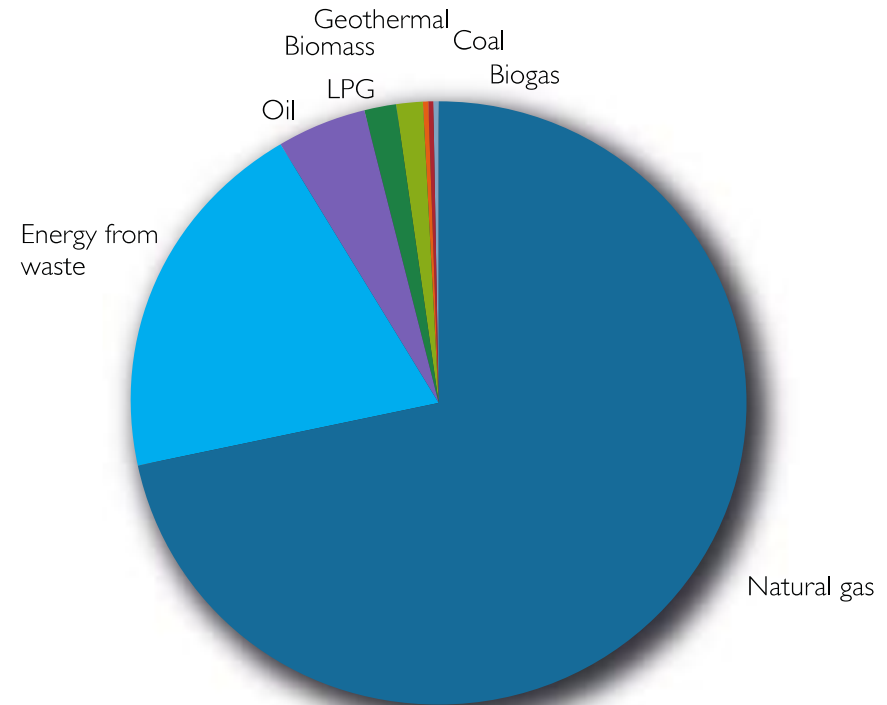


---

# Government Investment in Heat Networks

# Why heat networks in the UK?

- Lowest cost low carbon heat generally comes at scale – need a network to deliver the heat, particularly in urban areas
- Models show a range of deployment projections from 14 - 43% by 2050
- Committee on Climate Change (CCC) central scenario for the 5th carbon budget shows heat networks serving 18% of buildings heat demand in 2050 (81TWh), saving 15.1MtCO<sub>2</sub>e/year
- 5-8% compound growth rate is required even to meet the lower end of these trajectories (from 2% growth rates today).

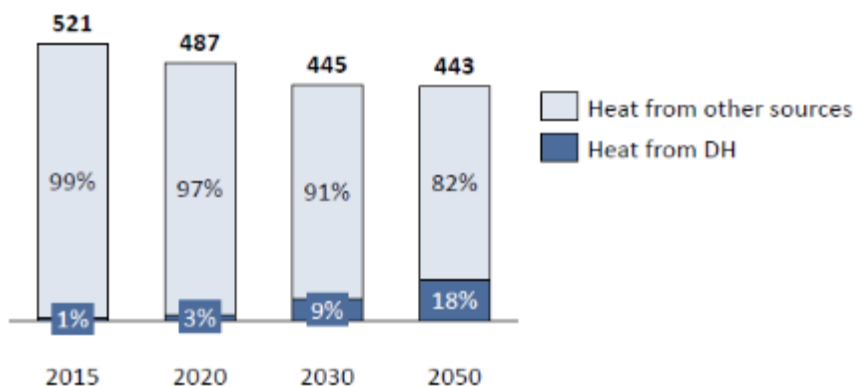


Today: approx 2000 larger heat networks in the UK, supplying 2% of buildings heat

