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DHC MUSE

Case studies context analysis - Claremorris

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Project information

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Statement of originality

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About MUSE DHC

The MUSE DHC project (*coMmUnity-led actionS for Efficient District Heating & Cooling*), funded by the LIFE programme, aims to accelerate the decarbonisation of Europe's heating and cooling (H&C) sector — which accounts for over 50% of energy consumption and greenhouse gas emissions.

With a strong community-led approach, the project will support the development of nine new efficient district heating and cooling (DHC) networks across five countries (Spain, France, Ireland, Italy, and the Netherlands), leveraging local renewable energy sources and waste heat. These networks will bring social, economic, and environmental benefits, such as lower energy costs, improved air quality, and greater citizen empowerment. Citizens will be actively involved through Living Labs, energy communities, and innovative governance and financing models
like cooperatives and crowdfunding.

MUSE DHC impact will be enhanced by also supporting nine follower case studies and by an intense dissemination activity.

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1. The local territorial context

Claremorris, located in the heart of south County Mayo, is a town that exemplifies the balance between tradition and modern development in rural Ireland. With a population of 3,857 recorded in the 2022 census, Claremorris is one of the larger towns in Mayo and serves as a vital service and commercial hub for its surrounding hinterland. The town has experienced notable growth in recent decades, particularly during the early 2000s, when it was the fastest growing town in the county. This expansion reflects both inward migration from rural areas and the attraction of younger families drawn by its transport links, services, and community amenities.

Demographically, Claremorris presents a relatively balanced age profile. The age dependency ratio, which measures the proportion of children and older people relative to working age adults, is close to the national average. This suggests a healthy mix of young families, working age residents, and older inhabitants, contributing to a stable social structure. The town's density, at over 200 persons per square kilometre, is significantly higher than the national average, highlighting its role as a concentrated urban settlement within a largely rural county.

Claremorris shares the temperate oceanic climate typical of the west of Ireland. Winters are mild, summers are cool, and rainfall is frequent, supporting the lush green landscapes that define Mayo. This climate has historically underpinned the town's agricultural base, with fertile soils and reliable rainfall sustaining farming activities. Agriculture remains central to the local economy, but Claremorris has diversified significantly in recent years. Retail, hospitality, education, and light industry now complement its traditional role as a market town. The town also hosts cultural and agricultural events, such as the Claremorris Agricultural Show, reinforcing its identity as both a commercial and community hub. Geographically, Claremorris occupies a strategic position. It lies at the junction of the N17 and N60 national routes, making it a key transport hub in the region. The town is also served by rail, with direct connections to Dublin and Westport, enhancing its accessibility and economic potential. At an elevation of 69 metres above sea level, Claremorris sits within a relatively flat and fertile landscape, surrounded by farmland that supports its agricultural economy. Urbanistically, the town has a compact core, with Dalton Street acting as a central axis, around which residential estates and commercial areas have developed. This compact form allows for efficient service provision and creates opportunities for sustainable urban planning.

Economically, Claremorris functions as a service center for a population far larger than its own. It provides retail, education, and healthcare facilities to surrounding villages and rural communities, while also offering employment opportunities in local businesses and industries. Many residents commute to

larger centers such as Castlebar or Galway, facilitated by strong transport links, but the town itself retains a vibrant economic base. Its combination of agricultural heritage and modern diversification positions Claremorris as a resilient and adaptable community.

District heating in Claremorris represents a transformative opportunity to deliver clean, affordable energy, reduce emissions, and position the town as a leader in sustainable innovation. With strong local authority leadership, community involvement, and alignment with national policy, Claremorris stands at a pivotal moment in Ireland's energy transition with the development of 2 5MW solar projects in the town while progressing its district heating opportunity.

