



Irish
District
Energy
Association

Financing Decarbonised Heat for Ireland

Budget 2024 Submission

Irish District Energy Association

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Pre-Budget Submission, Irish District Energy Association



Summary of Recommendations

The Climate Action Plan 2023 sets out clear targets to achieve 800 GWh of district heating by 2025 and 2700 GWh by 2030; we currently boast less than 20 GWh. The time for minor interventions has passed as Ireland is currently on track to achieve less than 10% of the 2700 GWh target for 2030. We cannot afford to wait, making it vital that Budget 2024 delivers the resources needed to kick-start district energy in Ireland.

For this reason, we call on government to provide a total allocation of €389.35m for district energy in Budget 2024 to,

- **Resource public sector bodies tasked with facilitating delivery of district energy (€6.35m)**
- **Match private sector capital infrastructure investment (€333m)**
- **Protect early adopter consumers with a new Heat Cost Protection Scheme (€50m).**

Investment Return

Approximately two-thirds of homes in Denmark are connected to district heating, 1 million of which saw no increase in heat price in 2022 at a time when gas and oil consumers were experiencing substantial price rises (The Local, 2022). This shows how decarbonisation and affordability can and do go hand in hand when we incorporate locally produced energy into our heating systems, which in turn benefits the wider economy and society by stabilising energy sector prices, moderating inflation, and helping businesses to stay competitive. We want the Irish public to benefit from this.

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About IrDEA

Founded in 2017 to promote the development of low-carbon district energy in Ireland, IrDEA currently represents over 30 member organisations boasting a range of specialisms across the value chain of the district heating and cooling sector both in Ireland and abroad.

We are the only association in Ireland dedicated to supporting and representing the interests of the district energy sector. It is our role to identify and propose solutions to the barriers faced by the sector in meeting the Climate Action Plan 2023 target of supplying enough heat and hot water to serve the needs of up approx. 200,000 homes and 2500 public/commercial buildings by 2030 (i.e., 2.7 TWh of district energy).

Acting on behalf of our members, we support and promote the growth of the district energy sector in Ireland to aid the creation of a new heat market that offers greater opportunities to use indigenous low-carbon and renewable sources of heat.

Our activities include,

- Developing and promoting policy on district heating & cooling.
- Supporting the growth of the sector in Ireland.
- Building and sharing knowledge on district energy in Ireland.
- Stakeholder engagement.
- Commissioning and supporting research on district energy.
- Collaborating with organisations with similar missions to our own in Ireland and abroad, this includes Renewable Energy Ireland and Euroheat & Power.

Message from the Chairperson of IrDEA, Dr David Connolly

IrDEA was founded in 2017 to promote the development of low-carbon district energy in Ireland. We are the only association in Ireland dedicated to supporting and representing the interests of the district energy industry in Ireland. At present, we have over 30 member organisations boasting a range of specialisms across the value chain of the district heating and cooling sector both in Ireland and abroad.

This is a technology that is well established and proven in countries across Europe with similar climates, populations, and energy systems to Ireland who benefit from sustainable and cost-effective heating. There is no technological reason why we cannot become a part of this, the only thing we need are transparent and robust regulatory and consenting regimes to facilitate the development and operation of district energy projects.

IrDEA has been very encouraged by the strides made in the past year by the Department of Environment, Climate and Communications, Sustainable Energy Authority of Ireland, and Commission for Regulation of Utilities to address the need for clear policy and action on this front. That said, the momentum needs to continue and clear investment is needed from government if we are serious about reaching the Climate Action Plan 2023 targets to deliver 0.8 TWh of district energy to Irish consumers by 2025 and at least 2.7 TWh by 2030.

This submission sets out IrDEA's broad view of the financing and resourcing needs of the sector in the year to come and our key policy asks so that policymakers and stakeholders are clear on the steps needed to deliver this affordable, locally produced, decarbonised solution to heat for Irish consumers.

We look forward to engaging with you as part of the Budget 2024 process and in the years to come.

Message from the CEO of IrDEA, Ms Yvonne Murphy

A combination of certainty in the potential of district energy as a decarbonised heating solution and hard work brought IrDEA from a concept in 2017 to an active association with an engaged and expert membership capable of thought leadership and change-making. In recent years, the organisation has invested in the resources and strategic vision needed to allow for our own growth in line with hopes for future sectoral development. As the organisation's first CEO, it is my role to help guide us towards achieving our mission of seeing 30% of Irish heat demand supplied through district energy by 2050.

