



Heating Up: Why Ireland can't afford to wait on District Heating

May 2026



Executive Summary



“Industry in Ireland is generating enough heat to warm entire towns, yet we let it escape into the air.”

Rob Costello - Partner, PwC

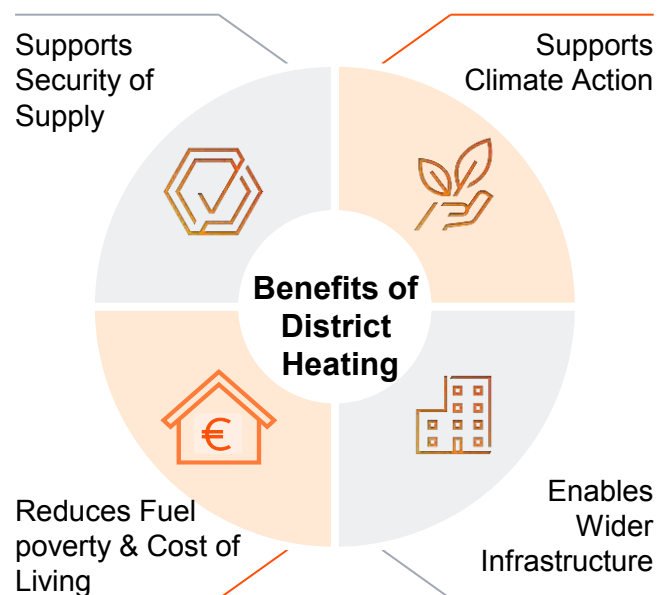
District heating systems distribute heat from centralised sources—such as power stations, data centres, or renewable energy facilities—to homes and businesses through a network of insulated pipes. It is an efficient, proven approach to delivering low-carbon heat at scale, already warming millions of buildings across Europe. Yet while our European neighbours invest heavily in expanding their networks, Ireland has barely begun. We are falling behind, and the cost of inaction grows with each passing year.

The case for district heating extends far beyond warm homes. As shown in the figure below, it delivers a powerful combination of benefits: strengthening energy security (an issue brought into sharp focus by the current conflict with Iran), driving progress on climate targets, tackling fuel poverty, and critically enabling the delivery of wider infrastructure. District heating is the connective tissue that can link housing, energy, and decarbonisation objectives into a coherent whole.

This is why district heating must be recognised as a core component of Ireland’s heating and energy strategies—not an optional extra or a niche solution. Currently, incentive structures favour individual heating solutions such as heat pumps, placing district heating at a competitive disadvantage despite its wider systemic benefits. A level playing field is essential if district heating is to compete fairly and attract the investment it needs.

The time to act is now. The National Development Plan and Housing for All commit to unprecedented infrastructure investment. District heating is the missing link that can maximise the value of this investment, but only if it is planned and delivered in parallel. Infrastructure and housing built today, without district heating provision, will not be rebuilt tomorrow. This is a once-in-a-generation opportunity.

Ireland needs a comprehensive National Strategy for district heating, backed by the incentives and regulatory frameworks required to unlock investment and accelerate delivery.



Proven technology, Untapped potential

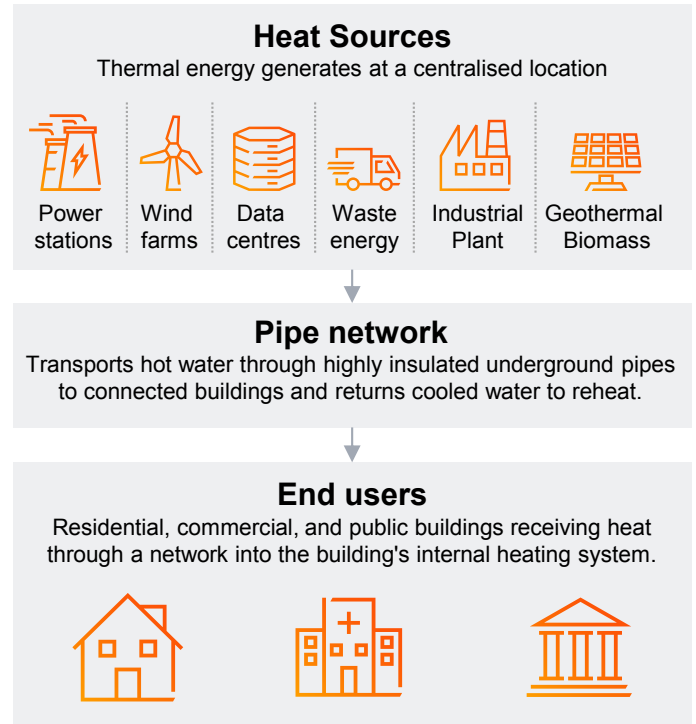
District Heating: Proven Concept, Modern Solution

District heating is a system that warms multiple buildings from a large, centralised energy hub. This system distributes heat in the form of hot water or steam through a network of insulated pipes to residential, commercial, and public buildings. Instead of each building having its own boiler, they all tap into this shared system, which efficiently provides heat and hot water.

