



**Friends of  
the Earth  
Ireland**

**Briefing Paper: District Heating  
April 2024**

**Contents**

1. Introduction
  - a. Overview
  - b. Irish Context
2. Local Heat Planning
3. Preventing Fossil Fuel Lock-in
4. Ownership Models and Community Empowerment
5. Regulation to Protect Households from High Costs
6. List of relevant resources

**1. Introduction**

**a) Overview**

District heating is a centralised heating system that delivers space heating and hot water to buildings in an area by distributing heat through a network of underground pipes. The heat can come from various renewable, waste heat, or fossil fuel sources. It is most often used in urban areas where there is a high population density and where there is access to existing sources of waste heat. District heating systems offer great potential as a more efficient, cost-effective and significantly less polluting heating source. In this way, they offer an important alternative to fossil fuel boilers which lock households into using expensive, harmful gas or oil.

Friends of the Earth is leading a campaign to ensure Government makes Irish homes and communities free of polluting fossil fuel heating as fast as possible, particularly for the most vulnerable. District heating is one tool to progress this decarbonisation of Irish homes and this briefing provides an overview of district heating in an Irish context, including current plans and proposals. This briefing does not seek to provide a detailed assessment, and rather summarises the main opportunities and challenges associated with district heating rollout, as well as risks and complications in terms of ownership and development of district heating networks in Ireland. Friends of the Earth's main focus is that district heating is delivered in a manner which prevents further fossil fuel dependency, delivers

absolute emissions reductions and provides for lower energy costs. We welcome the opportunity to further update this briefing as policy and regulation develops and through further engagement with stakeholders.

## **b) Irish Context**

Policy responses to decarbonise Irish homes have largely focused on increasing energy efficiency of buildings combined with installation of heat pumps. However the Government's 2023 Climate Action Plan has included a commitment to deliver up to 0.8TWH of district heating by 2025, and 2.7TWH by 2030.<sup>1</sup>

Currently, Ireland has only a few small scale district heating networks contributing less than 1% of the total heat used in Ireland.<sup>2</sup> The landmark 2022 National Heat Study produced by the Sustainable Energy Authority of Ireland showed the potential for up to 54% of heat in buildings to be supplied by district heating.<sup>3</sup> Codema's 2021 Dublin Regional Energy Master Plan shows that district heating could feasibly supply up to 87% of Dublin's heat demand by 2050.<sup>4</sup>

The main policy development has been the establishment of a district heating steering group by the government in 2022 to coordinate the development of district heating regulation and policy and to support growth of a district heating sector. The Steering Group Report 2023 contains eleven recommendations to develop district heating in Ireland, including the need to:

- enable public, private, and utility stakeholders to realise district heating development in Ireland;
- develop a regulatory system for district heating that ensures consumer protection and expand the district heating sector;
- enable and mandate public bodies to connect to district heating networks;
- establish a Centre of Excellence for district heating in the SEAI to support district heating development; and
- financially support roll out of district heating in Ireland

The Climate Action Plan 2023 has committed to implementing the recommendations of this Steering Group throughout 2023.

In July 2023 Ireland's Climate Change Advisory Council made the following recommendations on district heating:

*"- More urgency and ambition is required in developing district heating schemes, taking on board lessons from other countries where they already supply a significant proportion of heat.*

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<sup>1</sup> See <https://www.gov.ie/en/publication/7bd8c-climate-action-plan-2023/>

<sup>2</sup> <https://www.gov.ie/en/press-release/357c7-minister-ryan-launches-report-paving-the-way-for-the-expansion-of-district-heating-to-irish-homes-and-businesses-by-2030/>

<sup>3</sup> SEAI (2022) [\*District Heating and Cooling: Spatial Analysis of Infrastructure Costs and Potential in Ireland\*](#)

<sup>4</sup> Codema (2021) [\*Dublin Region Energy Masterplan\*](#)

- *Large energy users, including data centres, should be obliged to supply their excess heat to local communities to support district heating schemes.”<sup>5</sup>*