By 2050, IrDEA wants to see excess and renewable energy supplying district heating and cooling where it is technically and economically viable for residential, commercial, and industrial applications across Ireland. We do not promise to be the sole, silver bullet that alone delivers decarbonised heating and cooling for Ireland, but we do see ourselves as part of a healthy and functioning integrated energy system that delivers affordable, locally produced, decarbonised and sustainable energy to Irish consumers.

Our climate goals demand that we use every resource and viable available technology to boost efficiency and sustainability across the energy system. As a highly flexible, multi-energy source technology that can re-use waste energy and be used for short, medium, and long duration storage, grid balancing, and heating and cooling delivery, district energy has huge potential to be a key part of our decarbonised future.

We hope to work with decision-makers to see that happen and present here our thoughts on the steps needed for Budget 2024 to see that achieved.

About District Energy

Heating in Context

In 2021, heat made up 41.8% of final energy demand, with transport at 36.1% and electricity at 22.1% (SEAI, 2022a). From an emissions standpoint, building and industrial process heat accounted for 38% of total energy-related CO₂ emissions in the same year¹ and 24% of total greenhouse gas emissions – broken down into natural gas (39%), oil (36%), and coal/peat (25%) (SEAI, 2022c). As has been shown to be the case with the UK heat sector, in Ireland, ample supplies of gas and oil, a well-developed and continually expanding gas transmission/distribution network, and widespread use of gas and oil boilers has led to this emissions profile (Chaudry et al., 2015).

Where 'every year matters and every choice matters' (IPCC, 2022, p. vi), decisive action is needed to address heat decarbonisation and reduce to net zero the emissions profile it represents. The good news is that solutions exist today to facilitate that action. District energy is one of them.

How district energy works.

District energy systems deliver hot water and space heating or cooling to buildings using water that is heated or cooled centrally and transmitted through insulated pipes. Heat exchangers are placed inside buildings instead of individual boilers or heat pumps (saving on space and maintenance costs), allowing consumers to control the temperature using a thermostat and access hot water at the turn of a tap.

In very simple terms, this involves the following steps:

1. Water is heated or cooled to an agreed temperature at a central energy centre.
2. This water is then sent to buildings that are connected to the network using pre-insulated pipes.
3. When the water reaches the building, it flows through a heat exchanger. This equipment is used to extract the heat or cold from the district energy system water and transfer it into the water from the building's own closed loop system.

¹ 14.1 MtCO₂

4. The water from the district energy system never enters the building, instead it is returned to the energy centre to be used again.
5. Meanwhile, when the end consumer wants to heat or cool their home or to access hot water, they simply adjust the thermostat or turn on the tap.

Internationally proven.

As of mid-2023, there were just over 17,000 district heating networks across Europe supplying heat to 70 million people (Piel et al., 2023). It is no coincidence that some of the countries with the highest shares of renewable heat across Europe are also heavy users of district energy – they include Sweden, which boasts a renewable heat share of 68.6%, Estonia (61.3%), Latvia (57.4%), Finland (52.6%), and Denmark (51%). By contrast, Ireland has the lowest renewable heat share in Europe at 5.2% (Eurostat, 2023a), with less than 1% of heat demand being met by district energy (SEAI, 2022b).

Key growth market in Ireland.

SEAI's National Heat Study (SEAI, 2022b) provides a comprehensive assessment of the options available to decarbonise Ireland's energy used for heating and cooling homes, businesses, and industry. **Published in February 2022, the study indicates that up to 54% of Irish buildings could be suitable for connection to district heating networks.** This is in line with similar findings from the Irish Heat Atlas developed by Flensburg University on behalf of the Irish District Energy Association (Irish District Energy Association, 2020). According to this work, 36% of the heat used for buildings in cities, towns, and villages in Ireland is suitable for district heating technology that is widely deployed across Europe today. A further 21% of heat demand is also capable of being satisfied through more advanced 4th Generation District Heating, bringing the total predicted potential to 57% (ibid.).

Ready to deliver by 2030.