District heating has gained renewed relevance in the context of climate action and energy security for several compelling reasons. Centralised heat generation achieves higher efficiencies than individual building-level systems. Large-scale boilers, heat pumps, and combined heat and power plants operate more efficiently than domestic equivalents, reducing overall energy consumption, emissions and costs.² Globally, district heating met around 9% of final heating demand in buildings and industry in 2022, and since then several district heating markets have seen increasing innovation in delivering sustainable centralised heating.³

Potential of District Heating in Ireland

According to a National Heat Study conducted by SEAI in 2022, district heating represents a significant opportunity for decarbonisation by meeting up to 50% of building heat demand across the country. This is particularly critical given the thousands of new homes and buildings planned for construction across Ireland's urban centres in the coming decade. These buildings, once built, will not be rebuilt or substantially re-engineered for generations. If district heating is not integrated into these developments from the outset, Ireland risks locking in fossil-fuel dependency that will be costly and disruptive to retrofit later.⁴



District heating has the potential to offer Ireland a cost-competitive pathway to energy security through diverse local heat sources that can protect households from fossil-fuel price volatility. Research confirms that district heating is the most cost-efficient solution for apartment buildings and higher-density urban developments, whereas individual heating alternatives work better for single-family housing with low heat demand.



The potential of district heating to deliver substantial carbon savings is well evidenced internationally, yet it is only now emerging as a central component of Ireland's decarbonisation strategy and national policies. The Climate Action Plan 2025 positions district heating as essential to achieving the built environment sectoral emissions ceiling.⁵ The Heat Bill 2024 addresses the support required for the development of district heating infrastructure in Ireland.⁶ However, despite the growing policy momentum and stated ambitions, a comprehensive delivery plan or strategy for district heating in Ireland remains absent. While targets have been set and legislative frameworks are under development, the mechanisms for translating policy commitments into operational infrastructure at scale are not yet fully established.

Trends in Europe

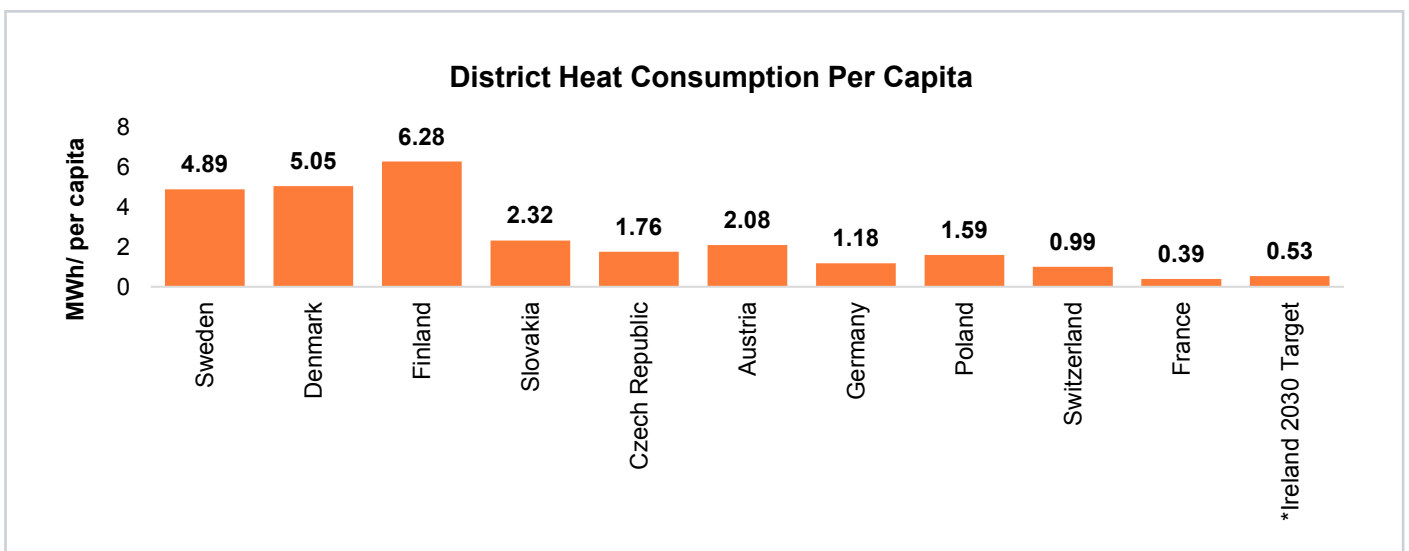
Europe's district heating sector remains a cornerstone of the continent's thermal energy landscape, with approximately 19,000 networks serving close to 80 million citizens as of 2023. In that year, total district heat supply reached 548.6 Terawatt-hours (TWh).⁷ Over the longer term, heating demand across Europe has steadily decreased, with Eurostat data showing a 19% reduction in heating degree days between 1979 and 2023. Despite this structural decline in space heating needs, district heating has

continued to expand its customer base, demonstrating the sector's resilience and growing appeal.

District heating sales across Europe in 2023 highlight significant variation in both scale and adoption. In absolute terms, Germany leads at 99,750 GWh/y.⁸ However, on a per capita basis shown below, the picture shifts dramatically where Finland, Denmark, and Sweden far outpace all others.⁹

Ireland, where district heating currently represents less than 1% of the heating market, has set a national target of 2,700 GWh by 2030, which translates to approximately 0.53 MWh per capita, placing it ahead of France. To attain this target, Ireland has to take action now in terms of DH infrastructure development.¹⁰

The energy mix powering Europe's district heating networks reveals a sector still in transition. Fossil fuels continue to dominate, with natural gas and coal collectively accounting for the majority of heat production in 2023.¹¹ However, bioenergy has emerged as a significant and growing contributor, particularly in Nordic and Baltic states where national forest resources provide a competitive and sustainable fuel source. Renewable and low-carbon sources, including geothermal, large-scale heat pumps, waste heat recovery, and solar thermal, collectively represent a growing but still modest share of the overall fuel mix.



