

Low2HighDH: Three Years of Turning Low-Grade Heat into Investment Pathways



David Perez, Creara Energy Experts, Coordinator of Low2HighDH project:

“Low2HighDH is now coming to an end after three years of working closely with 10 district heating sites in Poland, Lithuania and Slovakia, exploring how to integrate low-temperature energy sources into their systems and how to finance these solutions.

This is the future. Heating and cooling planners, developers and policymakers will have to consider these sources: water from wastewater treatment plants, water from old mines, water from lakes or

rivers, etc. Combining them with the right technologies (mainly heat pumps) creates a new paradigm for the district heating industry.

However, regulation is key. Heat tariffs must balance consumer protection with profit generation if we want the industry to evolve rapidly towards decarbonised heating and cooling. Especially in countries with a long tradition of district heating, heavily regulated tariffs represent an obstacle to building attractive investment cases, and this is often a barrier to bringing new technologies to market.

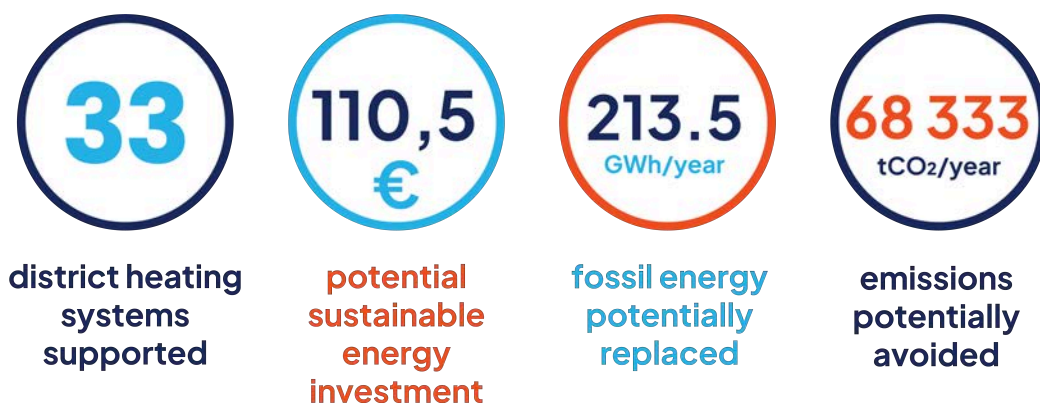
It is now time for national and European regulators to take action by reviewing tariff frameworks, removing investment barriers and creating the right conditions for innovative, low-carbon heating technologies to become financially viable and widely adopted.”

Three years. 33 district heating systems. €110.5 million in potential sustainable energy investment.

Low2HighDH has reached the end of its three-year journey – but the transition it has helped set in motion continues. Working primarily across Lithuania, Poland and Slovakia, with an additional case in Ukraine, the project addressed one practical question: how can existing high-temperature district heating systems integrate low-grade renewable and recovered heat without starting from zero?

The result is not one standard solution, but a portfolio of practical transition pathways supported by technical assessment, investment planning, market engagement and knowledge that can now be replicated elsewhere.

Low2HighDH in numbers



The project supported 10 pilots and 23 replicants and developed 24 technical integration strategies, including 10 representative configurations analysed in greater detail. The figures above represent estimated potential identified through the investment-planning process, rather than investments or impacts already realised.

From technical potential to real investment pathways

Low2HighDH started with the system rather than the technology. Each district heating system brought a different combination of network temperatures, generation assets, heat demand, local resources, ownership structures and investment conditions. The project therefore assessed pathways individually instead of promoting a predefined technology.

Air-source heat pumps emerged as the most frequently identified pathway, featuring in 22 of the 33 proposed solutions. Other cases drew on water and mine-water heat, wastewater heat, low-temperature geothermal energy and biomass.

The central finding: there is no one-size-fits-all route to district heating decarbonisation.

The appropriate solution depends on the heat source, network conditions, demand, existing assets and local investment conditions. In many cases, staged and hybrid approaches can progressively integrate renewable and recovered heat while retaining existing generation for peak demand, backup and security of supply.

Different countries, different opportunities

Country	Systems	Potential investment
Lithuania	15	€9.6m
Poland	8	€74.0m
Slovakia	9	€25.9m
Ukraine	1	€0.8m
TOTAL	33	€110.5m

Different starting points produced different technical and investment pathways. Lithuania's cases were strongly oriented towards heat pumps and further electrification; Poland included mine-water, geothermal, wastewater and air-source heat-pump pathways; Slovakia combined water- and air-source heat pumps, geothermal solutions and biomass. The additional case in Cherkasy, Ukraine, assessed a geothermal pathway.

Beyond feasibility: moving towards implementation



Identifying a technically promising solution is only the beginning. Low2HighDH integrated financial analysis and investment planning into the technical work, examining public support, debt, equity, private investment and blended finance, as well as implementation approaches such as ESCO arrangements, Energy Performance Contracting, Build-Operate-Transfer models, operational renting and subscription-based approaches.

The project also moved towards market engagement. Ten simplified Requests for Information based on a Rough Order of Magnitude approach were prepared to support initial engagement with potential suppliers, alongside ten tailored financial and regulatory workplans. At the time of reporting, implementation works were already underway at at least two sites.

Building capacity and community

Low2HighDH was never intended to work only with individual district heating operators. Local Liaison Groups connected supported systems with municipalities and other relevant actors; National Stakeholder Communities brought together district heating, policy, technology and financial stakeholders; and the project-wide Ambassador Community extended knowledge exchange beyond the directly supported systems.

