District heating projects financed by the EBRD in Ukraine

Photo: CEE Bankwatch Network

District heating is critical to Ukraine's energy infrastructure, providing centralised heating and hot water to both residential and commercial buildings. This system is particularly vital in urban areas where heating demand is high, especially during the harsh winter months. Between 2022 and 2023, Ukraine added over 650 megawatts (MW) of new renewable energy capacity, including 50 MW from bioenergy projects fuelled by biomass and biogas.1 This represents a significant investment in bioenergy development and a key step towards reducing the country's dependence on fossil-gas imports.

International support amid ongoing modernisation efforts

Modernisation projects for district heating systems in western Ukraine are being actively implemented with loans from international financial institutions, particularly the European Bank for Reconstruction and Development (EBRD). Primarily due to EBRD funding, modernisation initiatives in Ivano–Frankivsk and

[1] Cabinet of Ministers of Ukraine, Про затвердження Національного плану дій з відновлюваної енергетики на період до 2030 року та плану заходів з його виконання, *Verkhovna Rada of Ukraine*, 13 August 2024.

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Lviv, launched in 2008 and 2013, respectively, have been completed. Meanwhile, projects in Ternopil and Lutsk, initiated in 2012 and 2014, respectively, are ongoing.[2]

However, given that implementation began over a decade ago, more thorough progress assessments are now warranted. Notably, both Ternopil and Lutsk incorporated unsustainable biomass as a renewable energy source for their district heating systems.

Sustainable heating at the local level

Wood biomass – which includes woodchips, wood waste, and firewood – is the primary source of thermal energy production in municipal and industrial boiler plants, as well as in combined heat and power plants. Yet, as Ukraine progresses towards EU accession, it must adhere to the principles set out in relevant EU Directives to support the sustainable development of bioenergy and promote the country's environmental stability.

In 2018, the Ukrainian government adopted a national low-emissions development strategy until 2050[3] as part of its efforts to meet international climate commitments and implement national climate policy. Reports emerged in late 2024 about efforts to update the strategy. In November of that year, key elements of the revised strategy were presented at the 29th United Nations Climate Change Conference (COP29), where it was emphasised that the updated strategy would fully achieve climate neutrality by 2050 in an economically viable and socially acceptable manner.[4]

However, the revised version has yet to be officially published. As a result, Ukrainian cities still lack strategic documents to support and guide their green transition. Notably, the recently updated development strategies of the urban territorial communities of Ternopil[5] and Lutsk[6] do not include measures for reducing greenhouse-gas emissions among their strategic objectives, operational priorities, or development plans.

Preserving and developing existing district heating infrastructure can significantly reduce the cost of integrating low-carbon heating technologies like waste heat, geothermal pumps, biofuels, and cogeneration units at the municipal level. If municipalities were to abandon their district heating systems, the infrastructure would degrade rapidly, making it far more difficulty to introduce any non-gas-based heating solutions in the future.

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[2] European Bank for Reconstruction and Development, Projects, *European Bank for Reconstruction and Development*, accessed 30 April 2025.

[3] Government of Ukraine, Ukraine 2050 Low Emission Development Strategy, *United Nations Framework Convention on Climate Change*, November 2017.

[4] United Nations Development Programme, UNDP supports Ukrainian government in developing updated Low Emissions Development Strategy until 2050, *United Nations Development Programme*, 13 December 2024.

[5] Ternopil City Council, Затверджена Стратегія розвитку Тернопільської міської територіальної громади до 2027 року (із перспективою дії до 2034 року), *Ternopil City Council*, 2 May 2025.

[6] Lutsk City Council, Council of Europe, Стратегія розвитку Луцької міської територіальної громади до 2030 року, *Lutsk City Council*, 31 July 2024.