Source: Euroheat & Power, Eurostat, Climate Action Plan

*Ireland's value is a target set by the CAP in 2023 for 2030. There is no available data for Ireland on DH sales.

The continued reliance on fossil fuels underscores the scale of transformation still required to align Europe's district heating sector with its decarbonisation objectives. For Ireland, this presents a strategic advantage: by building its district heating infrastructure now with low-carbon heat sources from the outset, the country can avoid the costly and complex transition away from fossil fuels that many established European networks must now undertake.

Challenges of District Heating in Ireland

The legacy of the long-established natural gas network, combined with lower-density urban development and dispersed rural populations, makes it difficult to build strong commercial cases for shared heating systems, while the growth of renewable electricity offers a competing decarbonisation pathway. Regulatory structures remain underdeveloped which require urgent action. Technically, Ireland needs to further build the specialist expertise required to deliver district heating at scale. Both the construction sector and local authorities face significant capacity constraints which should be addressed, particularly when it comes to complex retrofit projects that can be disruptive or daunting for vulnerable households.

Economically, viable schemes often depend on access to low-cost waste heat from industry or data centres and starting from an almost non-existent baseline places Ireland at a disadvantage compared to countries with mature systems. Despite these challenges, a strong strategy, policy commitment and targeted investment can overcome these

barriers and position district heating as a central pillar of Ireland's low-carbon heat transition.¹²

Barriers to DH development in Ireland include...

- Zoning, demand risk, and mandating issues persist. Developers need off-take certainty, but aggregating heat loads in a contractually certain manner is challenging and slows efficient development.
- The Renewable Heat Obligation (RHO), as identified by the Irish District Energy Association (IrDEA), is a significant barrier to DH scale-up, and largely overlooks waste heat as a sustainable energy source in Ireland.
- The absence of mature DH customer protections and DH legislation risks perception of being "locked in" to a monopolist, potentially prompting disconnections or dual systems that harm DH efficiency.
- The lack of funding clarity, including what funding is available, how to access it, and how much is available, hinders DH development. This could be mitigated by a dedicated fund.
- Ireland's small, immature DH market has limited supply chain development, increased costs, and created competition for components and skills.
- Uncertainty around the DH market has reduced entrant readiness and resources commitment.
- Demand aggregation challenges persist, as securing sufficient, contractually firm demand to back large-scale DH investments remains difficult.





Benefits beyond the boiler:

The case for action

District heating needs to be recognised as a strategic infrastructure priority and not merely a heating solution. It not only heats homes, schools and businesses but it does so in a way which can insulate Ireland from global geopolitical events and energy price fluctuations. It provides a sustainable affordable solution to heating whilst also enabling infrastructure for a diverse range of projects from windfarms to houses. Understanding these wider benefits is critical to understanding the case for investing in district heating.

Security of Supply

Ireland's heating sector remains one of the country's most vulnerable energy domains, with more than 80% of households still dependent on imported oil and gas for their daily heating needs. This reliance on external energy sources exposes both homes and the national economy to global geopolitical tensions, supply chain disruptions, and shifting international fuel markets. SEAI highlights that using locally available renewable and waste heat is essential to strengthening Ireland's energy security.¹³ By tapping into indigenous resources, the country can reduce its dependence on volatile fossil fuel imports and build a more stable, self-reliant heat system.

The risks of continued fossil fuel dependency are illustrated by recent geopolitical conflicts. Until 2022, over 95% of natural gas in the Baltic countries was imported from Russia

72% of total district heating fuel consumption in Latvia is produced by wood chips.¹⁵

which saw an overnight emergency import ban during the Ukraine crisis that disrupted supply. The current conflict in Iran, and the closure of the Straits of Hormuz, has once again highlighted the risk of being on the end of a long supply chain.

Despite the supply shock, many district heating networks in Nordic and Baltic countries continued to operate reliably by switching between available heat sources, even as individual fossil-fuel-dependent heating systems faced uncertainty and disruption.¹⁴ This demonstrated the inherent stability offered by coordinated, multi-input heat infrastructure. In recent years, particularly following the Ukraine crisis, Ireland has placed increased emphasis on energy sovereignty, diversification of supply, and reducing vulnerability to external gas markets. District heating has since been recognised in national policy as a key mechanism supporting these strategic goals. It is no longer viewed solely as a climate solution, but as a core element of Ireland's long-term energy security strategy. In short, district heating allows Ireland to shift from an import-dependent heating model to one grounded in local, renewable, and resilient energy.



Copenhagen

Copenhagen’s district heating network is one of the world’s most successful, now serving over 99% of the city’s buildings through more than 2,000 kilometres of pipes. Yet this system was born from crisis. In the 1970s, Denmark’s near-total dependence on imported oil left the country exposed to severe economic shocks. The government responded by investing strategically in district heating as critical national infrastructure.

The efficiency of the system and the use of waste heat sources translate into heating prices that are among the lowest in Europe, providing stable and affordable warmth for household regardless of their income. It has also significantly improved Denmark’s energy security by reducing the reliance on fossil fuels and protecting Danes from fuel market volatility.¹⁶

Climate Action

District heating offers some of the most powerful and immediate climate and environmental benefits available to countries seeking to decarbonise heat. By shifting from thousands of individual fossil-fuel boilers to a centralised, network-based system, district heating can dramatically cut greenhouse gas emissions across entire neighbourhoods at once.

