

# PIPING HOT

The opportunity for heat networks in a new industrial strategy

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## 60-SECOND SUMMARY

The announcement of a new industrial strategy presents the country with an opportunity to radically overhaul its aging infrastructure in ways that support the UK economy in every region.

Concurrently, the UK faces the challenge of meeting climate change goals of 80 per cent reduction in CO<sub>2</sub> by 2050, recommitted to in the green paper for industrial strategy. To do this, the government will need to take a whole-system approach to decarbonisation that focuses on both electricity and heat, and considers how they are supplied to, and used, in every part of the country.

Yet, despite a new industrial strategy, clear policy goals for heat are largely absent from the government's green paper. Coherent low-carbon heat policy is challenging. Any strategy must consider *how much* capacity should come from heat generation and energy efficiency, *what* technologies are included, *where* they are optimally located and at *what time* of year.

The Committee on Climate Change (CCC) identifies three main policy areas required to stimulate the low-carbon heat sector: hydrogen, heat pumps and heat networks. Whilst all the technologies cited by the CCC will be critical to achieving the decarbonisation of the sector, heat networks are the technology that can be scaled up most quickly.

Within the context of meeting the industrial strategy's goals to overhaul energy infrastructure, this report will explore the opportunity for heat networks, the challenges facing their deployment, and policy options for their implementation. In particular, this report finds that investing in heat networks, delivered at a local level, can create up to 81,000 annual jobs and leverage up to £22 billion in private investment across the whole of the British economy.

## ABOUT HEAT NETWORKS IN THE UK

At their simplest, heat networks are insulated pipes that run underground from a heat generating plant, often at neighbourhood level, to any combination of residential, commercial or public buildings (for example, hospitals). As energy carriers, they can receive heat from any source of generation and this flexibility makes them a key 'no-regrets' option for decarbonising the heat sector. In addition, they are a technology that has application across the country.

Heat networks are a piece of the puzzle in the decarbonisation of the heat sector, which is itself part of a wider debate about how to prioritise energy efficiency in electricity and heat within the UK's National Infrastructure Commission (NIC 2016). Estimates suggest heat networks could serve around 10 per cent of total heat demand by 2030 (CCC 2016). These estimates assume the integration of other renewable heat technologies like heat pumps and hydrogen pumped through existing gas infrastructure. However, when combined with heat pumps in some areas, the total technical potential (that is, independent of economic factors) for heat networks in district

heating schemes could serve up to 57 per cent of total heat demand (Ricardo 2016).

At the same time, the announcement of a new industrial strategy presents the energy system with the opportunity of upgrading the aging infrastructures in ways that rebalance the economy.

Such requirements for large-scale investment into infrastructure are well-suited to the profile of heat networks. Indeed, they not only represent a new approach to energy infrastructure, they are also inherently local, with the potential to create new supply chains within regional economies. In this report, we find that deploying heat networks could create up to 81,000 annual jobs and generate up to £22 billion in private investment across the UK economy.

## REPORT STRUCTURE

In chapter 1, we start by outlining the underlying weaknesses in the UK economy, why it needs rebalancing and how heat networks fit within this. While this report focuses on heat networks, throughout 2017 IPPR will publish a number of

other reports that explore industrial strategy in more depth, and develop strategies for other aspects of the energy system, other sectors and regions.

In chapter 2 we provide more detail on what heat networks actually are, why they have historically been little-used in the UK, and their benefits in terms of energy security and decarbonisation.

In chapter 3 we examine the potential scale of investment and job creation that the heat network sector could generate. In order to realise this potential, in this chapter we also discuss the key barriers that must be overcome. We then discuss how central government can address these barriers by creating an enabling environment that helps to profile the size and location of heat demand nationally, provide finance and technical support and protect consumers.

Once these conducive conditions have been created, chapter 4 sets out why local authorities will be so important in delivering heat network projects. Furthermore, we discuss the steps they themselves will need to take in order to be equipped for the task.

## POLICY RECOMMENDATIONS

At the national level, this report recommends that the government should do the following.

- Expand the resources of the Heat Networks Delivery Unit (HNDU) so that it can map out suitable sites for heat networks (including areas suitable for waste heat) in greater detail and keep records of their performance
- Extend funding for the Heat Networks Investment Programme (HNIP) to 2030 in order to build a greater pipeline of projects and reassure investors of the government's long-term policy commitment – this is particularly important for assets like heat networks that can take a long-time to pay back initial investment. Concurrently the government should explore sector deals with technology companies and manufacturers to ensure the expanded investment goes towards a home-grown supply chain.
- Explore alternative financing options by:
  - evaluating a range of financing options (including grants, loans, equity, guarantees and bonds), and
  - providing technical support to investors through secondments of HNDU staff.

- Ensure customer protection by:
  - creating a framework for price control, similar to that currently in place and administered by Ofgem for electricity networks, and
  - creating the position of a dedicated energy ombudsman to resolve any complaints that customers cannot settle with their supplier.
- Further promote waste heat by:
  - including it within the RHI to incentivise industrial energy managers, and
  - ring-fencing funding within the HNDU to better record data.

At the local level, our overarching recommendation is for local authorities to become more active in the development of district heating projects. In particular, we make the following recommendations.

- Seek to continue the work of Manchester city council and create bespoke city-level procurement bodies that can negotiate with suppliers on behalf of different local authorities and help to standardise contractual arrangements.
- Reform local planning by:
  - undertaking heat zoning in conjunction with HNDU to understand the most suitable locations for heat networks and how this ties in with energy efficiency upgrades
  - taking a more active role in the construction and supply of district heating schemes by creating council-owned energy service companies.
- Identify gaps in the supply chain for delivering heat networks and ensure they are filled before going ahead with a project.
- Create broad local strategies that incorporate heat networks as well as other renewable heat and energy efficiency options, and share public data and best practice from these strategies and any previous studies with other councils.

To fully realise the opportunity for heat networks, both tiers of government need to act on these recommendations in tandem; some may overlap and coordination may be required. If this can be achieved, this sector could become an important part of a new low-carbon industrial strategy.

For the full report, including all references, data sources and notes on methodology, see: [www.ippr.org/publications/piping-hot](http://www.ippr.org/publications/piping-hot)

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