THE UNIVERSITY of EDINBURGH

# District Heating in the UK Policy Challenges and Solutions

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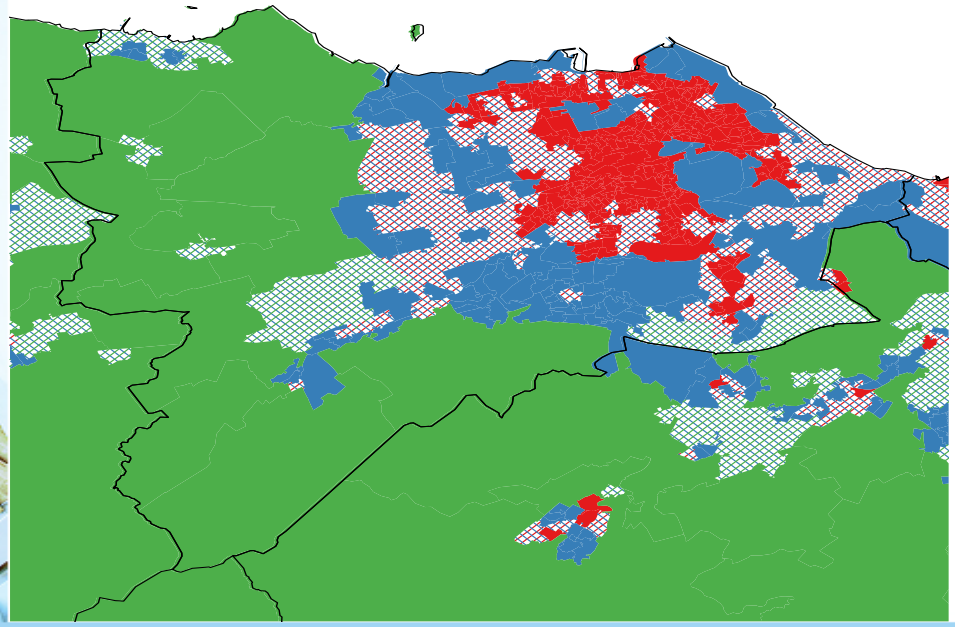
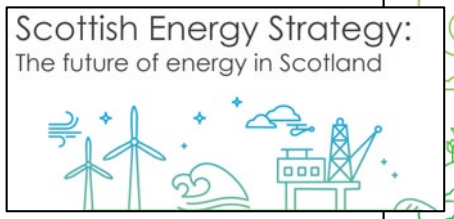
# District Heating - ‘low-regrets’ clean heat

**Source agnostic**

**Needs heat density and diversity**



Appropriately sited, low carbon heat networks are one of the 'low regrets' heat decarbonisation solutions that can support Scotland to meet our ambitious carbon reduction targets.
Energy Efficient Scotland Consultation 2019





# Three investment difficulties

Uncertain heat loads and future policy

makes it financially risky to develop future-proofed systems

for scale economies – leads to ‘cherry picking’

Lack of technical and customer protection standards – reputational damage

scottishcitiesalliance

Aberdeen • Dundee • Edinburgh • Glasgow • Inverness • Perth • Stirling

smart cities scotland

Limited local government powers and resources for heat and energy efficiency planning - particularly retrofit

Piecemeal action misses opportunities to steer network connections and expansion

# Making heat and energy efficiency planning work *for* DH - Zone Density and Cluster Density Models

## Zone density

- Maximise financial returns by only adding a zone if *that zone* beats a viability threshold
- Mimics current 'prime sites' development, although sites are usually determined by organisational, not data zone, boundaries

