market restrictions that reduce market flexibility significantly and still do not ensure that the cheapest possible thermal energy is purchased primarily, and part of the heat produced in the cogeneration process is released into the atmosphere at a time when it could have been transferred to the Riga heating supply system.

The methodology for determining the tariff for thermal energy produced in the cogeneration process of JSC “Latvenergo” is based on the proportional allocation of the energy resource, that is, natural gas, to electricity and thermal energy in proportion to the volume of production, without taking into account revenues from the sale of electricity. At the same time, the tariff methodology does not provide for differentiation of the thermal energy tariff depending on the technology of thermal energy production, namely cogeneration or water-heating boilers. It does not allow the heat energy producer to include revenues obtained in the electricity market in the tariff and thus reduce the price of purchased thermal energy for the part of Riga City on the right bank of River Daugava.

The auditors conclude that the Public Utilities Regulatory Commission (hereinafter referred to as the Regulator) has not provided for the protection of user interests fully and has not ensured that end users are provided with public services at the lowest possible price, which reflects the actual costs of the produced thermal energy taking into account the dependence of the operation of JSC Latvenergo CHPs on the electricity market and the relatively small marginal costs of the transition of CHP operation from the condensation mode to the cogeneration mode as well as the significant differences in the costs of thermal energy produced in the cogeneration process and in water-heating boilers. As the economic justification and market situation change accordingly, the Regulator has not only the right but also the obligation to review the tariff calculation methodology. The Regulator has not assessed the compliance of the tariff determination methodology with current market conditions by referring to the division of market regulation with the Competition Council.

JSC “Latvenergo” cannot influence the capacity of the Riga heating system, or the scope of the tender; however, it could participate in the tender and thus reduce the amount of cogeneration heat emitted into the atmosphere. The audit has found that 32% or 171,729 MWh of the amount of cogeneration heat emitted during the audited period was condensed on days when JSC “Latvenergo” did not participate in the tender. Of these, 96,225 MWh could be taken into the system technically.

For the Riga heat operator to apply the principle of economic gradualism in Riga heat procurement fully, cogeneration heat should be separated from the calculation of the heat tariff by allowing JSC “Latvenergo” to determine the price of cogeneration heat independently in accordance with the electricity market result.

The integration of waste heat into district heating is an important but underutilized solution. Its development is hampered by an unclear definition, lack of methodology and regulatory uncertainty in Latvia by creating risks for investors and making ensuring coordinated energy system effectiveness between the Riga City and JSC Latvenergo CHP plants difficult.

Waste heat is not considered renewable energy, but European regulations assign it an important role, as it can be counted towards national renewable energy and sustainable heating targets (to a limited extent). In practice, it means that we can produce less additional energy by using waste heat, reduce costs and make the heating system more environmentally friendly while providing cheaper heating energy to residents.

Latvia has adopted the relevant European Union legislation, but the definition of waste heat and the priority principle assigned to it by the legislator have created uncertainty in the sector. There is currently no separate methodology for integrating waste heat from data centres, wastewater and production into heating tariffs. There is no clear methodology for assessing the price of such waste heat and who should cover the costs to be able to integrate it into the district heating system. Such uncertainty in the legal framework creates additional risks for potential investors when they evaluate the possibilities of engaging in waste heat supplies to the district heating system.

In line with the climate neutrality goals and ensuring that the Riga district heating system complies with the effectiveness criteria, the Riga district heating development strategy plans a rapid transition to renewable resources by providing for the development of new renewables capacities. However, the effectiveness criteria of the district heating system can also be achieved with a broader integration of waste heat or the use of thermal energy produced in high-effectiveness cogeneration. In this context, it is critically important that the industry has a common definition of waste heat and a common understanding of the effective application of the district heating system criteria.

The efficient use of thermal energy produced in the cogeneration of JSC Latvenergo CHP helps JSC Latvenergo meet the requirements for high-effectiveness cogeneration. At the same time, the integration of such thermal energy into the Riga district heating system safeguards that the effectiveness criteria set for the heating system are met. Reduced heating demand may threaten the ability of JSC Latvenergo CHP to ensure compliance with the high-effectiveness cogeneration criteria. It may create an obligation to repay part of the compensation of 454.4 million euros received in 2017 in the future, the balance of which was 89.5 million euros at the end of 2024. Latvenergo has already written off EUR 64 million in asset impairment in 2024

(22 million euros in 2023).

Key recommendations

Based on the conclusions of performance audit, eight recommendations have been provided to the Ministry of Climate and Energy, the Ministry of Economics, the Regulator and JSC “*Rīgas Siltums*”. By implementing them:

- Uncertainty in the heating sector regarding the definition of waste heat shall decrease thus facilitating more active integration of waste heat into heating supply and shall eliminate potential inconsistencies with EU requirements, since the use of waste heat is one of the mechanisms for meeting the national climate and energy targets and its interpretation must be harmonised with EU regulations;
- Thermal energy produced in cogeneration plants will be sold in accordance with the thermal energy market rules set by JSC “*Rīgas Siltums*” (daily market);
- JSC “*Rīgas Siltums*” thermal energy procurement mechanism shall ensure compliance fully with the principle of economic gradualism, promote competition among thermal energy producers in the Riga thermal energy market and reduce the price of thermal energy purchased by JSC “*Rīgas Siltums*”;
- The Ministry of Climate and Energy shall set clear criteria for local and regional governments in the guidelines for the development of heating supply systems so that they can renew their strategic goals and ensure consistency between national goals and municipal actions. Project selection criteria shall include sustainability criteria such as future load dynamics, economic viability of networks or assessment of long-term system development to prevent the risk that decisions made may affect the effectiveness of the heating supply network negatively in the long term and cause an unpredictable increase in the heating tariff.