Beyond carbon reduction, district heating delivers clear environmental gains. The removal of domestic oil, gas and solid-fuel boilers eliminates local combustion, reducing emissions of NOx and SO₂, improving public health and urban air quality.¹⁷ District heating systems reduce reliance on imported fossil fuels, decreasing extraction-related environmental damage and cutting lifecycle emissions.

Projects such as the Tallaght District Heating Scheme, which runs entirely on waste heat from a data centre (see case study box), show how district heating can capture energy that would otherwise be lost, turning it into clean, low-carbon heat for buildings and reducing overall environmental impact.

In terms of infrastructure, the SEAI National Heat Study¹⁸ demonstrates that district heating represents a compelling and scalable investment opportunity in Ireland’s transition to net zero (see table below). While the Baseline scenario sees just €40 million directed towards district heating infrastructure, the more ambitious decarbonisation pathways envision investments of up to €9.67 billion under the Rapid Progress scenario. Notably, when compared to other infrastructure categories, district heating offers a cost-effective route to decarbonising heat.

Budget 2026 allocates €1.1 billion to accelerate Ireland’s energy transition, including €558 million for SEAI programmes focused on heat decarbonisation,¹⁹ while the forthcoming Heat Bill and SEAI’s District Heating Centre of Excellence signal growing institutional commitment to the sector. However, while funding and legislative frameworks are emerging, there remains no clear route to executing these ambitions through district heating at scale.

	Baseline	Decarbonised Gas	High Electrification	Balanced	Rapid Progress
District Heating Infrastructure	€0.04bn	€2.61bn	€9.53bn	€5.94bn	€9.67bn

Source: SEAI National Heat Study

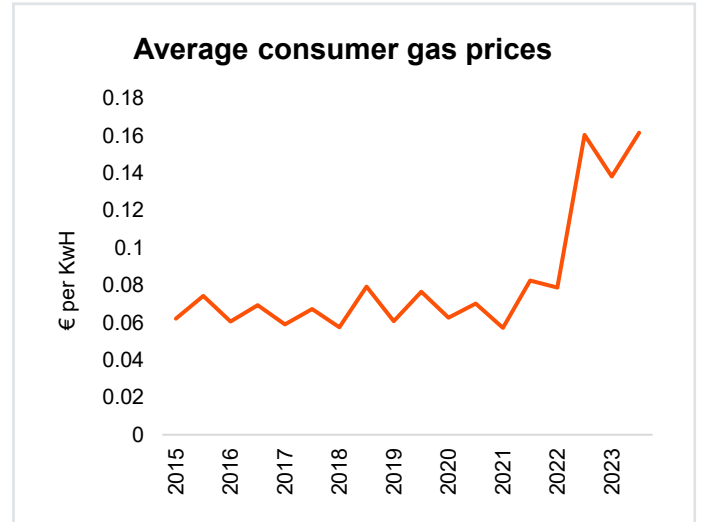
100,000

tonnes of CO² reduction every year in Esbjerg by replacing its coal-fired CHP plant with a sea-water heat pump connected to its district heating network.²⁰

A comprehensive national strategy for district heating is urgently needed to translate policy commitments into tangible infrastructure delivery, particularly as Ireland experiences rapid growth in commercial and residential development that presents a narrow but critical window of opportunity for integrating district heating from the outset.

Fuel Poverty and Cost of Living

Fuel poverty remains a persistent challenge in Ireland, with real consequences for households across the country. In 2025, 7.4% of individuals went without heating at some point during the year – not through choice, but through necessity.²² In 2023, two in five taxpayers reported



Source: CSO - Energy Balance: Thermal Energy (Table TMEGB05)

difficulties paying their energy bills. These are not abstract statistics; they represent families making impossible choices between heating and eating. Geopolitical events have put even more strain on low income households with gas prices experiencing significant volatility from 2022 onwards (as shown to the right).²³

District heating offers a fundamentally different proposition. By drawing on diverse, local heat sources – waste heat from data centres and industry, renewable energy, combined heat and power – district heating networks are not only insulated from global fossil fuel price swings but also gain from access to much lower cost energy sources.

The result is lower prices and greater price stability. The potential savings are dramatic: in Copenhagen’s Hvide Sande district heating network, residents pay just one-tenth of the national average heating price (see Copenhagen case study). While not every network will achieve such results, it demonstrates the transformative potential when district

2.3 million

tonnes of CO² savings targeted by 2024 in Munich by investing €9.5 billion in geothermal district heating.²¹



Ciarán Nevin – Director, PwC

“Ireland is at the back of the pack on district heating in Europe. Across the continent, proven networks are already cutting emissions, lowering bills and strengthening energy security. Europe shows us not what might be possible, but what is already being achieved at scale.”

~€632 per year
of cost savings for an Irish household with a centralised heating solution at 8 MWh per year of consumption.²⁶

10%
Copenhagen residents pay only 10% of national average heating bill.²⁵

heating is delivered at scale. Even when done at small scale it can still be effective. Thurrock Council needed to replace old storage heaters for 273 social houses, where many of the low income residents were paying heating bills of £3,000 per annum. The solution was to replace these heaters with a series of networked ground source heat pumps and heat batteries (a type of Thermal Energy Storage – see box). This investment cut energy bills by 67% and led to a 70% reduction in Carbon emissions.²⁴

For local communities, district heating represents a tangible return on the disruption that construction brings. Yes, there will be roadworks and inconvenience as pipes are laid. But unlike some projects where benefits flow elsewhere, district heating delivers directly to the community it serves. The disruption is temporary; the benefit is permanent.