Ternopil's district heating delays

The modernisation of Ternopil's district heating system – budgeted at up to EUR 16.1 million[7] – is being implemented under the city's district heating and hot water supply modernisation programmes for 2016–2020 and 2021–2024.[8,9] To support implementation efforts, in September 2012, Ternopil's municipal district heating provider secured a EUR 10 million loan from the EBRD and an additional EUR 5 million grant from the Eastern Europe Energy Efficiency and Environment Partnership (E5P) Fund.

Reports on the implementation of the modernisation programmes in Ternopil revealed that several key planned measures had not been carried out (see Table 1).[10] Specifically, a proposed woodchip-fired boiler equipped with a flue gas heat recovery system and a supervisory control and data acquisition remote-control system were not installed. The reconstruction of district heating pipelines and the installation of individual heating substations were only partially completed, with no information on the commissioning of modern heat pump units.

To clarify the project's implementation status, Bankwatch submitted information requests to Ternopil city council and the district heating provider. Only the provider responded, issuing an official refusal on the grounds that the company is classified as a critical infrastructure facility and that data on its operations constitutes restricted access information under Ukrainian legislation.

Even though Ukraine remains under martial law, project implementers should still provide regular updates and facilitate open dialogue with consumers, civil society organisations, and relevant public institutions. Maintaining transparency is crucial for building public trust, countering perceptions of corruption, and paving the way for future partnerships with donors.

Lutsk district heating overhaul lacks climate ambition

The modernisation of Lutsk's district heating system – with a total budget of up to EUR 16 million – commenced on 24 October 2014.[11] The financing structure involves a EUR 7 million loan from the EBRD to Lutskteplo – the city's district heating provider – and a EUR 3 million contribution from the Clean

[7] European Bank for Reconstruction and Development, Ternopil District Heating Modernisation, *European Bank for Reconstruction and Development*, accessed 30 April 2025.

[8] Ternopil City Council, Програма економічного та соціального розвитку м. Тернополя на 2016 рік, *Ternopil City Council,* 22 December 2015.

[9] Ternopil City Council, Програма розвитку житлово-комунального господарства Тернопільської міської територіальної громади на 2021-2024 роки, *Ternopil City Council*, 18 December 2020.

[10] Ternopil City Heat and Power Supply Enterprise, Інформація про виконання Програми модернізації (технічного розвитку) систем централізованого тепло- та гарячого водопостачання на 2021 – 2024 роки, *Ternopil City Council*, 18 December 2020.

[11] Lutskteplo, Lutsk City Council, European Bank for Reconstruction and Development, «Проект реконструкції системи централізованого теплопостачання у м. Луцьк» (у співпраці з Європейським банком реконструкції та розвитку), *Lutsk City Council*, last updated 2 September 2019.

Technology Fund, both secured by a municipal guarantee. In addition, E5P provided a grant of up to EUR 4 million to support the implementation of energy-efficient and environmentally sustainable infrastructure.[12]

As part of the modernisation effort, Lutskteplo installed a 5-MW biomass boiler and 210 individual heat substations, upgraded boiler-house and substation equipment, replaced distribution pipelines, and implemented a supervisory control and data acquisition system for remote monitoring and control. These measures have significantly improved energy efficiency, reduced heat losses and emissions, and enhanced the overall quality of the city's heating services.

Looking ahead, Lutskteplo plans to further modernise its heating capacity by installing biomass boilers. In cooperation with the United Nations Development Programme, Lutskteplo intends to add an 8-MW biomass boiler, while a separate project – developed with support from Swedfund International – is expected to result in the installation of a 16-MW solid-biomass-fuel boiler plant.

While implementation of the EBRD-supported project has thus far run smoothly and Lutskteplo continues to develop forward-looking plans, the overall strategy would benefit from a broader vision for carbon neutrality. Lutsk municipality should establish periodic project reviews to assess outcomes, identify emerging risks, and ensure strategies remain consistent with evolving EU climate and energy policies.