The strategic context for district heating in Claremorris is shaped by national and local policy. At the national level, the Heat (Networks and Miscellaneous Provisions) Bill 2024 provides Ireland's first dedicated legislative framework for district heating, ensuring consumer protections, licensing standards, and regulatory oversight. This legislation signals the government's recognition of district heating as a cornerstone of climate policy. Locally, Mayo County Council's Climate Action Plan emphasizes renewable energy integration and community based solutions, creating a supportive environment for a pilot project in Claremorris. Together, these frameworks align the town's ambitions with Ireland's broader decarbonisation agenda.

The objectives of a district heating scheme in Claremorris are multifaceted. At its core, the project seeks to provide low carbon, affordable heat to households, businesses, and public buildings, thereby reducing greenhouse gas emissions and enhancing energy security. Beyond environmental benefits, district heating can stimulate economic development by attracting investment, creating local jobs, and strengthening Claremorris's reputation as a forward thinking town. By positioning itself as a pilot location, Claremorris can demonstrate the viability of district heating in rural Ireland, paving the way for replication in other towns.

2. The reference policy and strategic context

The transition to low carbon energy systems has become one of the defining challenges of Ireland's climate policy. Among the various pathways to decarbonisation, district heating has emerged as a particularly promising solution. By aggregating demand and connecting consumers to low carbon and waste heat sources, district heating offers both environmental and economic benefits. Recent policy developments, including the Heat (Networks and Miscellaneous Provisions) Bill 2024, have placed district heating firmly on

the national agenda, signalling a shift from pilot projects to systemic implementation.

At the heart of Ireland's policy framework is the Heat Bill 2024, which provides the first stand alone legislative basis for a national district heating industry. The Bill proposes a regulatory model designed to protect consumers, ensure fair pricing, and establish licensing and oversight mechanisms. This legislation reflects the government's recognition that district heating is not merely a technical option but a strategic necessity for meeting climate targets and reducing reliance on fossil fuels. Complementing this, the Sustainable Energy Authority of Ireland (SEAI) has established a District Heating Centre of Excellence, tasked with supporting local authorities, developers, and communities in planning and delivering networks. Together, these measures provide the institutional backbone for a sector that has long lacked clear governance.

Strategically, district heating aligns with Ireland's broader decarbonisation goals. Heating accounts for a significant share of national energy use and emissions, and electrification alone cannot address the scale of demand in dense urban areas. District heating offers efficiency gains by pooling demand and integrating diverse sources such as waste to energy plants, data centers, wastewater treatment facilities, geothermal resources, and large scale heat pumps. Moreover, by reducing pollution and avoiding lock in to expensive gas and oil boilers, district heating contributes to both climate resilience and consumer affordability. Comparative analyses by the Irish District Energy Association (IrDEA) suggest that district heating can be the most economical low carbon heat option for a majority of the population when implemented at scale.

Governance and regulation are central to successful implementation. The Heat Bill lays the groundwork for consumer protections, licensing, and standards, but local heat planning will be equally critical. Identifying heat dense zones, securing anchor loads such as hospitals and public buildings, and mapping potential sources are essential steps in building viable networks. Policy advocates have emphasized the importance of statutory local heat planning to ensure coordination with urban development and public procurement. Ownership models also matter municipal, utility, and cooperative approaches each offer different pathways to empower communities, retain local value, and ensure professional operation.

Market development requires careful attention to finance and risk. Early projects face challenges of cost overruns and uncertain demand, which can be mitigated through robust feasibility studies, conservative forecasts, and public sector participation. Access to low cost capital, standardized contracts, and clear rights of way are necessary to de risk investment. Public buildings and social housing can serve as anchor loads, stabilizing demand and improving bankability. Roadmaps developed by sector stakeholders outline

steps to achieve 2030 targets, including setting clear national goals, streamlining permitting, and integrating district heating into building regulations and retrofit programs.
Implementation strategies must balance ambition with pragmatism. Networks should be phased, beginning with core clusters and anchor loads, and designed for modular expansion. Transparent tariffs, metering, and service standards must be established from the outset to build consumer trust. Above all, networks must prioritize low carbon sources from the start, avoiding transitional fossil fuel assets that risk undermining long term goals. Community engagement is equally vital, ensuring that consumers understand the benefits, protections, and opportunities for participation in ownership or governance.

