

Challenges and opportunities

Heat networks, district heating, community heating

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Opportunities

- Committee on Climate Change estimates 18% households supplied by heat networks by 2050 to most economically meet net zero
- Best opportunity where:
 - individual heat pumps are hardest, (e.g. small houses with no space for DHW cylinder / no garden)
 - insulation hardest, (e.g. conservation areas)
 - Heat demands high and close together (e.g. town / village centres/blocks of flats)
 - Current heat source not liked / higher carbon / higher cost (eg oil and electric heating)
 - Local heat source – e.g. mines water, existing heat network, energy from waste plant, waste heat from data centre, supermarket chillers, sewage heat, local waste biomass
 - Community spirit – key to economics is for as many as possible to agree to connect
- Has been consistent Government support for feasibility studies and capital grants
- Heat network zoning
- Big possible CO₂ savings

CO₂ emissions per average house kg

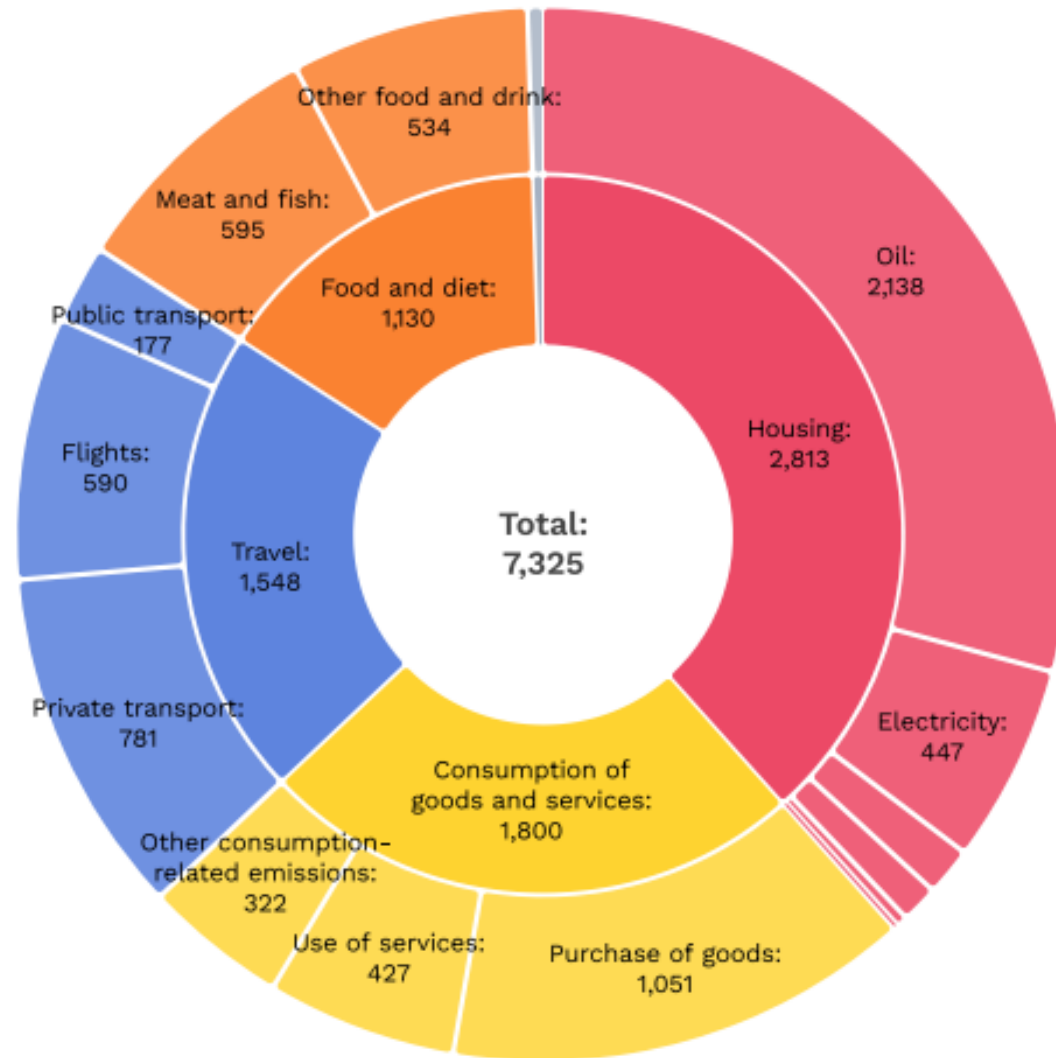
Housing
Emissions resulting from residents' use of energy in their homes.