Training activities, webinars, roadshows and participation in external events created further opportunities to exchange experience and strengthen the capacity needed to develop similar

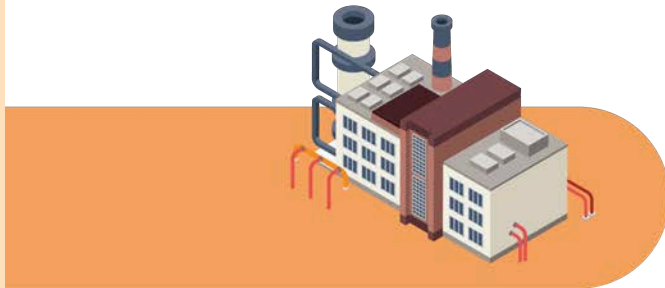
projects elsewhere.



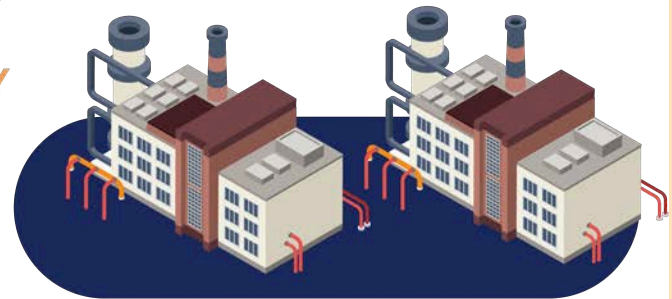
LOCAL EXPERIENCE



SHARED KNOWLEDGE



STRONGER CAPACITY



REPLICATION

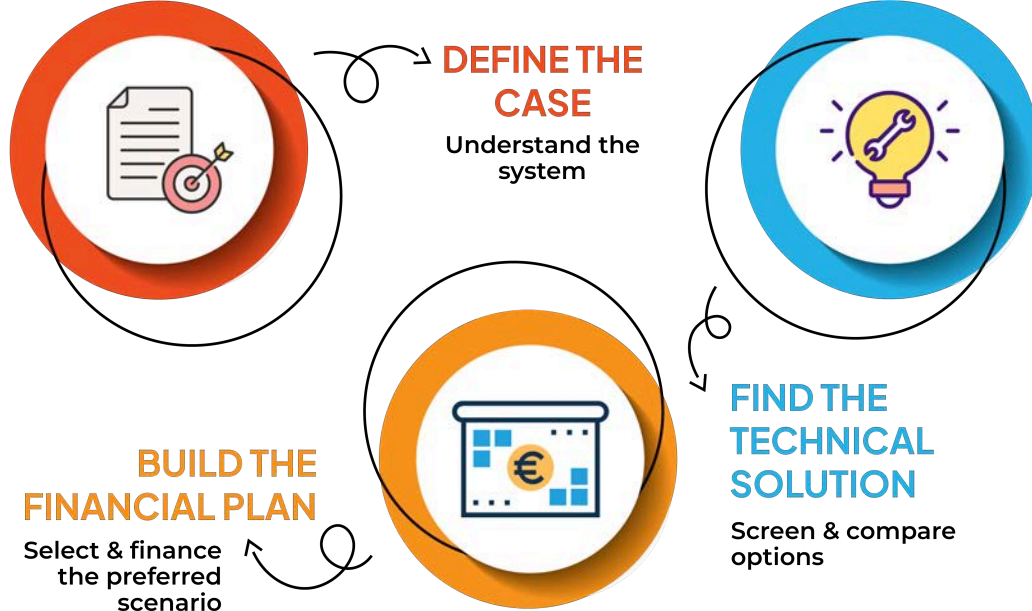
What did we learn?



- Start with the system and locally available resources, not with a predefined technology.
 - Low-grade heat can be integrated progressively through staged and hybrid approaches.
 - Minimising unnecessary temperature lift is important for technical and economic performance.
 - Technical and financial pathways need to be developed together.
 - Implementation depends on regulation, tariffs, procurement, ownership and stakeholder commitment as well as technology.
 - An investment plan is the starting point for implementation, not the end of the transition.
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Taking the Low2HighDH approach further

The project leaves behind more than individual investment pathways. Its technical and financial portfolios, generic use cases, investment-planning experience, training materials, policy work and Local Replication Roadmap are intended to help other high-temperature district heating systems address similar transition questions.



Explore the final results

- Technical Solutions Portfolio – 24 strategies for integrating low-grade renewable and recovered heat.
- Financial and investment-planning resources – approaches to financing and implementation.
- Generic use cases and replication resources – practical knowledge for applying the Low2HighDH approach elsewhere.
- Training, webinars and project publications – capacity-building material for district heating stakeholders.



A final milestone in Katowice

Low2HighDH concluded its three-year journey with its final event in Katowice on 30 September 2026, bringing together district heating, technology, policy and finance perspectives to discuss how low-grade energy sources can move from technical opportunity towards real investment and implementation. A dedicated final-event press release will share the event highlights and conclusions.



The project ends. The transition continues.

Low2HighDH has spent three years turning technical potential into practical pathways for change. Its 33 investment pathways and €110.5 million potential investment pipeline show the scale of the opportunity. The next step belongs to district heating operators, municipalities, public authorities, technology providers and financiers: turning plans into projects and projects into cleaner heat.

Thank you to all project partners, pilot and replicant sites, Local Liaison Groups, National Stakeholder Communities, Ambassadors and stakeholders who contributed to the Low2HighDH journey.



LOW-GRADE HEAT. HIGH IMPACT.



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CONTACT@LOW2HIGHDH.EU

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