3. The national and regional context

Ireland's energy and climate policy has evolved rapidly in recent years, driven by European Union directives, national legislation, and the urgent need to decarbonise the economy. The country faces challenges in reducing emissions from heat, transport, and agriculture, but has begun to establish a comprehensive framework that integrates mitigation, adaptation, and energy efficiency. District heating, though still in its infancy in Ireland, is increasingly recognised as a strategic tool within this broader policy landscape.
At the European level, Ireland is bound by several directives that shape its national energy and climate policies. The Energy Efficiency Directive (EED) requires member states to achieve significant energy savings, implement efficiency obligations on suppliers, and lead by example in the public sector. Ireland has transposed these obligations through measures such as supplier efficiency schemes, building renovation strategies, and mandatory energy audits for large enterprises. The Renewable Energy Directive (RED III) sets binding targets for renewable energy deployment, which Ireland is addressing through rapid expansion of onshore and offshore wind, solar, and renewable heat technologies. The Energy Performance of Buildings Directive (EPBD) has influenced Ireland's building regulations, mandating higher efficiency standards and supporting renovation programmes that prepare buildings for integration into low-carbon heating systems. Together, these directives form the backbone of Ireland's compliance with EU climate law, alongside the EU Emissions Trading System (ETS), the Effort Sharing Regulation (ESR), and the LULUCF Regulation, which set sectoral ceilings and carbon accounting rules.
Nationally, the cornerstone of Ireland's climate and energy planning is the National Energy and Climate Plan (NECP), which outlines the pathway to 2030. The NECP integrates EU obligations with domestic targets, committing Ireland to accelerated emissions reductions across electricity, buildings, transport, and agriculture. It emphasises system flexibility, rapid deployment of

renewables, and the decarbonisation of heat through electrification, efficiency, and district heating. The plan also highlights adaptation, recognising the impacts of climate change on infrastructure, communities, and ecosystems, and embedding resilience measures into national policy. The NECP is complemented by the Climate Action Plan, which sets sectoral emissions ceilings and identifies specific measures for each sector, including energy efficiency retrofits, renewable heat deployment, and electrification of transport.

Ireland's Climate Change Mitigation and Adaptation Strategy provide the overarching framework for long-term climate governance. It integrates mitigation measures—such as emissions reductions, renewable energy expansion, and efficiency improvements—with adaptation actions to build resilience against climate impacts. Local authorities are required to prepare Climate Action Plans, ensuring that national targets are translated into regional and community-level initiatives. This multi-level governance structure strengthens Ireland's ability to deliver on its EU and national commitments.

Within this framework, district heating has gained prominence as a key instrument for heat decarbonisation. The approval of the Heat (Networks and Miscellaneous Provisions) Bill 2024 marked a turning point, establishing Ireland's first stand-alone legislative framework for district heating. The Bill proposes a regulatory model with consumer protections, licensing standards, and the designation of the Sustainable Energy Authority of Ireland (SEAI) as the Heat Network Authority. By creating a clear governance structure, the legislation aims to unlock investment, de-risk projects, and accelerate the rollout of heat networks. District heating is explicitly framed as a means to reduce fossil fuel dependence, integrate renewable and waste heat sources, and deliver affordable, low-carbon energy to households and businesses.

At the regional and local level, district heating is being integrated into planning and development strategies. County Development Plans and Local Authority Climate Action Plans increasingly include heat mapping, zoning, and identification of anchor loads such as hospitals, schools, and public housing. These measures align procurement, urban regeneration, and retrofit programmes with district heating opportunities, ensuring that networks are planned strategically and supported by public-sector demand. Civil society organisations have also advocated for community ownership models, transparent tariffs, and consumer protections to ensure equitable outcomes and prevent fossil fuel lock-in.