The Commission for Regulation of Utilities (CRU) has been appointed as regulator of District Heating and Cooling networks. The CRU now has functions relating to the protection of district heat customers.<sup>6</sup> With decisions now being made on the regulatory framework for district heat, it is important that district heating **planning and rollout is progressed in a way that provides benefits both to emissions reductions and to Irish households, and prevents lock-in to polluting sources of heat, namely gas and oil.**

## 2. Local Heat Planning

Heat needs to be used near to where it is produced if it is to be energy efficient and prevent high distribution costs.<sup>7</sup> As district heating depends on heat demand density and sources of clean heat being available, planning for district heating must be done on an area-by-area basis. The revised EU Energy Efficiency Directive sets a requirement for all municipalities of over 45,000 inhabitants to produce their own individual heating and cooling plan.<sup>8</sup> This Directive must be transposed by Government by 2025.

The Climate Change Advisory Council in their 2023 Annual Review made a recommendation that *‘introducing evidence-based zoning for district heating at the local authority level and comprehensive characterisation of heat sources is crucial to progression.’* Many European countries who have developed and are developing district heating networks already require local governments to develop local heating plans, including Scotland, the Netherlands, and Germany. Local heat planning is a significant step, requiring input from communities, local authorities, civil society organisations and energy stakeholders, as such planning in many cases facilitates an orderly wind-down of the gas grid which is crucial to meeting climate commitments. This approach is already being followed in the Netherlands. Their national gas phase-out has taken a district-oriented approach, where local authorities create individual heating plans and run pilot schemes to get off gas.<sup>9</sup>

Local authorities in Ireland will have to be equipped with the technical knowledge, staffing and resources necessary to undertake heat zoning and planning and to scale up district heating.<sup>10</sup> Currently there is no technical support framework in place to support heat planning, nor is there dedicated funding. The Government’s District Heating Steering Group has recommended that a National District

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<sup>5</sup> See <https://www.climatecouncil.ie/councilpublications/annualreviewandreport/CCAC-AR-2023-postfinal.pdf>

<sup>6</sup> See <https://www.cru.ie/regulations-policy/energy/district-heating/> and S.I. 630 of 2022

<sup>7</sup> <https://www.raponline.org/blog/reap-benefits-district-heating-make-local/>

<sup>8</sup> [https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficiency-targets-directive-and-rules/energy-efficiency-directive\\_en](https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficiency-targets-directive-and-rules/energy-efficiency-directive_en)

<sup>9</sup> [https://ce.nl/wp-content/uploads/2022/04/CE\\_Delft\\_210381\\_The\\_natural\\_gas\\_phase-out\\_in\\_the\\_Netherlands\\_DEF.pdf](https://ce.nl/wp-content/uploads/2022/04/CE_Delft_210381_The_natural_gas_phase-out_in_the_Netherlands_DEF.pdf)

<sup>10</sup> <https://energy-cities.eu/member-states-must-get-ready-for-the-new-local-heat-and-cooling-planning-obligation/>

Heating Centre of Excellence be established to coordinate, support, and drive the delivery of district heating projects as well as providing technical support, staff upskilling, and a central support office for local authorities.<sup>11</sup>

Identifying areas suitable for district heating and then communicating with households that they are in a district heating zone will be vital to ensure the state and relevant households do not incur undue additional costs (for example through purchasing of new fossil fuel boilers or installation of heat pumps) in areas when district heating will soon be available. This is also important for public buildings; public buildings must also be decarbonised in accordance with emission reduction targets and these buildings will constitute important anchor loads, guaranteeing a minimum level of heat demand in areas eligible for district heat.