Enabling Wider Infrastructure

District heating needs to be seen as more than just a way to heat buildings in a sustainable and secure fashion. It needs to be seen as a critical piece of enabling infrastructure that unlocks development across multiple sectors. By thinking about heat as a shared network rather than an individual building problem, Ireland can deliver housing faster, integrate renewable energy more effectively, and operate essential public services more efficiently. It unlocks a wide range of infrastructure including:

Housing: Ireland's housing crisis demands solutions that enable faster, more cost-effective construction. District heating delivers on both fronts. By connecting developments to a shared heat network, builders eliminate the need to install individual boilers or heat pumps in every unit – reducing construction complexity, cost, and time.

Renewable Energy: Ireland's renewable energy ambitions are central to its climate strategy, yet intermittency remains a challenge. When the wind blows strongly, supply can exceed demand, forcing turbines to curtail generation – wasting clean energy that took significant investment to develop. District heating provides a solution. Excess electricity can be used to heat water, which is then stored and distributed through heat networks when needed (see Thermal Energy Storage box, below).

Power stations: Even as Ireland transitions to renewables, gas power stations will remain necessary for grid stability when the wind does not blow and the sun does not shine. District heating transforms the environmental equation for these facilities. Combined heat and power plants capture waste heat from electricity generation, which can then be used to heat homes through the heat network.

Wider Infrastructure: Across Ireland, data centres, industrial facilities, and commercial operations generate vast quantities of heat as a byproduct of their activities. Currently, this heat is not merely wasted – it is actively expelled into the environment. District heating transforms this equation entirely. By capturing waste heat and distributing it through networks, facilities that were once heat polluters become heat providers.

Thermal Energy Storage and Demand Side Response

Thermal energy storage (TES) allows for the storage of hot water which has been heated by electric boilers when energy is abundant or cheap (during off-peak period or when surplus renewable electricity is available). The hot water is stored in insulated tanks or underground reservoirs (or other similar storage systems) until it is needed and can then be supplied to homes and businesses via the district heating network. Key benefits include:

- Allowing heating equipment to operate at optimal load conditions
- Shifting electricity consumption to low-cost periods, reducing heating costs
- Separating heat production from heat supply, increasing flexibility

TES also supports **Demand Side Response (DSR)**, the reduction of electrical consumption to balance and stabilise the grid. Rather than increasing fossil fuel-based generation during peak demand, district heating systems with TES can draw on stored heat, reducing electrical demand without impacting heat supply to consumers.

TES is already proven at scale. At **Cadaujac, France**, a solar thermal field heats over 10,000 m³ of water across 60 boreholes, with heat pumps raising temperatures as needed for space heating and hot water.^{27 28}

TES has been shown to reduce CO² emissions from electrical heating district heating systems by 21.2%.²⁹

Now or Never:

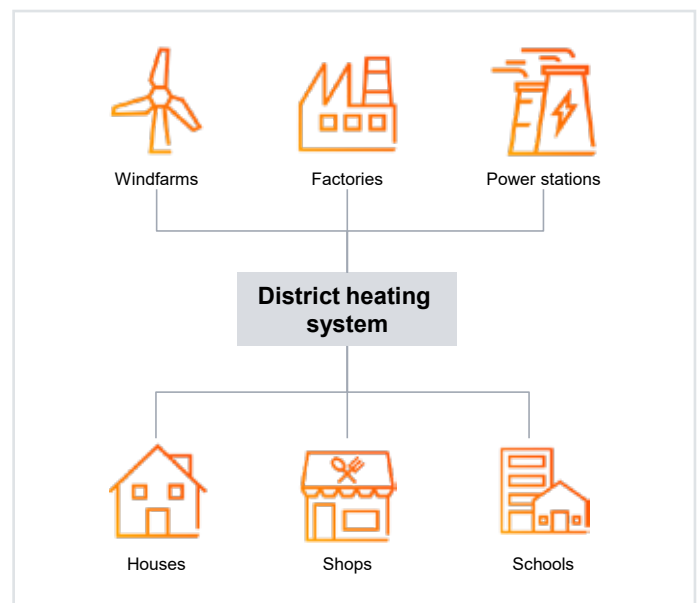
Seizing the Moment for District Heating in Ireland

The decisions Ireland makes today about its heating infrastructure will shape our built environment for decades to come. As we phase out gas and oil boilers towards 2050, a long-term approach needs to be taken as to what will replace it. DH provides many energy system benefits, which individual heat pump supply does not while adding additional electrical load and strain to the electrical grid, and without utilising Ireland indigenous waste heat. The Programme for Government's recognition of district heating as a key component of our decarbonisation pathway is a welcome and significant step forward. However, recognition alone will not deliver the transformative change our heating sector requires.

District heating is not merely an end in itself—it is a critical enabler of Ireland's broader infrastructure ambitions, unlocking the viability of power generation projects while future-proofing residential and commercial developments. Yet we still await the National Heat Policy Statement. Without a comprehensive, co-ordinated national strategy, which places district heating at the centre of a wider Heat policy, these synergies will remain untapped. The window for action is narrowing, but it remains open; with the right framework in place, Ireland can harness district heating as foundational infrastructure that accelerates delivery across the National Development Plan.