# Element Energy modelling for CCC

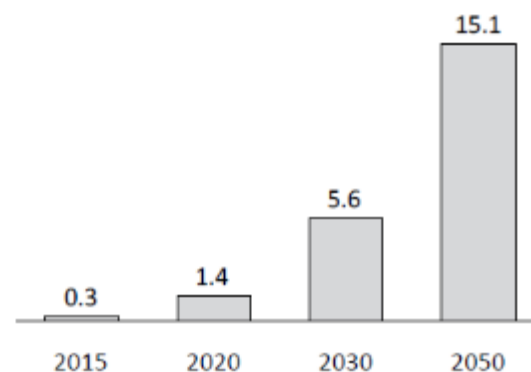
## District heating deployment in the Central scenario

Heat supply in the domestic and non-domestic sectors\* (TWh)



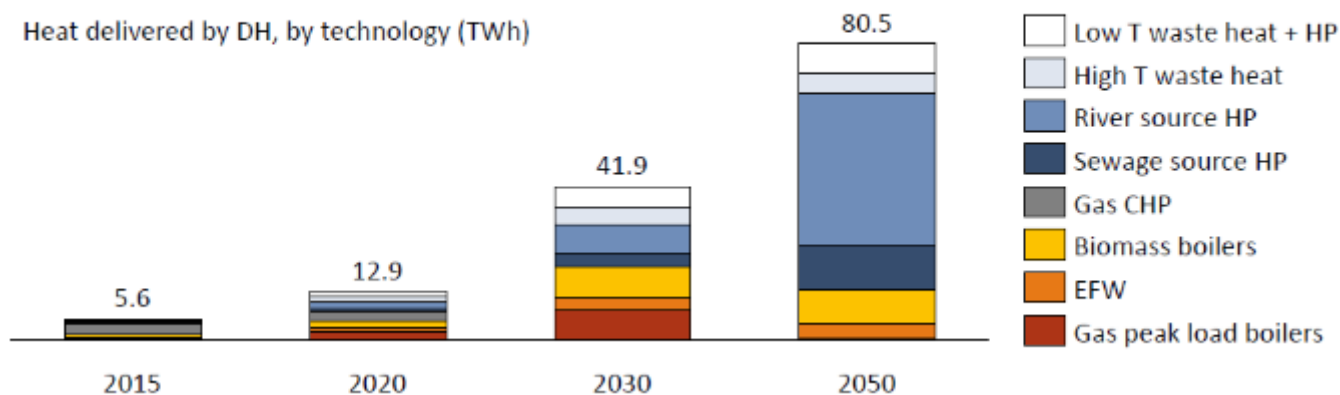
## Associated CO<sub>2</sub> abatement

CO<sub>2</sub> emissions abatement from DH (MtCO<sub>2</sub>)



## Technology mix in the Central scenario

Heat delivered by DH, by technology (TWh)