Food and diet
Emissions resulting from the consumption of food and drink products by residents.

Travel
Emissions resulting from the transport choices & behaviours of residents.

Waste
Emissions resulting from the management of waste generated by residents.

Consumption of goods and services
Emissions resulting from the purchase of goods and the use of services by residents.



Rural village - oil is 29% of CO₂
Heat network with heat pump
and wind turbine would reduce
this by around 90%

impact-tool.org.uk

Challenges

- Expensive and many costs hard to estimate
- Complex
- Finding best opportunities difficult
- Slow to develop economically viable projects that have public support
- Disruptive to install
- Little UK track record on retrofit heat networks to existing housing (which is the largest proportion UK heat demand)
- Need to win hearts and minds of prospective customers
- Challenge / benefit – connection must be zero upfront cost to customers
- Standing charge needed to cover cost of investment, metering, billing, maintenance – but standing charge should be lower than cost of boiler ownership (maintenance, repairs, replacement every 13 yrs)

How to reduce challenges

- Is there a location that already has a heat source (eg site with excess biomass boiler capacity, or extension to existing heat network)
- Is there already a strong environmentally minded community
- Sites with many buildings under common ownership e.g. areas with high proportion of social housing, or Council stock, villages owned by local estate,
- Private wire from PV, wind turbine, hydro improves economics, increases CO₂ savings and are more 'exciting' than heat networks

Funding

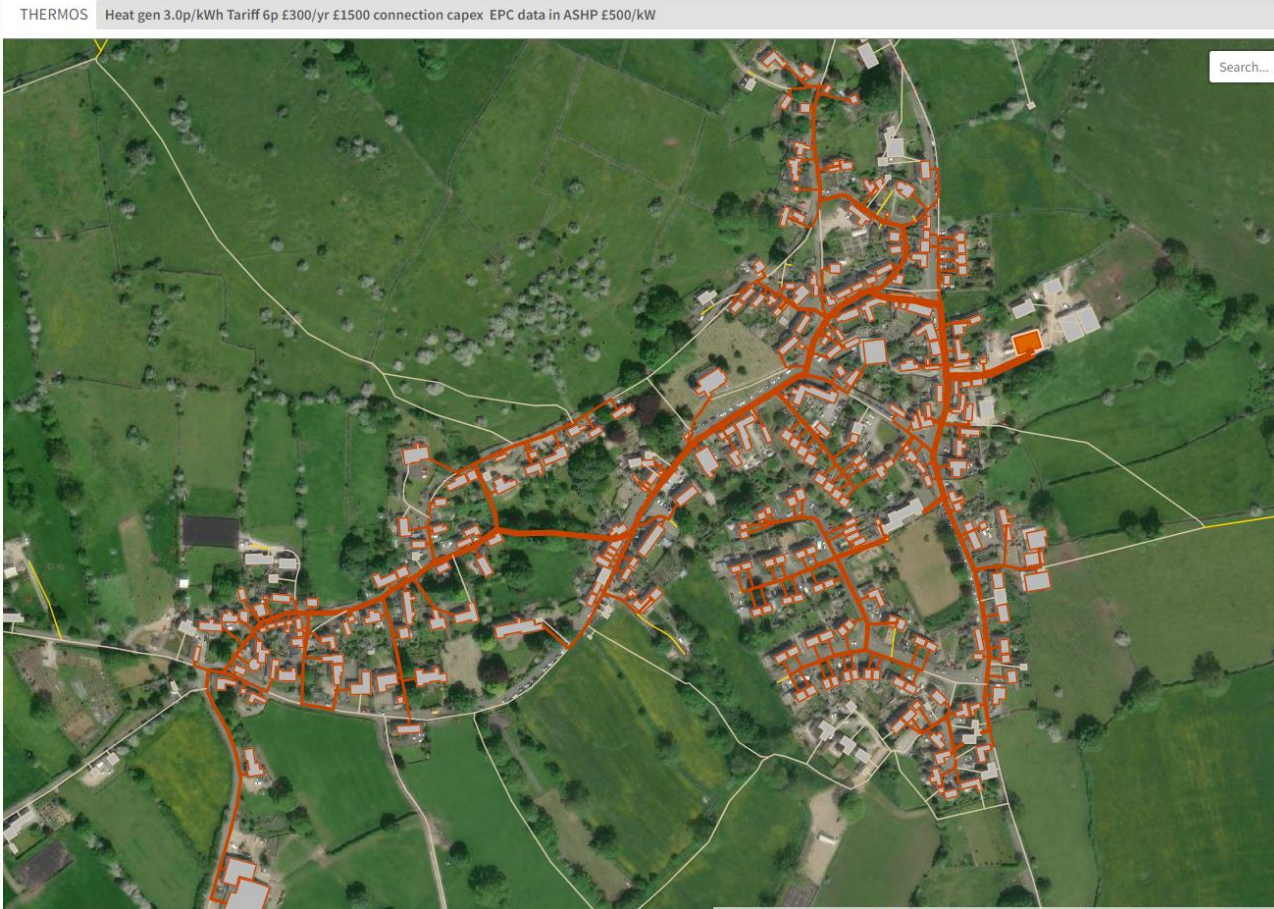
mostly from Department for Energy Security and Net Zero (BEIS)