The Unique Window of Opportunity

Ireland stands at an inflection point. Over the next decade, the country will embark on one of the most ambitious infrastructure programmes in its history. The 2025 update to the National Development Plan³⁰ commits €36 billion to housing and €3.5 billion to energy grid infrastructure investments explicitly designed to support Ireland's housing growth ambitions. Decisions being made now will shape Ireland's built environment for the next fifty years. District heating must be part of this conversation from the outset, not bolted on as an afterthought.



District Heating: The Missing Link

There is no sector where this is truer than in housing. The government's target of delivering 300,000 new homes by 2030 will require construction at a pace and density Ireland has never achieved before.³¹ Achieving this target will require high-density developments in urban areas, exactly the context where district heating is most cost-effective.

Rather than installing individual heating systems in every apartment, developers should be connecting to a shared network, reducing construction costs and timelines. For large-scale developments under pressure to deliver quickly and affordably, district heating is not a luxury; it is an enabler. This is equally true for the energy sector. The National Development Plan calls for €3.5 billion to be spent on new energy infrastructure. District heating cannot be seen as an afterthought or a "nice to have" add on. It can transform the economics of energy infrastructure, helping to ensure this once-in-a-lifetime investment in the sector achieves the biggest bang for its buck.



Sinead Lew – Partner, PwC

“Targeted, time-based tax incentives and capital grants are vital to mitigate the upfront investment risks and expedite the expansion of district heating networks in Ireland. To level the playing field, tax incentives and grants should also extend to property developers and building owners, encouraging the integration of district heating infrastructure in new developments, thereby balancing the current preference for individual heat pumps.”

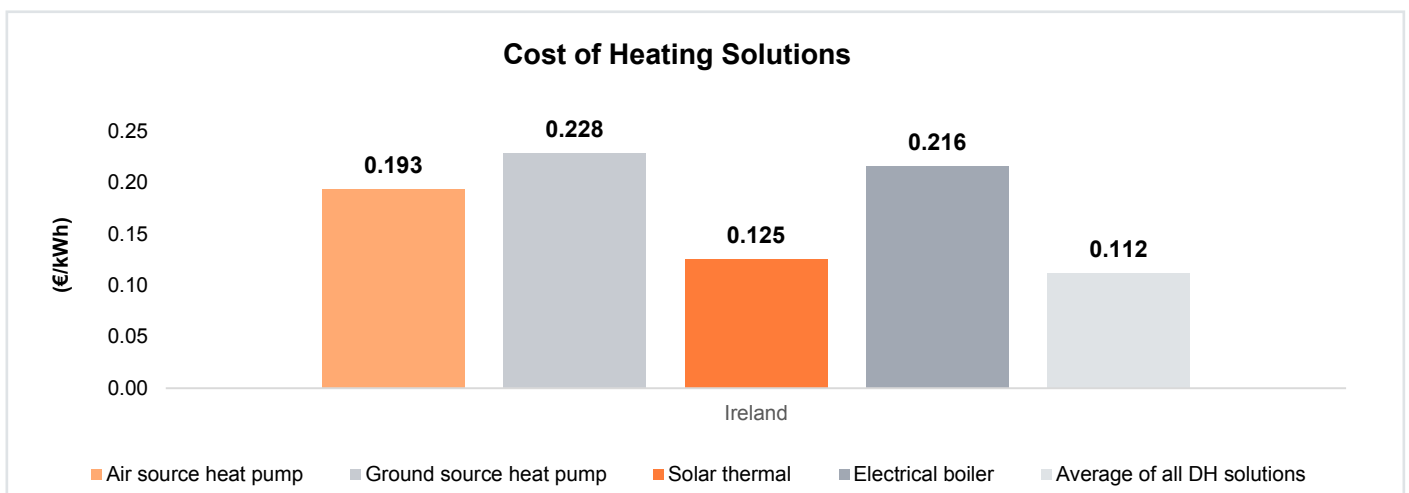
A Level Playing Field for Low-Carbon Heat

If we are to take advantage of this once in a lifetime opportunity, then we need to ensure we create the right incentives to develop district heating solutions. Ireland’s current incentive structures for low-carbon heating were designed primarily with individual solutions in mind. Grants for heat pumps have been successful in driving uptake, reducing upfront costs for households and making the transition away from fossil fuels more affordable. This support remains important, particularly for existing homes and lower-density settings where individual solutions make sense.

However, in the context of 300,000 new homes, many of which will be high-density urban developments, these same incentives risk distorting technology choices. The relatively low unit cost of individual heat pumps, combined with available grants, can make them appear the default

option even where district heating would deliver greater efficiency, lower lifetime costs, and stronger decarbonisation outcomes.

As seen in the following graph, district heating solutions in Ireland are estimated to be over 40% cheaper than air source heat pumps and approximately half the cost of ground source heat pumps, the two most commonly incentivised technologies. Yet despite this clear economic advantage, Ireland’s incentive framework continues to channel grants and subsidies predominantly toward these higher-cost individual solutions.³² Similarly, Housing developers who are under pressure to minimise upfront expenditure and deliver units quickly may opt for the individually incentivised solution rather than the collectively-optimal one.



Source: Danfoss & Technological University of Denmark, PwC

District heating networks are not typically developed by housing developers. To achieve the scale and efficiency that makes district heating compelling, networks must span multiple developments, connecting housing estates, commercial buildings, and public facilities across entire urban areas. This requires dedicated infrastructure developers, or utilities, with the capacity to plan, finance, and operate networks over decades. Housing developers are customers of these networks, not their builders. A level playing field is vital to the success of district heating. This requires capital grants and tax credits targeted at district heating infrastructure developers and investors, recognising where the real barriers lie.