Challenges with biomass use

While biomass has some advantages over fossil fuels for heat supply, it cannot be considered a fully sustainable energy source. More environmentally and economically viable alternatives for energy production include heat pumps, industrial waste heat, solar thermal energy, geothermal energy with methane recovery, and thermal energy storage.

Combined heat and power plants should use biomass only when no feasible alternative heat sources are available. Additionally, biomass fuel must be limited strictly to secondary woody biomass or agricultural residues. Under the EU's 2018 and 2023 Renewable Energy Directives, biomass used in district heating and cooling systems must meet specific criteria for both sustainable greenhouse-gas reductions and efficiency to count towards renewable energy targets or qualify for financial support.[13,14] However, Ukraine currently lacks competent national authorities with the capacity to enforce these standards effectively.

[12] European Bank for Reconstruction and Development, Lutsk District Heating Project | Project Summary Document, *European Bank for Reconstruction and Development*, last updated 1 February 2019.

[13] European Parliament, Council of the European Union, Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources, *EUR-Lex*, 11 December 2018.

[14] European Parliament, Council of the European Union, Directive (EU) 2023/2413 of the European Parliament and of the Council of 18 October 2023 amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652, *EUR-Lex*, 18 October 2023.

Sustainability criteria apply to installations with a capacity of 7.5 MW or more for solid biomass, and 2 MW or more for gaseous biomass. Biomass used to fuel district heating systems must also deliver minimum reductions in lifecycle greenhouse-gas emissions, namely at least 70 per cent for facilities commissioned after 2021, and at least 80 per cent for newly built systems.[15]

When designing bioenergy support schemes, EU Member States must consider the available volumes of sustainable biomass for both energy and non-energy applications, as well as the need to preserve national carbon sinks in forests and other ecosystems. They must also adhere to the principles of the circular economy, promote the cascading use of biomass, and comply with the waste hierarchy defined in the EU's Waste Framework Directive.

Ensuring a stable supply of solid biomass for boiler houses presents considerable challenges. As outlined in Ukraine's National Renewable Energy Action Plan until 2030, over 500,000 hectares of land must be conserved for the potential cultivation of energy crops.[16] However, as of early 2025, approximately 139,000 square kilometres (km^2) of Ukrainian land – mainly agricultural areas in the eastern and southern regions of the country – are littered with landmines and unexploded ordnance.[17] Additionally, cultivating energy crops requires irrigation and a supplementary energy source in order to dry green woody biomass. As a result, Ukraine does not have enough suitable land for large-scale production of this type of fuel.

In light of the obstacles outlined above, biomass should be treated as a last-resort, transitional measure – used only after implementing comprehensive energy efficiency measures like building insulation and other energy-saving initiatives, and prioritising more sustainable alternative energy sources.

Recommendations for the EBRD

Bankwatch supports the EBRD's approach to financing projects that modernise district heating systems in Ukrainian cities. These projects aim to improve service quality for residents, enhance energy efficiency, strengthen environmental safeguards, and ensure full alignment with the EU's climate objectives. However, relying exclusively on biomass for heat generation can pose significant environmental risks and deliver limited climate benefits.

To ensure that the modernisation of district heating systems in Ukraine aligns with the EU's climate goals, adopting a cautious, science-driven approach is crucial. Our recommendations for the approriate use of biomass are outlined below:

[15] Ibid.

[16] Cabinet of Ministers of Ukraine, Про затвердження Національного плану дій з відновлюваної енергетики на період до 2030 року та плану заходів з його виконання, *Verkhovna Rada of Ukraine*, 13 August 2024.

[17] Cabinet of Ministers of Ukraine, Денис Шмигаль: Для нас принципово розмінувати державу за роки, а не за десятиліття, *Government Portal of Ukraine*, 8 January 2025.

- **Strengthen project oversight and accountability**

  Municipal authorities and project operators should implement more effective control mechanisms to ensure the timely implementation of project activities, compliance with procurement plans, selection of reliable equipment suppliers and contractors, and efficient use of financial resources. This should include regular progress reports, independent audits, and transparent communication with stakeholders.