### **Considerations for Ireland:**

- Transposition of the revised EU Energy Efficiency Directive should be taken as an opportunity to mandate all local authorities to develop local heating plans which includes district heat zoning, as well as gas network phase-out and decommissioning plans.
- Legislative and regulatory change will also be needed to ensure Gas Networks Ireland (GNI) facilitates district heat development, while supporting gas phase out and decommissioning. It is important to note that currently GNI's legal mandate and functions do not support this necessary change. Conflict of interest risks also arise where GNI seeks to extend the gas network and connect gas customers in areas most suitable for district heat.
- The Government must build the capacity of local authorities to be able to develop heating and cooling plans for their area - additional finance, technical expertise and staffing will be needed.<sup>12</sup>
- Planning regulations should be updated to ensure all new builds within district heating zones are built "district heating ready".<sup>13</sup>
- Households, businesses and public bodies within district heating zones should be informed of their eligibility for district heating as soon as possible, to prevent further fossil fuel lock-in, and to ensure unnecessary energy renovation costs can be avoided where possible.

### **3. Preventing Fossil Fuel Lock-in**

Not all sources of heat for district heating networks are renewable, and the sustainability of a district heating system is entirely dependent on the heat sources used. Currently around 90% of district heating networks worldwide are reliant on fossil fuels.<sup>14</sup>

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<sup>11</sup> <https://www.gov.ie/en/press-release/357c7-minister-ryan-launches-report-paving-the-way-for-the-expansion-of-district-heating-to-irish-homes-and-businesses-by-2030/>

<sup>12</sup> <https://energy-cities.eu/member-states-must-get-ready-for-the-new-local-heat-and-cooling-planning-obligation/>

<sup>13</sup> <https://assets.gov.ie/77673/991117b5-0a57-48bd-bd2f-99f1bb8ce49e.pdf>

<sup>14</sup> IEA <https://www.iea.org/energy-system/buildings/district-heating>

Historically, district heating systems have used fossil gas or coal as the primary heat source, and many district heating networks across Europe are reliant on gas.<sup>15</sup> Countries such as Sweden, Denmark and the Netherlands have set regulations on their district heating networks to move to renewable sources of heat and significant steps towards phasing out fossil fuels have been made, using biomass and renewable waste. In Sweden, fossil fuels now only make up around 10% of the district heating mix.<sup>16</sup>

The International Energy Agency has stated that aligning with 2050 net zero scenarios require existing district heating networks to both improve their energy efficiency and to switch to renewable sources of energy.<sup>17</sup> Renewable sources of heat could include solar thermal, large-scale heat pumps, geothermal and in certain limited circumstances sustainably-sourced bioenergy.

As noted above, a district heating network could also integrate secondary heat sources such as waste heat from large industries such as data centres in Ireland. **Although waste heat may provide benefits for adjacent areas, such developments raise risks of lock-in to data centres which may be themselves highly dependent on fossil fuels, put significant pressures on the Irish electricity system, and/or which may produce other adverse environmental impacts (e.g. on water systems).**

In Ireland the opportunity now exists to ensure district heating networks are developed in a manner which prioritises efficiency and zero-carbon solutions from the outset. The EU's revised Energy Efficiency Directive (EED) has introduced stricter requirements around the efficiency of district heating & cooling networks from 2027 onwards. By 2050 only renewable heat, waste heat or a mix of renewable heat and waste heat will constitute an efficient district heating system.

#### **Considerations for Ireland:**

- As Ireland builds its initial district heating systems, it should ensure they are future-proofed by only allowing 100% renewable-powered DH systems from the outset.
- There is a need for national legislation to specify which heat sources used in networks are considered “renewable”. It is important in this regard that such a definition does not allow for further fossil fuel development.
- The Climate Change Advisory Council recommended looking to large energy users such as data centres for sources of waste heat for DH networks.<sup>18</sup> Consideration must be therefore given to the risks of long-term lock-in of data centres to Ireland's electricity grid. There also exists a risk of stranded assets if a public or private body builds a district heating network which solely relies on heat sources from either waste heat from industry or a gas-fired power station. It will be vital that renewable sources of heat are prioritised over gas-fired power plants or waste heat from

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<sup>15</sup> <https://op.europa.eu/en/publication-detail/-/publication/16710ac3-eac0-11ec-a534-01aa75ed71a1/language-en>

<sup>16</sup> <https://www.raonline.org/blog/how-clean-is-europes-district-heating/>

<sup>17</sup> <https://www.iea.org/energy-system/buildings/district-heating>

<sup>18</sup> <https://www.climatecouncil.ie/councilpublications/annualreviewandreport/CCAC-AR-2023-FINAL%20Compressed%20web.pdf>

polluting industries. It is also important that assessments of district heating are not limited to questions of eligibility and costs and take account of other climate and environmental risks.