4. The local context

Local energy strategies typically focus on several key sectors: buildings, transport, energy supply, and land use. In the building sector, priority actions include deep retrofits of public buildings, social housing, and commercial

premises, alongside stricter energy performance standards for new developments. These measures reduce demand and prepare the building stock for integration into low-carbon heating systems. In transport, electrification and modal shift are promoted to reduce fossil fuel dependence, while energy supply strategies emphasize renewable generation and the capture of waste heat. Land-use policies encourage compact urban development, which creates the density needed for efficient district heating networks.

Specific targets are embedded in these plans to ensure accountability. Local authorities commit to retrofitting a significant proportion of their public building stock, reducing emissions in line with national ceilings, and piloting renewable energy projects. Many councils have begun heat mapping exercises to identify zones of high demand and potential anchor loads such as hospitals, schools, and leisure centres. These zones are earmarked for district heating development, with renewable and waste heat sources—such as large heat pumps, biomass, solar thermal, and wastewater recovery—identified as priority inputs. By aligning these local actions with national targets under the National Energy and Climate Plan (NECP), councils contribute directly to Ireland's obligations under the Energy Efficiency Directive (EED) and the Renewable Energy Directive (RED).

The level of implementation varies across the country. Some local authorities are at the stage of feasibility studies and stakeholder engagement, while others have advanced to pilot projects. Dublin, for example, has already established district heating networks linked to waste-to-energy plants, while other towns are exploring smaller-scale schemes. The designation of Decarbonisation Zones within each local authority area has accelerated planning, requiring councils to identify specific geographic areas where emissions reductions will be concentrated. These zones often serve as testing grounds for district heating, renewable integration, and community-based energy initiatives.

A notable feature of local energy strategies in Ireland is the emphasis on participative and cooperative approaches. Public consultation, stakeholder workshops, and community energy co-operatives are increasingly used to design and deliver projects. This participatory model ensures that citizens are not only consumers but also stakeholders in the energy transition. Cooperative ownership structures for district heating networks are being explored, allowing communities to retain value locally and build trust in new systems. Transparent tariffs, metering, and consumer protections are also highlighted as essential tools to secure public acceptance and equitable outcomes.

Energy transition and carbon neutrality are now central to Ireland's urban and territorial planning. They define the regulatory environment, shape spatial development, and ensure that cities and regions contribute meaningfully to national and European climate commitments. By embedding these objectives into plans and regulations, Ireland's local authorities are becoming key

engines of the broader energy transition, ensuring that sustainable growth and climate resilience are achieved together.

5. The territorial energy context

Claremorris currently lacks large-scale renewable heat infrastructure. Electricity supply is dominated by the national grid, which is increasingly decarbonised through wind and solar, but direct renewable heat penetration remains low. Biomass use is limited to small-scale applications, and while individual heat pumps are being installed in newer homes, uptake is constrained by upfront costs and retrofit requirements.

5.1 The local energy demand

The energy profile of Claremorris, a growing town in south County Mayo, reflects both the structural characteristics of rural Ireland and the broader national trends in energy use. Final energy consumption in the town can be divided into three main sectors: residential and commercial buildings, transport, and public and industrial facilities. Each sector has distinct patterns of demand and fuel use, but together they reveal a common reliance on fossil fuels and a pressing need for efficiency and renewable integration. Heating and transport dominate the local energy landscape, accounting for the majority of consumption and presenting the greatest challenges for decarbonisation.

Residential and commercial buildings represent approximately 40 to 45 percent of final energy demand in Claremorris. Within this sector, heating and hot water are the primary drivers of consumption, reflecting the town's temperate but damp climate, which requires consistent space heating throughout much of the year. The housing stock is mixed: older dwellings often rely on oil-fired boilers or solid fuels such as coal and peat, while newer estates incorporate more efficient systems, including electric heating and, in some cases, heat pumps. Commercial premises—shops, offices, and hospitality venues—also depend heavily on oil and electricity, with limited renewable penetration. Electricity demand in this sector covers lighting, appliances, and ICT, but heating remains the dominant load. The prevalence of older, less efficient buildings amplifies demand, making retrofitting and renewable integration critical priorities.