Delivering 2.7 TWh of district energy by 2030 will mean connecting the heat demand equivalent to approx. 200,000 homes and 2500 public/commercial buildings with low-cost, low-carbon heat. This equates to approx. 10% of buildings in Ireland. The total investment required is estimated at between €2.7 and 4 billion for the deployment of the heat networks and associated heat production plants (approx. 40% public piping, 20% homes & buildings, and 40% new low-carbon production plants) (Government of Ireland, 2023).

This target can be met primarily due to the well-established district heating industry in Europe, which can be leveraged for the rapid roll out of district heating in Ireland. For example, there are already over 30 million homes with district heating in Europe, so connecting the heat demand equivalent to 200,000 in Ireland by the end of the decade will require less than 1% of what the industry has already delivered in Europe (Piel et al., 2023).

A further benefit is that the development, operation, maintenance, and supplying of heat to district heating networks would likely lead to the creation of over 2,000 full-time jobs over the next decade. District heating skills and training requirements exist at the interface between energy, engineering, and construction. Often workers operating in heat networks development, operation, and maintenance have undertaken training or worked in one or more of these sectors.

As a result, significant cross-over is likely between the district energy sector and these three broad areas of skills and training and it may be a key avenue for workers seeking to transition from fossil intensive industries to renewables (Vogeley et al., 2020). Some typical examples of this include,

1. Gas pipe installation contractors whose re-skilling requirement is typically less than 1 month to qualify for district heating pipe installations.
2. Plumbers who can very readily switch from gas/oil boiler installation to heat exchangers, a well-established technology that most plumbers would be familiar with.
3. Mechanical contractors installing fossil fuel plant rooms could transition to low-carbon energy centre development and installation as this requires a near identical skillset. The key difference being the purchase and connection of heat pump units as opposed to boilers.

Benefits of District Energy.

We are at a critical juncture on the road to decarbonisation, particularly in the energy sector where large infrastructural projects take time to plan, promote, develop, and deliver. Although district energy networks can be delivered relatively quickly when compared to other types of projects, the lack of policy, regulatory and public financing frameworks in the Irish system continue to delay the sector in making headway in time for our 2025 and 2030 targets.

For us, the case for district energy is self-evident given its capacity to deliver decarbonised heat using an adaptable, multi-fuel, flexible, and affordable technology that is well proven and established elsewhere. This merits the sort of investment we advocate for in this submission.

Decarbonised heat

Our research has shown that 35% of heat demand is at a high enough heat density for district heating to be highly feasible or feasible with current technology. A further 21% of the heat demand could also be catered to with the deployment of the most advanced technology on the market at present. We also estimate that approx. 10% of building heat demand could be served by district energy by 2030 and 30% in the longer term, which is well in line with government targets (Renewable Energy Ireland, 2021). This is consistent with the National Heat Study published by SEAI in February 2022.

To give a sense of the decarbonisation potential of this, urban buildings alone in Ireland account for around 4 Mt of carbon and approx. half of Ireland's heat demand in buildings. If district heating were to be introduced for these buildings alone, it would reduce heat related emissions by approx. 20% and overall energy-related carbon emissions by over 10% (SEAI, 2022b).

Adaptable

Unlike natural gas grids, which run the risk of becoming stranded assets as we pivot to decarbonised energy sources, district energy networks are not dependent on any single type or source of energy. As the types of energy we use shift and change the network of pipes in a district energy system continues being used in its original form, while the energy centre can be adapted to incorporate additional or new energy sources. This prevents having to dig up streets to replace heat network infrastructure with fuel or technology specific piping, saving money and preventing disruption.

Importantly, district energy consumers know their heating system can be adapted to run on the best available energy mix without having to replace the equipment in their homes and businesses. This benefit is punctuated by the fact that the heat exchangers used to connect buildings to district energy networks are small when compared with individual boilers, require minimal maintenance, and typically last for decades before needing replacement. This also saves money and prevents disruption for consumers.

Multi-fuel

Modern-day 4th generation district energy systems use significantly lower water temperatures to earlier forms of district energy, which previously relied on steam and water heated to approximately 100°C to deliver heating. The introduction of high-efficiency pre-insulated pipes in the 1970s allowed this shift. Further optimisation has followed, driven by improved building energy standards, continued innovation in the materials used to build and run these systems, and the advent of digital tools that help to control and reduce system losses and improve precision. (Averfalk & Werner, 2019). As a result, modern day district energy systems typically supply water between 60°C and 80°C.