#### 4. Ownership Models and Community Empowerment

The Climate Change Advisory Council has recommended that best practice examples from other jurisdictions are followed in terms of the roll-out, governance framework and management of district heating networks, with clear enabling legislation required urgently in this area.<sup>19</sup>

In countries where district heating has been most successful, the heat network companies are owned by local government.<sup>20</sup> Benefits of a publicly-owned model include the ability to access public sector funding, the opportunity to generate revenue for local authorities, as well as greater control over flexible development, consumer tariffs, and growth of the network.<sup>21</sup> It also has potential for delivery of aggregate demand and providing anchor public sector demand loads. It is important to note that assigning any responsibilities to Gas Networks Ireland would raise conflict of interests risks given that their mandate is chiefly focused on expanding fossil gas connections and infrastructure.

New public finance must be made available for local authorities to develop district heating networks and to consult with relevant communities. Codema and the Irish District Energy Association have previously called for a low-cost green loan facility for local authorities to develop district heat networks, similar to the Housing Finance Agency loan facility.<sup>22</sup>

Other cities and areas in the EU have put ownership of district heat networks into the hands of communities.<sup>23</sup> A large number of district heat networks in Denmark are operated and owned cooperatively, typically smaller district heat networks in rural areas.<sup>24</sup> Denmark has high heat demand, supportive legislation, and cooperatives can access cheap loans through local municipalities.<sup>25</sup> The city of Eeklo in Belgium commissioned the construction of a district heating network with a requirement for

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<sup>19</sup> <https://www.climatecouncil.ie/councilpublications/annualreviewandreport/CCAC-AR-2023-FINAL%20Compressed%20web.pdf>

<sup>20</sup> <https://www.gov.uk/government/publications/international-heat-networks-market-frameworks-review>

<sup>21</sup> [https://guidetodistrictheating.eu/wp-content/uploads/2020/04/HeatNet-NWE\\_Business-Case-to-Public-Sector\\_District-Heating.pdf](https://guidetodistrictheating.eu/wp-content/uploads/2020/04/HeatNet-NWE_Business-Case-to-Public-Sector_District-Heating.pdf)

<sup>22</sup> IrDEA (2020) [Submission to the Public Consultation fo Inform a Policy Framework fo the Development of District Heating in Ireland](#).. The Housing Finance Agency provides loan finance to local authorities, voluntary housing bodies and higher education institutions for housing and related purposes.

<sup>23</sup> [https://foeeurope.org/sites/default/files/climate\\_justice/2020/community-energy-guide.pdf](https://foeeurope.org/sites/default/files/climate_justice/2020/community-energy-guide.pdf)

<sup>24</sup> Katinka Johansen, Sven Werner (2022) *Something is sustainable in the state of Denmark: A review of the Danish district heating sector*, Renewable and Sustainable Energy Reviews, <https://doi.org/10.1016/j.rser.2022.112117>.

<sup>25</sup> [https://foeeurope.org/sites/default/files/climate\\_justice/2020/community-energy-guide.pdf](https://foeeurope.org/sites/default/files/climate_justice/2020/community-energy-guide.pdf)

a minimum of 30% citizen ownership, and a 100% renewable energy target.<sup>26</sup> In the Netherlands, the community of Groningen took over the district heating network, and cut gas entirely from their supply.

