



A picture of heat networks

A new report from the Association for Decentralised Energy provides a comprehensive picture of the current heat network market, says *Hanae Chauvaud de Rochefort*

The opportunities for heat networks are greater than ever before. Government has identified heat networks as a key technology to decarbonise heat and has allocated £320m of funding out to 2021 to grow the heat networks market. This funding is expected to draw in up to £2bn of additional capital investment and lead to the construction of hundreds of heat networks in England and Wales. For many considering investing or installing heat networks, a clear picture of the current market would be beneficial. This information has not been readily available but a report released by the Association for Decentralised Energy last month provides the most comprehensive insights available to date.

Market Report: Heat Networks in the UK covers about 160,000 domestic and commercial customers on 810 different heat networks, representing a fifth of the overall number of customers connected to heat networks in the UK. The report also collates data already available into the one source of information.

Ten key facts emerge from the report:

1. Number of schemes and scale

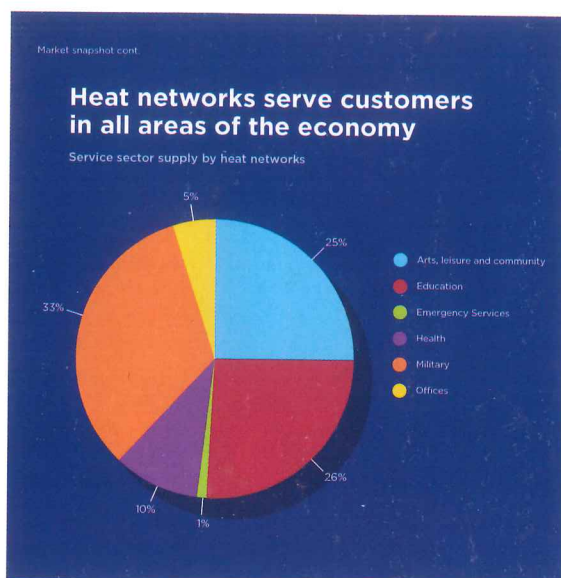
There are circa 17,000 heat networks in the UK, of which around 5,500 are district scale networks and about 11,500 are communal scale networks. This is up from the previous number of 2,000 schemes reported in 2013.

District scale networks can supply entire cities by connecting various heat loads in different locations and from different sources to the network (i.e. plant rooms, waste heat from data centres, recoverable heat from rivers and tube stations) and carrying heat up to each property.

2. Heat demand met by heat networks and sectors

Heat networks supply around 12,000GWh of heat annually, of which 6,500GWh is supplied to the domestic sector and 5,500GWh to non-domestic loads. This represents 2 per cent of the overall UK heat demand.

In the commercial and public sectors, the largest users of heat networks are military buildings, education buildings (universities



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and colleges), and art, leisure and community centres. The complete breakdown (on 5,500GWh) is as follows:

3. Electricity demand met by combined heat and power (CHP) on heat networks

CHP plants connected to district scale schemes supply around 5,800GWh of electricity used by local consumers and exported to the electricity grid. This represents 2 per cent of the total UK electricity demand.

4. Current energy mix and future trend

Heat networks infrastructure lifetime enables the take up of renewable and low carbon energy sources.

Diverse energy sources are used on heat networks. Gas remains the main source of heat, but increasingly other energy sources form part of the 'energy mix', such as large scale biomass and energy from waste. A comparison of the energy mix used by heat network operators in 2016 with the energy mix reported for future projects shows an increase in more efficient gas, biomass, heat pumps and energy from waste. While other technologies such as hydrogen and heat pumps have potential to contribute to the UK heat

decarbonisation, heat networks can be scaled up most quickly.

5. Customers connected and sectors

There are 491,898 customers connected to heat networks in the UK, of which a large majority comprises domestic customers (446,517 connections), to a lesser extent commercial and retail (37,943 connections), and the remaining 7,438 connections are found in universities, hospitals, public buildings and light industries.

6. Length of insulated pipework

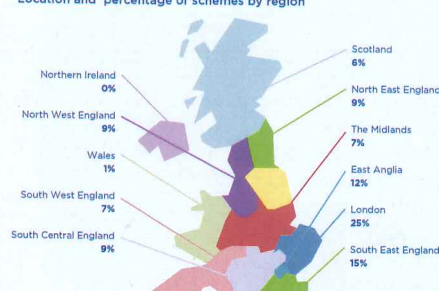
The total heat networks infrastructure represents approximately 1,800 kilometres of insulated pipework. By way of comparison, the GB gas infrastructure represents 282,000 kilometres of pipework.

7. Current use of thermal storage and potential

Heat networks allow large-scale storage systems to be used. Just over 7 per cent of operational schemes in the UK are known to use a thermal store currently, but this is expected to increase. If the UK meets 17 per cent of its overall heat demand with heat networks, as is modelled in the Government's 2017 Clean Growth Strategy, it could deliver 35GWh of annual energy storage.

Heat network operation drives economic activity all over the UK:

Location and percentage of schemes by region



Meeting government ambitions for clean growth by 2030 for heat networks could lead to up to **64,000 jobs** created every year for five years.

8. Location of schemes by regions of England, Scotland, Wales and Northern Ireland

Most current schemes are located in London, however heat networks operation drives economic activity all over the UK.

9. Gas imports savings

Heat networks can make the most of renewable and recoverable sources of energy that otherwise would be lost. The energy savings from the schemes in operation are significant: the ADE estimates that heat networks save approximately 3,065GWh of gas imports per year.

10. Carbon emissions savings

The UK needs to deploy as much heat networks as exists today every year and recover more wasted heat through the heat networks to meet the UK carbon targets. Today heat networks reduce carbon emissions in buildings by approximately 0.7m tonnes of CO₂ each year, which represent a significant contribution to the UK heat decarbonisation requirement. By way of comparison, the flow of carbon emissions reduction in buildings required each year between 2020 and 2030 to meet the CCS target under the central scenario is 1 mtCO₂.

• The ADE report is available at theade.co.uk.