Because of this, these systems are primed to partially heat the water in the system from a range of sources such as,

- Variable renewable electricity generation.
- Waste heat (power generation, data centres, wastewater treatment, refrigeration, etc.).
- Ambient heat from air, water, or geothermal sources.

Large industrial heat pumps are then used to lift the temperature to between 60°C and 80°C before sending it out into the network. As these sources of energy tend to be available at a low cost, this approach reduces and reuses excess or unused energy. It also means heat pumps use less energy to lift the temperature of the water as it starts off warm to begin with. Vitally, this reduces costs to consumers, making energy more affordable.

The European Waste Heat Map shows there is enough waste heat in Ireland to meet the heat demand of our entire building stock (Moreno et al., 2022). This is not unique to Ireland, as enough excess heat is produced across Europe to meet all current heat demand (Danfoss, 2023). District energy systems are uniquely placed to use this untapped local source of energy to provide space and water heating to Irish consumers affordably and reliably.

Flexible

Ireland must develop significant energy storage potential to achieve the target of 80% renewable electricity by 2030. Though district energy is classified as a heat sector decarbonisation solution, it also functions as a key linkage technology between the electricity and heat sectors. One of the ways it does this is by providing short, medium, and long-duration thermal energy storage. This allows for renewable electricity that would otherwise be curtailed to be stored and for cheap electricity to be stored at times of high production and low demand.

At its most basic, thermal storage can simply mean a domestic hot water tank, however, larger industrial tanks are used to provide storage ranging upward from several hours to several days. For even longer-duration storage ranging upward to several months, Pit Thermal Energy Storage (PTES) tends to be used. This involves the creation of a large pit in the ground, which is covered by specialist waterproof membrane, filled with water, and covered with a super insulated roof. Well-optimised thermal storage systems can provide significant flexibility for district energy systems to harness energy when it is abundant and deploy it to consumers when needed. An example of this is the systems designed to be heated by a solar energy in summer for heat distribution in winter (Sifnaios et al., 2023).

Through their use of thermal storage, district energy systems have the potential to add significantly to Ireland's energy storage capacity within a very short timeframe, meaning their value extends beyond decarbonising the heat sector to also supporting increased decarbonisation in the electricity sector.

Affordable

Once established, district energy is an affordable and stable source of space and water heating for consumers. **This is shown across countries like Denmark and Sweden who have weathered the recent energy crisis with stable heat prices and, in some limited instances, have seen price drops over the past year** (Johansen & Werner, 2022; The Local, 2022).

This is largely because these countries have reached a critical mass of district energy consumers, which supports economies of scale and optimised efficiency. This is further aided by efficient energy generation, with systems often employing efficient energy generation technologies, such as combined heat and power (CHP) and high-efficiency boilers or heat pumps. These technologies can maximize the use of the primary energy source, reducing waste and overall heating costs. The ability to use diverse and multiple energy sources supports adaptation to changing energy markets and provides access to lower-cost and environmentally friendly energy sources. Policy levers can be used to require operators to do just this, further aiding affordability; this is done in Denmark and has resulted in stable heat prices during the significant volatility of the past two years (The Local, 2022).

On an individual level, consumers benefit from the central operation of the system, which eliminates the need for regular boiler maintenance and replacement. This equipment is effectively replaced either by an individual heat exchanger or a small substation for a group of buildings, both of which are small in scale, durable, and low in maintenance requirements. Consumers can also control when and how much heat they use by adjusting the thermostat and to access hot water they simply turn on or off the hot tap, this eliminates the need for immersion heaters or electric showers, providing further cost savings.

Finally, as heat networks grow, their efficiency and economies of scale grow with them. As a result, the more mature the network gets, the better the savings, which provides certainty and stability for consumers in the longer term.

Overview

Pre-Budget Submission, Irish District Energy Association



Context & Recommendations

Despite Ireland's strong position and reputation for renewable electricity (KPMG, 2022), we are ranked last among our European peers for renewable heat – only 5.2% of Irish heat comes from renewable sources (Eurostat, 2023b). This must change urgently if we are serious about achieving our 2030 and 2050 climate goals.