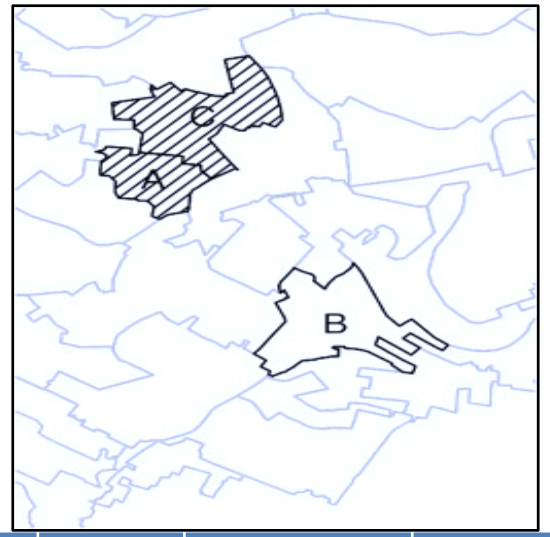
## Cluster density

- Aims to maximise heat demand connected to network, while ensuring aggregate within cluster beats a viability threshold
- Anchors DH first by supplying large heat loads
- Builds out to smaller heat users nearby

## Securing pay back

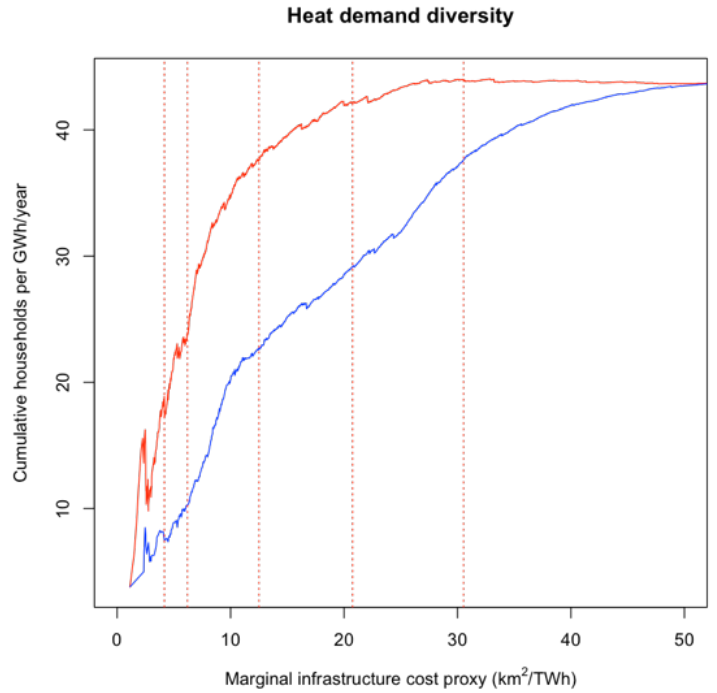
- Both require some form of obligation to connect

# Cluster model connects around 50% more heat demand at a given cost threshold




| Zone | Area | Demand | Area/Demand |
|---|---|---|---|
| A | 5.6 | 6.2 | 0.9 |
| B | 12.1 | 6.0 | 2.0 |
| C | 11.4 | 4.1 | 2.8 |
| A+C | 17.0 | 10.3 | 1.7 |

Clustering for Affordable Heat




Cluster model has higher load diversity, reducing average costs

**Read detail**: *'What might district heating zones look like?'* D Hawkey, 2017 www.heatandthecity.org.uk

# How countries with similar liberalised markets to the UK support DH

## Norway

- **Efficiency standards for energy from waste**
- **Local directive planning**
- **Regional municipal utilities**
- **Licensing**
  - Including right to apply for mandated connections of new developments
  - Certified tech-economic, social and environmental standards
- **Consumer protections**
  - Including collective switching

## Netherlands

- **Cooperation between local government and industry**
  - Underpinned by legislation
- **Local government finance**
- **Regional municipal utilities**
- **Concession areas**
- **Consumer protections**
  - Including transparent accounting standards for fair pricing

# UK District Heating as Low Regrets Clean Heat

| | |
|---|---|
| **Current policies** | • Lack measures to de-risk investment for economies of scale and carbon saving |
| **Solve by cluster-density planning** | • Connecting 50% more heat demand than zone-density model<br>• Cost efficiencies |
| **Solve by licensing and regulation** | • As in Netherlands and Norway<br>• Obligation to connect<br>• Technical standards and customer protections |
| **Benefiting** | • Low income households<br>• Older buildings hard to retrofit to high thermal standards<br>• Carbon and cost savings |
| **Checklist and resource guide** | • www.heatandthecity.org.uk Meeting Strategic Challenges of DH |