District Heating in the UK
Policy Challenges and Solutions

Janette Webb

Jan.Webb@ed.ac.uk

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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

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

<table>
<thead>
<tr>
<th>Zone</th>
<th>Area</th>
<th>Demand</th>
<th>Area/Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>5.6</td>
<td>6.2</td>
<td>0.9</td>
</tr>
<tr>
<td>B</td>
<td>12.1</td>
<td>6.0</td>
<td>2.0</td>
</tr>
<tr>
<td>C</td>
<td>11.4</td>
<td>4.1</td>
<td>2.8</td>
</tr>
<tr>
<td>A+C</td>
<td>17.0</td>
<td>10.3</td>
<td>1.7</td>
</tr>
</tbody>
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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](http://www.heatandthecity.org.uk)
# How countries with similar liberalised markets to the UK support DH

<table>
<thead>
<tr>
<th>Norway</th>
<th>Netherlands</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Efficiency standards for energy from waste</td>
<td>• Cooperation between local government and industry</td>
</tr>
<tr>
<td>• Local directive planning</td>
<td>– Underpinned by legislation</td>
</tr>
<tr>
<td>• Regional municipal utilities</td>
<td>• Local government finance</td>
</tr>
<tr>
<td>• Licensing</td>
<td>• Regional municipal utilities</td>
</tr>
<tr>
<td>– Including right to apply for mandated connections of new developments</td>
<td>• Concession areas</td>
</tr>
<tr>
<td>– Certified tech-economic, social and environmental standards</td>
<td>• Consumer protections</td>
</tr>
<tr>
<td>• Consumer protections</td>
<td>– Including transparent accounting standards for fair pricing</td>
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<tr>
<td>– Including collective switching</td>
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</tbody>
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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
- Cost efficiencies

**Solve by licensing and regulation**
- As in Netherlands and Norway
- Obligation to connect
- Technical standards and customer protections

**Benefiting**
- Low income households
- Older buildings hard to retrofit to high thermal standards
- Carbon and cost savings

**Checklist and resource guide**
- [www.heatandthecity.org.uk](http://www.heatandthecity.org.uk) Meeting Strategic Challenges of DH