IrDEA estimates that district heating networks can supply heat today with 60-90% less carbon than natural gas. Over time, this carbon footprint would be reduced further to zero by deploying a range of heat sources, including heat pumps, solar, bioenergy, and geothermal to drive district energy systems.

One of the great benefits of district heating is that this can be rolled out while ensuring affordable and secure heat sources for consumers. For example, **approximately two-thirds of homes in Denmark are connected to district heating, 1 million of which saw no increase in heat price in 2022** at a time when gas and oil consumers were experiencing substantial price rises (The Local, 2022). This shows that **decarbonisation and affordability can go hand in hand** when we incorporate locally produced energy into our heating systems, benefitting the wider economy and society by stabilising energy sector prices, moderating inflation, and helping businesses to stay competitive.

Other countries, like Denmark and Sweden have shown a consistent ability to build-out district heating from an almost zero base to large shares at a constant growth of 1% of heat demand per year. There is no reason why we cannot become a part of this trend (Piel et al., 2023).

Overview of Recommendations

We acknowledge that the past year has seen the beginnings of a district energy-specific policy landscape being set down by government thanks to the work of the Department of Environment, Climate and Communications alongside the District Energy Steering Group whose report was published this year (Government of Ireland, 2023). But increased urgency, innovation, and resources are needed to mobilise the sector to deliver tangible projects that will help us meet our Climate Action Plan 2023 targets of 0.8 TWh of district energy by 2025 and 2.7 TWh by 2030. This submission sets out IrDEA's view of what is needed as part of Budget 2024 to achieve that.

IrDEA is calling for a total budgetary allocation of €389.35m to,

- **Resource public sector bodies tasked with facilitating delivery of district energy (€6.35m)**
- **Match private sector capital infrastructure investment (€333m)**
- **Protect early adopter consumers with a new Heat Cost Protection Scheme (€50m)**

Recommendations

Pre-Budget Submission, Irish District Energy Association



1. Resource the Public Sector to Drive District Energy Delivery.

Developing the district energy sector will require significant resource investment by both private industry and government. As the key architect of what will become a significant new market for heat, thermal storage, and energy balancing, it is incumbent upon government to ensure sufficient staffing and resources are deployed to lead the process of market development.

IrDEA envisions several key areas of resource investment that will be needed on the part of government to facilitate the establishment and growth of the sector. They fall under three main headings,

- District Heating Steering Group Recommendations.
- Regulatory Regime.
- Role of Local Authorities in Heat Network Delivery.

District Heating Steering Group Recommendations

Clear direction on how to go about this was published in July 2023, through the District Energy Steering Group Report (2023), which was spearheaded by the Department of Environment, Climate and Communications. This report made 11 recommendations on the action needed to kick start the rollout of district energy in Ireland, they are:

1. To establish, through SEAI, a National District Heating Centre of Excellence (NDHCE).
2. Encourage local authorities to continue developing existing projects.
3. Carry out detailed economic analysis on the feasibility of a list of measures (NDHCE).
4. Bring forward legislation for the sector (DECC).
5. Review the supports available for renewable heat production (DECC & NDHCE).
6. Engage with InvestEU Advisory Hub to explore financing options (DECC & NDHCE).
7. Strengthen the reference to district energy in key planning and development strategies (DHLGH).
8. Develop a Long-Term Strategy for District Energy (DECC & NDHCE).
9. Conduct a national level assessment of Candidate Areas for district energy (NDHCE).
10. Establish a funded grant programme for feasibility studies for potential schemes (NDHCE).
11. Undertake research on awareness, current views, experience of current users, preferences and levels of uptake expected with respect to district energy (NDHCE).

Regulatory Regime

The Commission for Regulation of Utilities (CRU) was also appointed the regulator for the district energy sector in June 2023 in line with requirements under EU Directive 2018/2001 on the promotion of the use of energy from renewable sources. It will be its role to provide regulatory oversight for the market to provide certainty and quality assurance to consumers as well as heat network developers and operators.

Role of Local Authorities in Heat Network Delivery

District energy networks are built around local heat sources and heat demand. They are locally led by nature, which creates the potential for local authorities to act in a central role as facilitators, partners, and or leaders of their

development and operation. This is in addition to their role in development planning, heat mapping/zoning, or administering consenting for network development.