Public and industrial facilities contribute approximately 15 to 20 percent of final energy demand. Schools, leisure centres, council offices, and healthcare facilities are major consumers, primarily through heating and electricity. Most of these buildings rely on oil or gas boilers, with electricity used for lighting, ICT, and smaller loads. Industrial activity in Claremorris is relatively modest, consisting of small manufacturing and agri-processing operations, but these facilities also depend on fossil fuels for heat and power. Opportunities exist to

capture waste heat from industrial and municipal processes, such as wastewater treatment, but these remain untapped. Public buildings, however, present a strong opportunity for anchor loads in future district heating schemes, offering stable demand and the potential to de-risk investment in renewable heat infrastructure.

Taken together, these proportions mirror national averages, where heating and transport account for the majority of energy use. In Claremorris, heating demand is particularly significant due to the climate and the prevalence of older, inefficient buildings. Transport demand is shaped by rural settlement patterns and limited alternatives to private car use. Public and industrial facilities, though smaller in scale, add to the overall reliance on fossil fuels and highlight the need for integrated solutions. Renewable energy penetration in the town remains low, with electricity from the national grid increasingly decarbonised but direct renewable heat sources covering only a small fraction of demand. District heating is absent, leaving households and businesses dependent on individual systems.

5.2 The local energy supply

The local energy is supplemented by solid fuel stoves in older homes. Renewable heat sources—such as domestic heat pumps and small biomass boilers—are present but limited. SEAI data suggests that nationally, renewable heat accounts for only about 7% of total heat demand, and in towns like Claremorris the share is likely lower, closer to 3–5%. There are no district heating networks in the town, meaning that heat is produced and consumed at the building level without economies of scale or integration of renewable or waste heat sources.

Cooling production is negligible. Ireland's temperate climate means that cooling demand is minimal, confined to specific commercial applications such as ICT facilities or retail refrigeration. No dedicated cooling plants exist in Claremorris, and cooling loads are met through electricity from the grid.

Age and type of installations reflect the town's reliance on conventional systems. Most oil boilers in homes and public buildings are more than 15–20 years old, with efficiency levels well below modern standards. Newer housing estates incorporate more efficient systems, including some heat pumps, but these remain exceptions. Solar PV installations are relatively recent, installed within the past decade, and biomass use is limited to small, privately owned boilers.

However, as the community organisation is presently developing over 10MW of solar generation within Claremorris which can supply excess energy to a heat pump source, this has positioned the proposed district heating project as a very realistic and viable option for the town.

6. Mapping and activation of stakeholders

Preparing the ground for the implementation of a district heating project in Claremorris has engaged in a comprehensive stakeholder engagement process. Engagements included:

- Local Government and Authorities: Mayo County Council is the primary authority responsible for planning, climate action, and infrastructure development. Its Climate Action Plan and designation of Decarbonisation Zones provide the regulatory framework for district heating. The Council's planning and housing departments are critical for identifying anchor loads such as social housing estates, while its climate and energy officers can champion the project. Engagement with elected councillors ensures political support and alignment with community priorities.
- Public Institutions and Anchor Loads: Schools, Claremorris leisure centres, Primary health facilities, Church and council offices represent stable heat demand and can serve as anchor loads for the network. The Health Service Executive (HSE) facilities in Claremorris, along with educational institutions, are essential partners. Early consultation with these institutions can secure long-term contracts, reduce demand risk, and demonstrate public-sector leadership in decarbonisation.
- Community and Civil Society: Local residents, community groups, and energy co-operatives are central to building trust and acceptance. Claremorris Chamber of Commerce, local development associations, and environmental NGOs can facilitate dialogue and ensure that the project reflects community values. Cooperative ownership models, where residents have a stake in the network, can strengthen buy-in and keep value local. Public workshops and consultations should be organised to explain benefits, tariffs, and consumer protections.
- Private Sector and Businesses: Local businesses, particularly those in retail, hospitality, and light industry, contribute to heat demand and can benefit from stable, affordable energy. Industrial facilities and agri-processing plants may also provide waste heat, making them potential suppliers as well as consumers.
- Technical and Energy Agencies: The Sustainable Energy Authority of Ireland (SEAI) plays a national role in supporting district heating through technical guidance, funding, and regulation. At the local level, energy service companies (ESCOs) and engineering firms can provide expertise in design, construction, and operation.
- Regional and National Stakeholders: Beyond Claremorris, regional actors such as the Western Development Commission and national departments (Environment, Climate and Communications) provide