Planning frameworks could also require housing developers in designated zones to connect to district heating networks, creating the demand certainty that infrastructure investors need.

This is not about picking winners. It is about ensuring that the right heating solution can be deployed in the right context – and that Ireland gains the maximum societal benefit from its historic infrastructure investment. Without this rebalancing, Ireland risks locking 300,000 new homes into suboptimal heating solutions by default.





Making Heat Happen: From Market Sounding to Procurement

Ireland's heat decarbonisation targets require a rapid scale-up of district heating from a very low base. The challenge is not only technical — identifying viable heat sources and demand clusters — but institutional: aligning procurement, contracting, and financing so that projects are bankable, affordable, and scalable.

A clear regulatory framework covering price controls, consumer protection, metering, third-party access, and connection policies is essential. Without it, risk remains mispriced and the cost of capital stays high. For consumers, success hinges on affordable, predictable tariffs, transparent pricing, reliable service, and robust protections — building the trust needed to drive voluntary connections and long-term uptake.

There is no single procurement model that fits all district heating projects. Several proven routes exist, each with distinct trade-offs that must be carefully evaluated against the scale, complexity, and risk profile of each scheme:

- **Traditional Public Procurement** involves the public sector designs and tenders for construction, retaining most risk. Best suited to smaller projects but offers limited incentive for lifecycle optimisation.
- **Design-Build / Design-Build-Operate** are based around a private contractor who designs and builds the system, potentially operating it for 5–15 years. Financing is generally public however demand and revenue risk remain with the public sector.
- **PPP / Concession** where a private entity designs, builds, finances, and operates the network over 20–30+ years, earning revenue from tariffs or availability payments. These can be more complex to procure but transfers significant risk away from the public purse.
- **Developer-led / Utility-led** involves a private utility or Energy Services company developing the system and selling the heat directly. This can be much faster moving, but tariffs may be higher and public oversight is limited.

For complex, phased projects requiring private sector innovation, Competitive Dialogue or Competitive Procedure with Negotiation will be a key component of any procurement route, allowing bidders to propose and optimise solutions while testing market appetite for different risk allocations.

A comprehensive national strategy

To achieve this rebalancing, Ireland needs more than individual policy measures, it needs a comprehensive national strategy for district heating that provides clarity, direction, and confidence for all stakeholders. Whilst the announcements around the National Heat Policy Statement are welcome, no strategy has yet come forward. When this strategy does come, it needs to ensure that district heating is a core component. Such a strategy must begin with a clear roadmap: defined targets for district heating deployment, realistic timelines, and identified priority zones. Urban centres with high housing density, areas earmarked for major development under Housing for All, and locations near significant waste heat sources – data centres, power stations, industrial facilities – should be mapped and prioritised. This is not about imposing district heating everywhere, but about identifying where it delivers greatest value and focusing effort accordingly.

The strategy must also honestly address current blockers to investment. These include fragmented planning processes, lack of established supply chains, skills gaps, procurement models for delivery and the absence of a regulatory track record.

Each requires targeted intervention: streamlined planning pathways for heat networks, investment in workforce development, and proactive engagement with potential infrastructure developers to understand and remove barriers.

A national strategy is the key to unlocking private investment. Investors need confidence that policy will remain stable, that demand will materialise, and that regulatory frameworks will protect their interests alongside consumers'. A clear government commitment – backed by a published roadmap – transforms district heating from a speculative opportunity into a bankable proposition. The strategy must explicitly set out how public sector investment will be deployed to leverage private capital: using grants and concessional finance to de-risk early-stage projects, providing guarantees that reduce investor uncertainty, and creating demand through planning requirements and public sector anchor loads.

Without such a strategy, Ireland will continue to lag behind Europe, developing piecemeal projects while private capital flows to more certain opportunities elsewhere. With one, it can build a coherent, investable pipeline that delivers district heating at the scale Ireland needs.

From Ambition to Action: The Tallaght District Heating Scheme

The Tallaght District Heating Scheme³³ represents a landmark achievement as the country's first large-scale district heating network to capture and distribute waste heat from a data centre. This innovative scheme demonstrates that district heating is not a theoretical proposition for Ireland but an operational reality delivering low-carbon heat to buildings today.

The scheme delivers a high level of innovation by capturing waste heat from the nearby data centre and distributing it via an underground network of highly insulated pipes to connected buildings. During normal operation, heat demand is 100% covered by data centre waste heat, providing space heating and hot water to customers throughout the year. Phase 1 became operational in 2022 and connects South Dublin County Council facilities and the TU Dublin-Tallaght campus to the district heating network. This innovative approach reduces carbon emissions by approximately 1,500 tonnes annually. Almost 6,000 MWh of energy has been generated to date; A total of 1,098 tCO₂ have been saved to date (as of June 2024).

The success of the Tallaght District Heating Scheme poses a fundamental question for policymakers and urban planners: If Tallaght can deliver low-carbon district heating using data centre waste heat, why not Dublin city centre, Cork, Limerick, or Galway?



Time to turn up the heat

Ireland faces a clear choice. The infrastructure decisions being made today – the housing developments being planned, the power stations being designed, the energy grid being upgraded – will determine how Ireland heats its buildings for the next fifty years. District heating can be part of that future, but only if action is taken now.