Budget 2024 Recommendation

Considerable time and resources will be needed to deliver under each of these headings, which will in turn require investment on the part of government. IrDEA recommends that adequate provision be made as part of the budgetary process for sufficient staffing resources and accompanying budgets for,

1. The Heat Policy Unit of the Department of Environment, Climate and Communications.
2. The National District Heating Centre of Excellence (NDHCE) to be set up within the Sustainable Energy Authority of Ireland.
3. The Commission for the Regulation of Utilities.
4. Local authorities.

An initially investment must be made as part of Budget 2024 to support the extensive work to be done in building the expertise and capacity needed to kick start the sector. IrDEA suggests a foundational investment of €6.35m for this purpose, broken down as set out below, with the potential for further allocations as additional capacity is needed in line with sectoral growth. This is particularly likely in the local government sector should a leadership role be required of local authorities in building and driving forward district energy network development.

Authority	Purpose of spending	Allocation (€ 000)
DECC	Double the size of the unit leading district energy policy and legislation.	350
SEAI	Establish, resource, and staff the NDHCE.	1,000
CRU	Provide CRU with additional resources to develop and implement regulation for the district energy sector.	350
Local authorities	Provide for the recruitment of dedicated district energy unit staff for all local authorities (€150,000 x31)	4,650
		6,350

Total Budget 2024 Cost: €6.35m

2. Capital Grant Supports for District Heating Projects.

Ireland's Climate Action Plan 2023 has tasked the district heating sector to deliver up to 800 GWh of capacity by 2025 and 2700 GWh by 2030; we currently supply less than 20 GWh. One major reason for the slow uptake of this technology is lack of any dedicated grant support for district heating projects. This was acknowledged by the District Heating Steering Group in its recently published report (Government of Ireland, 2023), which, *inter alia*, recommends,

Consideration of a distinct district heating fund to be established to pool and provide Capex supports for technical and financial expertise, to project sponsors seeking to install district heating schemes (ibid. 2023, p. 4).

Scale of Investment needed.

We agree with the assessment of the District Heating Steering Group that between €2.7 to €4 billion of investment will be needed to deliver district heating projects between now and 2030 to meet Ireland's 2700 GWh target (ibid. 2023, p. 4). The private sector is ready to invest – this includes many IrDEA members –, but the long-term and infrastructural nature of these networks demands that the State also play a role in financing their development.

Examples of investment schemes in other jurisdictions.

Ireland's late adoption of district energy means we can learn from how other jurisdictions have sought to strike the balance between private investment and public financing of district energy. A recent example can be found in the UK, which is,

1. Only about 5 years ahead of Ireland in the process of adopting district energy at national level.
2. Historically like Ireland in its approach to the heat sector.
3. Similarly reliant on oil and gas for heat and in need of a pathway to decarbonising heat.

The UK government has developed a dedicated capital support grant entitled the *Green Heat Network Fund (GHNF)* where the maximum allowable grant is up to 50% of the estimated eligible commercialisation and construction costs of the project (UK Government, 2023). Ireland requires a similar grant scheme to stimulate the initial sectoral investment.

Budget 2024 Recommendation

Between €3 and €4bn of investment is needed to reach Ireland's 2030 district energy target. It is IrDEA's position that CAPEX support of 50% as seen in the UK is needed on the part of government to build confidence for potential early-stage investors. This would help to de-risk projects and reduce costs for consumers who ultimately pay back investment capital in the form of network and other charges.

1. IrDEA recommends that government put in place a multi-annual budget of between €1.5 and €2bn to support up to 50% of the capital costs of district heating in Ireland between 2024 and 2030.
2. This should be delivered on a phased annual basis for the full period leading up to 2030 to facilitate steady delivery of heat networks.
3. A total allocation of between €250m and €333m per year for the period in question is needed, beginning in 2024.

Total Budget 2024 Cost: €333m

3. Introduce a Heat Cost Protection Scheme

Once established, district energy is an affordable and stable source of space and water heating for consumers. This is shown across countries like Denmark and Sweden who have weathered the recent energy crisis with stable heat prices and, in some instances, have seen price drops over the past year (Johansen & Werner, 2022; The Local, 2022). This is largely because these countries have reached a critical mass of district energy consumers, which supports economies of scale and optimised efficiency. To get to that point, the Irish district energy sector needs financial certainty to build confidence among Irish consumers that switching from gas will pay off for them.