funding, policy alignment, and strategic oversight. Their involvement ensures that the project contributes to Ireland's National Energy and Climate Plan (NECP) and aligns with EU directives on energy efficiency and renewable heat.

The engagement process has been generally positive with stakeholders, identifying roles, interests, and potential contributions. Transparent communication about tariffs, consumer protections, and renewable integration is essential to build trust. The management through a local community Co-Opreative can oversee the project and ensure accountability accordingly.

7. English Summary

Claremorris, a growing town in south County Mayo with nearly 4,000 residents, has developed into a key service and commercial hub while retaining its agricultural roots. Its compact urban form, strategic transport links, and balanced demographics make it well-placed for sustainable energy initiatives. The town currently relies heavily on fossil fuels, especially oil for heating, with limited renewable penetration and no district heating infrastructure. Cooling demand is negligible due to Ireland's climate, and most heating systems are old and inefficient.

At the national level, Ireland's energy and climate policy is shaped by EU directives such as the Energy Efficiency Directive (EED), Renewable Energy Directive (RED III), and Energy Performance of Buildings Directive (EPBD). These require energy savings, renewable integration, and higher building standards. Ireland's National Energy and Climate Plan (NECP) and Climate Action Plan set targets for emissions reductions, renewable deployment, and heat decarbonisation. The Heat (Networks and Miscellaneous Provisions) Bill 2024 provides the first dedicated legislative framework for district heating, establishing consumer protections, licensing, and oversight. SEAI has created a District Heating Centre of Excellence to support local authorities.

At the regional and local level, Mayo County Council's Climate Action Plan and Decarbonisation Zones encourage renewable energy integration, retrofits, and compact urban development. Councils are beginning heat mapping to identify anchor loads such as schools, hospitals, and leisure centres. These zones are earmarked for district heating, with renewable and waste heat sources (biomass, solar thermal, large heat pumps, wastewater recovery) highlighted as priorities. Implementation varies: Dublin has operational networks, while smaller towns like Claremorris are at feasibility stage.

The energy demand profile of Claremorris shows that residential and commercial buildings account for 40–45% of consumption, transport 35–40%, and public/industrial facilities 15–20%. Heating and transport dominate, mirroring national averages. Renewable heat penetration is estimated at only

3–5%, below the national average of 7%. Waste heat potential exists in wastewater treatment and agri-processing but is not yet harnessed.
Stakeholder engagement is central to implementation. Key actors include Mayo County Council, public institutions (schools, health facilities, leisure centres), community groups, local businesses, technical agencies (SEAI, ESCOs), and regional/national bodies such as the Western Development Commission. Cooperative ownership models and transparent tariffs are emphasised to build trust and ensure equitable outcomes. A local community co-operative could oversee the project, ensuring accountability and participation.
Claremorris is well-positioned to pilot district heating in rural Ireland. National legislation, EU directives, and local climate action plans provide the framework, while the town's compact form, public-sector anchor loads, and untapped waste heat offer practical opportunities. The main challenges are fossil fuel dependence, low renewable penetration, and ageing infrastructure. With strong stakeholder engagement and phased implementation, Claremorris could become a flagship example of sustainable energy transition and carbon neutrality at the local level.

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