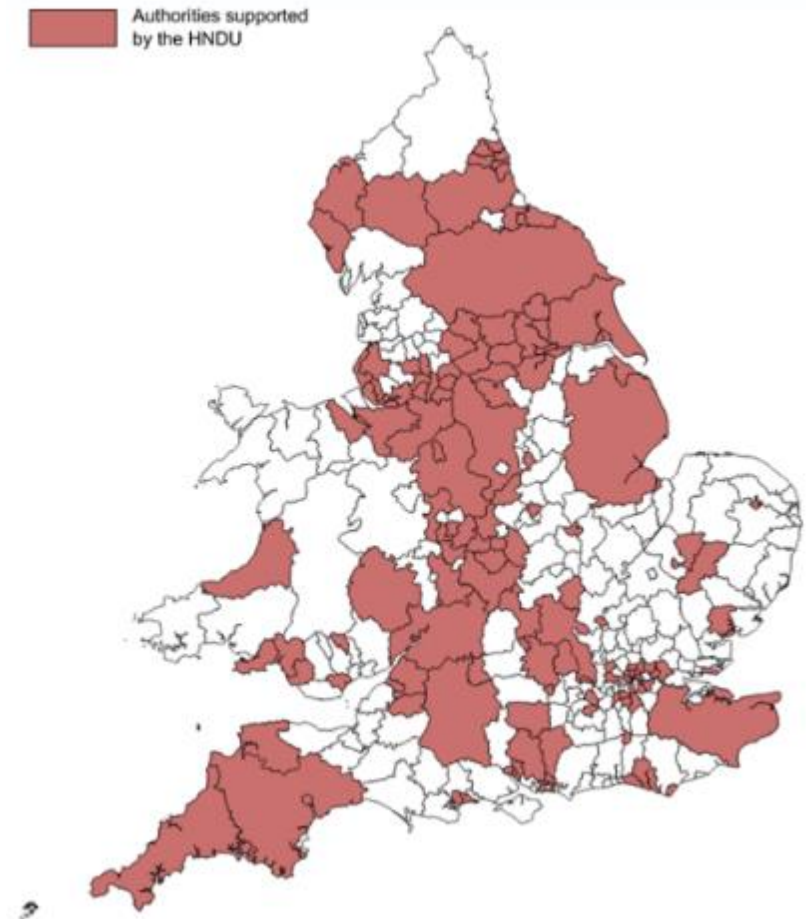
# Heat networks: story so far

- Industry led schemes: Heat Trust and technical Code of Practice
- Heat Metering & Billing Regulations
- £7m Heat Network Innovation Programme
- Heat Network Delivery Unit
- HNIP Pilot



# Heat networks delivery unit

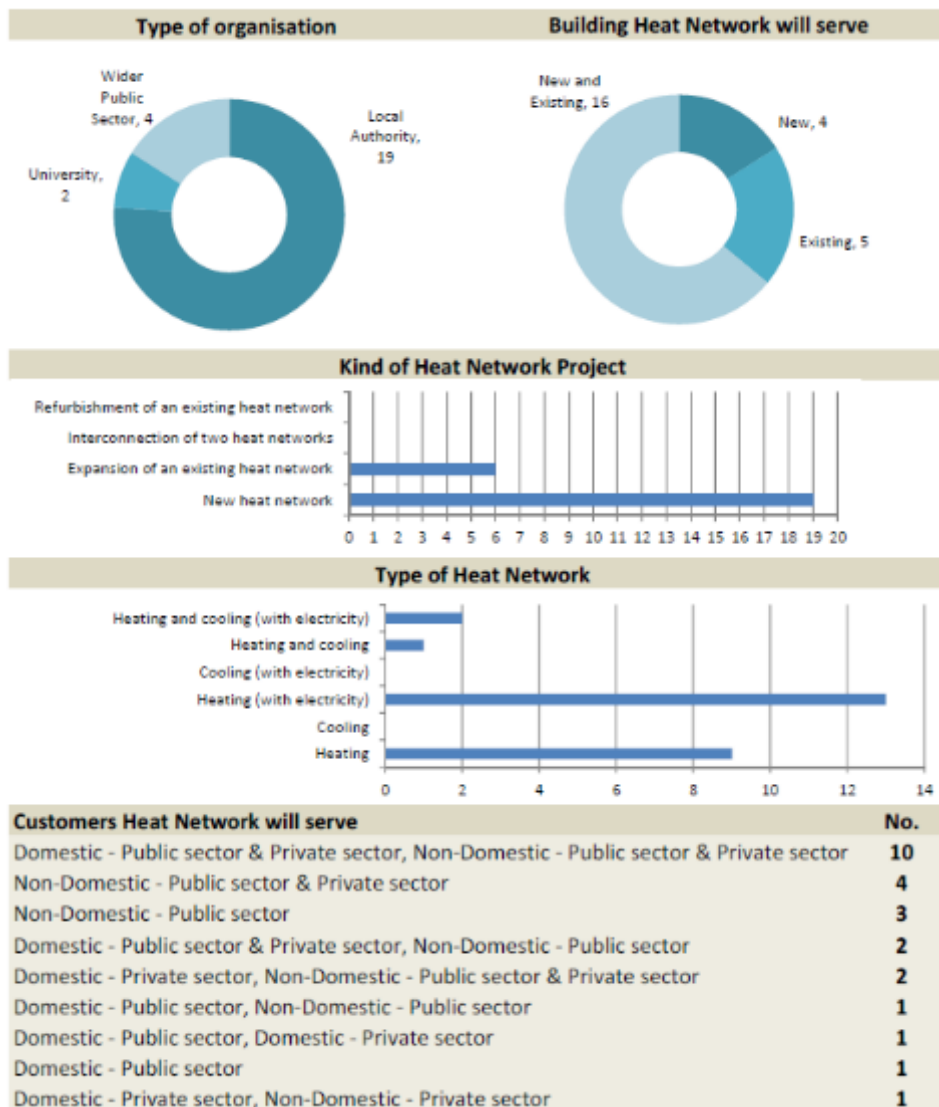
- > 140 local authorities and >200 projects supported
- > £14m funding
- Diverse range of projects in terms of scale, heat technology, building types
- A clear demonstration of the ambitions of local authorities across England and Wales to support the deployment of heat networks