IrDEA proposes that a new *Heat Cost Protection Scheme* be established to safeguard early adopters of district energy from electricity price spikes that may occur in the future. This would require €50m to be ringfenced each budget year for the next 10 years, the purpose of which would solely be for drawdown in the event of a severe and unexpected electricity price spike as seen over the past year. Provided no such emergency emerges, this fund would not be drawn down and could be rolled over each year.

Rationale

Low carbon district energy prices are linked to electricity prices as the heat pumps used to lift the temperature of waste heat to the requisite 60° and 80°C use electricity. When electricity prices become more than double gas prices, district energy becomes less competitive than gas as a source of space and water heating. This disincentivises early adopters from moving to district energy, which in turn undermines investment certainty for those seeking to develop district energy networks.

Current situation

The ratio between electricity and gas prices is 3:5 in Ireland as compared with 1:2 in Scandinavia (Uribe et al., 2022). This is in part because the peak price of gas sets the price of electricity and, in Ireland, we are heavily dependent on gas for electricity generation during peak periods of demand. With a target of 80% renewable electricity by 2030 and net zero by 2050, this is likely to change for the better in the future. However, until we get to that point gas will likely remain less expensive than electricity for consumers of heat. This makes it very difficult to convince first-mover consumers in the short-term to leave fossil fuels and move to low carbon alternatives backed by electricity like district heating and heat pumps.

Creating certainty for investors and consumers

Energy infrastructure investors look for stable prices to build viable investment cases and deliver affordable energy to consumers. The initial capital investment and ongoing operational and maintenance costs of each project must be modelled against the likely income from consumers purchasing heating from the system. The greater the unknowns, the greater the costs that must be built into the business case to make it viable. This uncertainty premium is shouldered by consumers in the form of service/network charges.

Reducing uncertainty in the business case improves affordability and value for money for consumers. Greater certainty also improves the overall likelihood of largescale capital investments being undertaken to deliver district heating networks.

How the Scheme would work

The purpose of the Scheme would be to ensure the cost of electricity for heat pumps on low-carbon district heating networks does not become more than double the cost of gas as the fossil fuel alternative. This would keep parity between the two because only 1 unit of electricity is needed by the heat pumps on district heating schemes to produce >3 units of heat.

The Scheme would involve a commitment by government to provide financial support to district heating consumers if electricity prices rise to the point where district heating is not competitive with gas or if electricity prices become

unusually high. Such a scheme would operate on a tiered basis, with the upper limit of support being set to limit liability to the taxpayer. This would involve two elements,

1. **Competitiveness Protection (Ratio):** Support to ensure that the ratio between the cost of electricity used for district heating compared to the cost of gas for a customer is limited to 2, keeping district heating competitive with gas.
2. **Affordability Protection (High Prices):** Support for consumers when electricity costs become excessively high due to an extreme event, such as the war in the Ukraine in 2022.

Budget 2024 Recommendation

IrDEA's calculations indicate that the cost of this protection would vary between €0 and a maximum of €50m per annum for the first 800 GWh of district heating. We recommend that,

1. A maximum multi-annual fund of €500 million be allocated, equating to €50 million per year over 10 years.
2. This would be ringfenced and if after the 10-year period has not been deployed, marked for use in the further promotion of district energy between 2034 and 2050.

Total Budget 2024 Cost: €50m

Conclusion

We need urgent investment to mobilise the district energy sector to deliver tangible projects that will help us meet our Climate Action Plan 2023 targets of 0.8 TWh of district energy by 2025 and 2.7 TWh by 2030. This submission sets out IrDEA's view of what is needed as part of Budget 2024 to achieve that.

We are calling for a total budgetary allocation of €389.35m to,

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The elements exist for Ireland's heat sector to be transformed by the rollout of district energy at the scale needed to provide a real alternative to gas and oil for Irish consumers. The technology is shown to work, there is plenty of heat demand to make heat networks viable in up to 54% of existing buildings, and there is an abundance of heat sources just waiting to be plugged into Irish heat networks. All that remains is for the rollout to be facilitated by clear public policy and investment support.

We urge government to commit the funds needed to deliver on the policy commitments made in the Climate Action Plan 2023 for district energy. If this is done, Ireland's heat sector could make rapid gains in the share of renewables integrated into the system, creating a security of supply and affordability dividend that will benefit generations to come.

Sources

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