- **Improve data transparency and stakeholder engagement**

  Transparent and accessible data are essential for building stakeholder trust, enabling external evaluations, and supporting evidence-based decision-making. In particular, project operators should publish clear and comprehensive information on the environmental and climate outcomes of district heating modernisation efforts. This would facilitate comprehensive assessments of environmental impacts during the operational phase and the overall sustainability of investments.

- **Enhance biomass fuel sustainability and market resilience**

  In district heating systems where biomass is a central component of the heating strategy, further efforts are needed to ensure stable supply chains, improve fuel quality, and explore a wider range of biomass types. As outlined in the 2023 Renewable Energy Directive, adherence to the cascading-use principle should be integrated into fuel procurement and use policies.

- **Enforce biomass certification standards**

  Encourage municipal authorities and project operators to observe sustainability standards for the raw materials used in bioenergy boilers. In particular, they should use biomass certified according to national or voluntary certification schemes recognised by the EU in accordance with the requirements of the 2018 Renewable Energy Directive.

- **Diversify renewable energy technologies**

  Greater emphasis should be placed on adopting innovative low-carbon technologies such as heat pumps, solar thermal systems, and cogeneration units. Technology diversification reduces dependence on a single fuel source and improves system flexibility and resilience.

- **Establish regular performance review systems**

  Municipalities should be assisted with establishing periodic performance reviews and strategic planning to reach carbon-neutrality targets. Long-term success requires systematically evaluating technical, financial, and environmental performance, identifying emerging risks, and implementing strategy updates aligned with evolving EU climate and energy policies.

By implementing these recommendations, Ukrainian municipalities can maximise the impact of current and future district heating modernisation projects, contributing to a more efficient, secure, and sustainable energy future. Success will require not only technical solutions but also strong institutional frameworks and clear policy guidance in line with EU standards. Most importantly, these efforts must be supported by transparent reporting mechanisms and meaningful stakeholder engagement to ensure long-term sustainability and build public trust.

Table 1. Status of Ternopil's district heating modernisation project (2021–2024)[18]

Number	Activity	Planned financing (UAH million)	Actual financing (UAH million)	Implementation status
1	Replacement of pump units at boiler houses with modern variable-speed pumps	21.29	19.44	Between 2016 and 2020, seven network pump units with variable-speed drives were installed.
2	Installation of an 8-MW woodchip-fired boiler with a flue gas heat recovery system at one of the boiler houses	169.88	0	Not implemented The component was removed from the EBRD Procurement Plan and replaced with another component involving the installation of a small-scale, biomass-fuelled, combined heat and power plant (scheduled for implementation between 2025 and 2027).
3	Replacement of outdated boilers with high-efficiency models (over 92 per cent efficiency) and installation of variable-speed pumps	35.62	66.22	Completed between 2016 and 2020
4	Reconstruction of district heating pipelines using pre-insulated piping	27.4	51.8	Partially implemented between 2016 and 2020 The remaining measures were excluded from the EBRD Procurement Plan and carried out

[18] Ternopil City Heat and Power Supply Enterprise, Інформація про виконання Програми модернізації (технічного розвитку) систем централізованого тепло- та гарячого водопостачання на 2021 – 2024 роки, *Ternopil City Council*, 18 December 2020.

				with technical assistance from the United States Agency for International Development between 2021 and 2024.
5	Installation of individual heating substations and transition to a two-pipe heating system	24.23 (E5P grant)	24.23 (E5P grant)	Ongoing The 205 individual heating substation units specified in the contract were delivered and installed, with an additional 30 units commissioned in November 2023.
6	Implementation of supervisory control and data acquisition-based remote heating control system (technical and software components)	22.13	0	Not implemented Implementation of the component postponed to the 2025–2027 period.