# Heat Networks Investment Project aims

1. Increase the **volume** of heat networks built, by providing central Government funding which will draw in significant additional investment.
2. Deliver **carbon savings** for carbon budgets across the lifetime of the infrastructure asset
3. Impact the **type** of heat networks built so that they are technically and commercially **future-proofed** and operate with **no customer detriment** in comparison to the likely alternative heat supply.
4. Alongside investment in innovation and development of the appropriate legislative framework, help to create the conditions for a **self-sustaining heat network market** that does not require continued Government funding after this programme of investment support has ended.

# HNIP pilot bids summary



# HNIP successful projects

Recipient	Project Name	Amount Awarded	Technology	Project type
Sheffield City Council	Sheffield District Energy Network development	£5.73m (£2.23m grant & £3.5m loan)	EFW & Biomass power plant	Expansion and interconnection of two heat networks
Camden Council	Somers Town Energy (Phase 2)	£1.05m grant	Gas CHP	Expansion of an existing heat network
Manchester City Council	Manchester Civic Quarter Heat Network	£2.87m grant	Gas CHP	New heat network
Colchester Borough Council	Colchester Northern Gateway	£3.51m grant	Heat Pump	New heat network
London Borough of Waltham Forest	Wood Street South	£1m grant	Gas CHP	New heat network
London Borough of Barking & Dagenham	Becontree	£1.08m grant	Gas Boiler	New heat network
Westminster City Council	Church Street District Heating Scheme	£2.56m grant	Gas CHP	New heat network
Crawley Borough Council	Crawley Town Centre Heat Network	£1.4m grant	Biomass & Gas CHP	New heat network
Manchester City Council	St Johns heat network	£5m loan	Gas CHP	New heat network
<b>Total</b>		<b>£24.21m</b>		



# HNIP eligible heat networks & costs

- Connecting two or more buildings
  - No technical or contractual impediment to future expansion / interconnection
  - >50% renewable energy, 50% recovered heat, 75% CHP or 50% combination
  - Reduction in primary energy compared to counterfactual
  - Heat Networks (Metering and Billing) Regulations 2014
  - CHPQA
- 

- Commercialisation – as part of commercialisation + construction
- Energy centre and primary network
- Extra costs for secondary distribution system upgrades; only in existing anchor load buildings
- Extra costs for tertiary heating and hot water system upgrades where wet systems are being installed for the first time; only in existing domestic anchor load buildings where all properties are wholly publicly owned

# HNIP funding gap and scoring

- **Funding gap** is the HNIP capital contribution required to take the IRR without HNIP funding up to the hurdle rate of the equity investors. (Evidence two financial scenarios with and without HNIP funding and evidence other funding unavailable)
- **Carbon** – short term carbon savings over i) lifetime of first heat source and ii) across the lifetime of the infrastructure asset
- **Consumers** – heat bill savings and improvement in consumer protection above Heat Trust or equivalent standard
- **Social benefits** – national (social NPV) benefits over i) lifetime of first heat source and ii) lifetime of the infrastructure asset
- **Deliverability** – not scored but high confidence of deliverability to stated timetable is required before projects will be funded