#### **Considerations for Ireland:**

- Primary legislation is needed to enable development of district heating networks.<sup>27</sup> This should set out a governance framework and terms for the management of networks.
- Public funding must be made available to local authorities to develop district heating networks and put in place proper community engagement strategies.
- Primary legislation should also allow for the future development of district heat based on community cooperative models.
- **Assigning any responsibilities to GNI would require fundamental changes to GNI’s mandate and functions to fully align with climate obligations and must integrate related plans to phase out and decommission relevant parts of the existing gas network.**

#### **5. Regulation to Protect Households from High Costs**

The challenge for Government will be to ensure sufficient investment to district heating rollout while also providing affordable heat for households. District heating is only considered cost-effective where the heat demand density is above the threshold needed to justify the large upfront investment needed.<sup>28</sup> One of the benefits of district heating is that the more households are attached to the heating grid, the cheaper heating costs will be for households. In order to keep district heating tariffs low for consumers, it will be essential for renewably-sourced district heating networks to be built at scale with access to sufficiently large population areas.

#### **Considerations for Ireland:**

It will be important therefore that consumer protection, affordability and price certainty are prioritised during the transition to district heating networks, to ensure fairness and to guarantee that vulnerable households are not negatively impacted. As of 2023, the CRU has been appointed regulator of district heating networks in Ireland, and are currently in the process of developing a regulatory framework for the sector.<sup>29</sup> Adequate regulation must be put in place by the state to protect consumers on district heating networks, particularly the ‘first-movers’, to ensure the costs of scaling up the network is not put onto households.

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<sup>26</sup> <https://www.rescoop.eu/uploads/Community-Energy-Guide.pdf>

<sup>27</sup> <https://www.climatecouncil.ie/councilpublications/annualreviewandreport/CCAC-AR-2023-FINAL%20Compressed%20web.pdf>

<sup>28</sup> [https://www.beuc.eu/sites/default/files/publications/beuc-x-2021-111\\_consumer\\_cost\\_of\\_heat\\_decarbonisation\\_report.pdf](https://www.beuc.eu/sites/default/files/publications/beuc-x-2021-111_consumer_cost_of_heat_decarbonisation_report.pdf)

<sup>29</sup> See <https://www.cru.ie/publications/27529/> and <https://www.cru.ie/regulations-policy/energy/district-heating/>

As district heat is region specific, it can often be the case that a single district heating supplier has a monopoly on supply, and contracts are made over long time periods.<sup>30</sup> The result is that customers can be at a higher risk of high costs, have little or no ability to switch suppliers, and could have less recourse to redress this if sufficient safeguards are not put in place.<sup>31</sup> The regulator cannot rely on competition to bring prices down for households, and must have a strong regulatory framework for consumer protection on district heating.

## 6. Relevant Resources

RAP(2023) Warming up to it: Principles for clean, efficient and smart district heating

<https://www.raonline.org/wp-content/uploads/2023/11/RAP-Oxenaar-District-heat-policy-principles-11.2023.pdf>

District Heating Steering Group Report (2023) <https://www.gov.ie/en/publication/3f132-district-heating-steering-group/>

BEUC (2022) The Consumer Costs of Decarbonised Heat

[https://www.beuc.eu/sites/default/files/publications/beuc-x-2021-111\\_consumer\\_cost\\_of\\_heat\\_decarbonisation\\_-\\_report.pdf](https://www.beuc.eu/sites/default/files/publications/beuc-x-2021-111_consumer_cost_of_heat_decarbonisation_-_report.pdf)

BEUC(2021) How To Make District Heating Fit For Consumers

[https://www.beuc.eu/sites/default/files/publications/beuc-x-2021-044\\_consumer\\_rights\\_district\\_heating.pdf](https://www.beuc.eu/sites/default/files/publications/beuc-x-2021-044_consumer_rights_district_heating.pdf)

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<sup>30</sup> [https://www.beuc.eu/sites/default/files/publications/beuc-x-2021-044\\_consumer\\_rights\\_district\\_heating.pdf](https://www.beuc.eu/sites/default/files/publications/beuc-x-2021-044_consumer_rights_district_heating.pdf)

<sup>31</sup> BEUC (2021) [The Consumer Costs of Decarbonisation](#)