- HNDU – Heat networks delivery unit – since 2013 has part funded local authorities to undertake feasibility studies for heat network, recently funding offered more widely. Highly likely new funding will be announced May/June. Hopefully community groups will be able to apply or via LA
- HNES – Heat network efficiency scheme, 100% on studies exploring how to make existing networks more efficient and 50% of capital to make improvements (community finance of other 50%?) runs to March 2025. Community groups can apply.
- GHNF – Green Heat Networks Fund – up to 50% of capital for new networks or decarbonisation of existing network. Heat loads must be more than 100 houses (gross simplification of requirement!). 100% funding of commercialisation of projects. Runs to March 2025 (and likely to be refined and continued post 2025). Community groups can apply
- + other less specific e.g. levelling up funding, social housing decarbonisation, ever changing pots innovation funding

Policy – I think the funding shows there is support generally

- Heat network zoning
 - *'The overall aim of zoning is to develop heat networks in zones where they can provide the lowest cost low carbon heat to the end-consumer in England through regulation, mandating powers, and market support..'*
- It's a few years away, (is complex bit of technical and economic work and then quite a change for public to agree to....)
- In essence a requirement to connect to the heat network if in zoned area. Currently predominantly in urban areas.
- Currently private houses won't have this requirement (but they form most of the heat load – so without them the heat networks won't be economic... but it's a very hard policy to sell.)
- Heat network developers / operators will somehow be selected to run the heat network in a zone.
 - Do we want this to be private sector ? eg replicate privatised water companies / DNOs with their monopoly position.
 - In Denmark heat networks are by law not for profit. The larger networks are municipally owned and the smaller one consumer co-ops
- I believe the community energy approach would:
 - Make heat networks more attractive to prospective customers
 - Provide greatest long term benefit to communities and environment
 - Deliver lower operating cost, not just due to no profit extracted, but due to more constructive relationships between operator and customers, more incentive to do what is best for the whole community, local buy-in, local management etc
- With GHNF suppling up to 50% of capital cost – there is scope to give the asset GHNF funds to community or local authority, rather than to private sector company?
- If we believe this is an opportunity need to get on top of the process that is developing this policy and ensure it enables an community lead approach as an option.
- Lots to learn from Denmark and Welsh Water which was not privatised but is in a not for profit structures. In Denmark in the 1970s some areas were zoned for gas heating and most for heat network. Now the some of the gas areas are voting over 95% in favour of changing to heat network

How to assess ? Thermos:



Thermos:

- estimates heat loads
- Makes pipe routes along paths and road
- Assesses the economics of each connection, does income from heat sales support cost of installing pipe
- Free to use, but need some training to work it out
- Need individual buildings drawn into openstreets maps (or you need to put them in openstreets maps – not hard but time consuming
- Some capital costs in Thermos but UK specific would be better.

www.thermos-project.eu