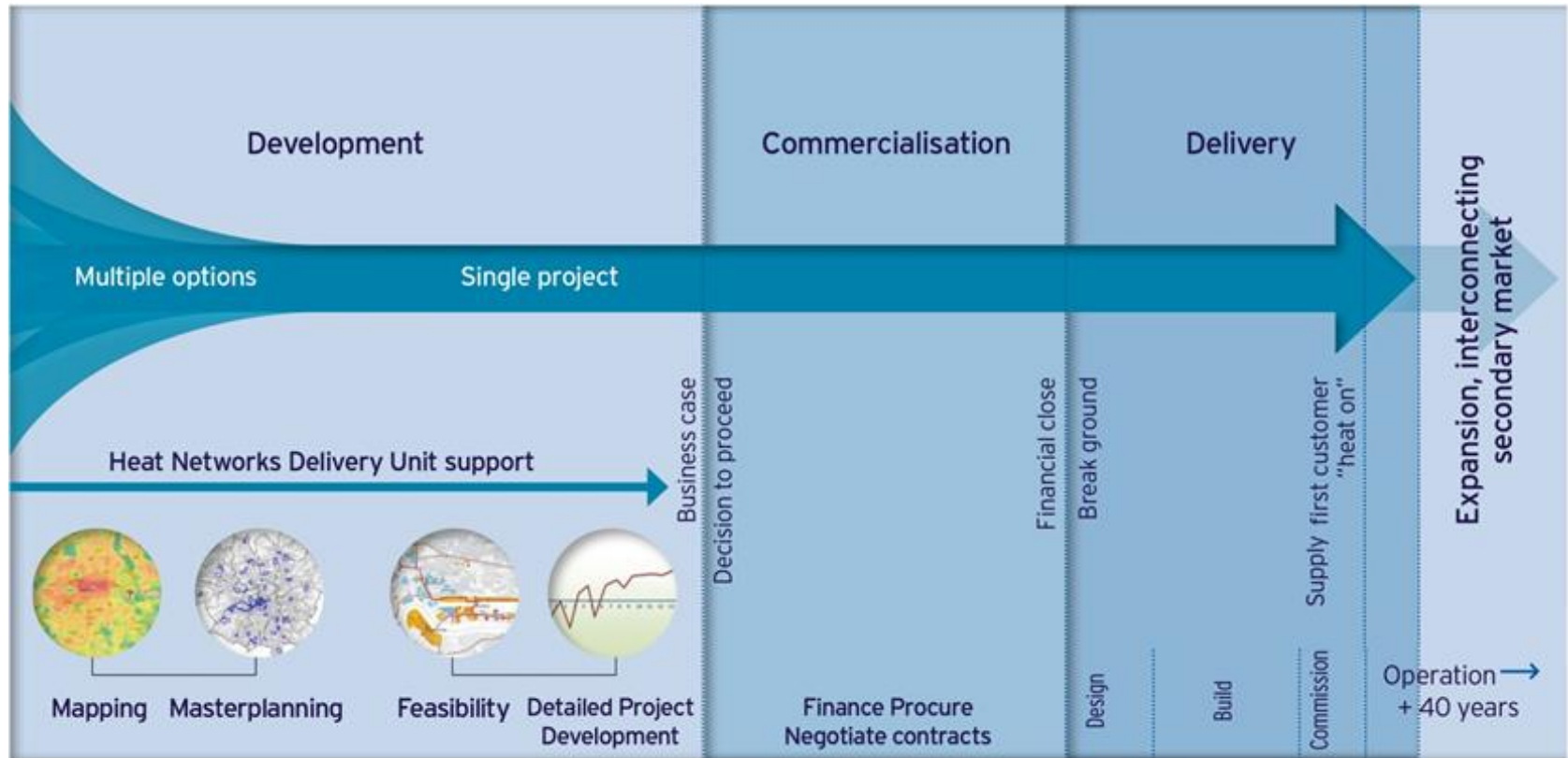
# Creating conditions for a self sustaining market

Sustained **pipeline** of heat network projects in development matched by a sufficient volume of appropriate **finance** so that they are built.

## What are the components of a sustainable heat network market?

- Heat network sponsor capacity and capability
- Consumer connections and satisfaction
- Supply chain growth
- Costs falling, possibly through contractual standardisation and cost-reducing innovation
- Sufficient supply of finance, reduced perceptions of risk, and cost of capital falls
- Conditions becoming more favourable for investment
- Aggregation of heat networks into larger portfolios commensurate with institutional investor thresholds
- Contractual innovation which might include unbundling
- Creation of a secondary market for heat networks

# Heat networks deployment and delivery



# Thank you

Rufus.ford@beis.gov.uk