The technology is proven. The benefits are clear: lower emissions, greater energy security, reduced fuel poverty, and infrastructure that gets cheaper as it grows. European neighbours have demonstrated what is possible when governments commit to district heating as strategic national infrastructure. Ireland has the opportunity to learn from their experience and leapfrog decades of incremental development.

But windows close. Once the 300,000 new homes are built with individual heating systems, once the power stations are constructed without heat capture, the opportunity is lost – not delayed, but gone. Retrofitting is prohibitively expensive and disruptive. The economics that make district heating compelling today will not return.

Legislative progress offers some grounds for optimism – the Heat Bill, which was targeted for enactment in 2025, will establish a regulatory framework, a new Heat Network Authority, and mandatory public sector connections. But

The National Development Plan represents a once-in-a-generation investment in Ireland's future. District heating is the missing piece that can connect housing, energy, and climate objectives into a coherent whole. We need decisive action now to seize this opportunity before it passes.

that target has already been missed, and foundations are not buildings. Without rapid progression from feasibility studies to construction at scale, Ireland's 2.7 terawatt-hour target for 2030 will remain aspirational.

Ireland has the finances, the ambition, and the need. What is missing is the strategy. The time for deliberation has passed. The time for action is now.

Ireland has the lowest share of district heating in Europe. That gap is costing us. It is time to close it.

Appendix

Appendix Case Studies of Different Cities in Europe

Location	Technology	Energy Source	CO ₂ Savings	Benefit of Thermal Network / District Heating
Esbjerg, Denmark	Sea-water heat pump	Sea water	>100,000 t CO ₂ /year	Economical, green, flexible, proven technology ensuring supply security and price stability. Without DH: not possible to implement very large heat pumps; more expensive electricity grid
Høje Taastrup, Denmark	Pit thermal energy storage (PTES)	CHP, waste-to-energy, large heat pumps	6,200 t CO ₂ /year	Enables cost optimisation and sector coupling for entire Copenhagen area. Without DH: reliance on gas and individual heat pumps — higher cost, higher peak electricity loads, more CO ₂
Brønderslev, Denmark	ORC, CSP, biomass boiler, heat pump, electric boiler, heat storage	Solar radiation, local wood chips, flue gas heat, green electricity	Up to 96% reduction vs natural gas boiler	Enables use of multiple sources for cost-optimised heat and electricity generation. Without DH: Denmark would not be on its way to an inexpensive climate-neutral heating sector
Skærbæk, Denmark	Biomass grate boilers, steam turbine, CCUS (modelled)	Forest operation residues	Capture of up to 750,000 t CO ₂ /year	Thermal network enables use of extra CCUS heat, increasing plant coverage from 50% to 92%. Without DH: less economic option to capture carbon and create negative emissions
Dronninglund, Denmark	Pit thermal energy storage	Solar thermal (37,500 m ² field)	2,500 t CO ₂ /year	Storage serves as daily and seasonal store; acts as heat source for heat pump in winter. Without DH: impossible to get so much solar heat into the energy mix (not enough available space)
Silkeborg, Denmark	Flat plate solar thermal collectors	Solar thermal, gas, electricity, surplus heat	15,000 t CO ₂ /year	Reduces fuel price dependency and heat prices. Without DH: municipality would not meet its aim of CO ₂ -neutral DH by 2030
Sdr. Felding, Denmark	Two air-to-water CO ₂ heat pumps	Surplus green electricity	Not quantified — uses renewable electricity	Enhances DH efficiency, reduces operational costs and grid strain. Without DH: lower renewable energy utilisation and higher carbon emissions
Munich, Germany	Deep geothermal wells, heat pumps	Geothermal energy	2.3 million t CO ₂ (cumulative by 2040 vs 2023)	Holistic approach incorporating district cooling and renewable electricity; creates jobs in the region. Without DH: continued fossil fuel use for heat generation



Location	Technology	Energy Source	CO ₂ Savings	Benefit of Thermal Network / District Heating
Mannheim, Germany	Large river-water heat pump (20 MW)	Electricity + low-temperature river heat	Up to 21,500 t CO ₂ /year (over 20 years)	Avoids major building renovations by using existing DH infrastructure. Without DH: city changed by decentralised heat pump fans; increased noise; likely higher national costs
Rauschenberg-Bracht, Germany	Flat plate collectors, seasonal storage, heat pumps, biomass boiler	Solar (~70%), local wood chips (~25%), electricity (~5%)	98% reduction vs previous oil/wood supply	Local added value; constant and predictable heat price. Without DH: high solar fraction only achievable with seasonal storage in combination with DH
Ybbs, Austria	Moving step grate boilers, back-pressure steam turbine	Bark and wood chips	Up to 46,000 t CO ₂ /year	Sawmill residues used as fuel; produced heat supplied to sawmill and pellet plant for drying. Without DH: no economic operation of plant possible
Reidling, Austria	Anaerobic digestion CHP	Manure, maize, vegetable processing residues	Up to 1,400 t CO ₂ /year	Alternative income source for farmers facing price declines. Without DH: no economic operation of the plant possible
Heerlen, Netherlands	Geothermal wells, mine water plant, thermal source network	Mine water geothermal	3,600 t CO ₂ /year (2,000 heating + 1,600 cooling)	Reduces energy poverty; lessens electrical grid congestion. Without DH: continued fossil fuel dependence and energy poverty
Geneva, Switzerland	High vacuum flat plate solar thermal	Solar thermal + biomass	130 t CO ₂ /year	Stabilises solar heat production over time. Without DH: more GHG emissions from the site

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