HEAT AND THE CITY

Heat Networks: Planning for a Zero-Carbon World

UK Local Authority District Energy Vanguards Network

Sheffield, 10 March 2020

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District Energy Vanguards Network

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https://heatandthecity.org.uk/

HEAT AND THE CITY

Jon Buick

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Common issues with district heating policy

Jon Buick

Energy Infrastructure – Project Officer

Common issues

1. **Planning is not sufficiently focused on delivery**

2. **Policy maps go ‘out of date’ too quickly**

3. **Energy and heating hierarchies are too flexible in their interpretation**

“I've often thought that if planners were botanists, zoologists, geologists, and people who know about the earth, we would have much more wisdom in such planning than we have when we leave it to the engineers.”

William O. Douglas

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Connection Ready Condition

District Heat Networks – Connection ready:

No development shall commence excluding site preparation works, site investigation works (including environmental investigations) and works of demolition until the applicant submits to and has secured written approval from the LPA on evidence demonstrating that the development has been designed to enable connection of the site to an existing or future district heating network, in accordance with the London Heat Network Manual (2014).

Reason:

To demonstrate that the site heat network has been designed to link all building uses on site (domestic and nondomestic) and to demonstrate that sufficient space has been allocated in the plant room for future connection to wider district heating in accordance with London Plan (2015) policies 5.5 and 5.6.

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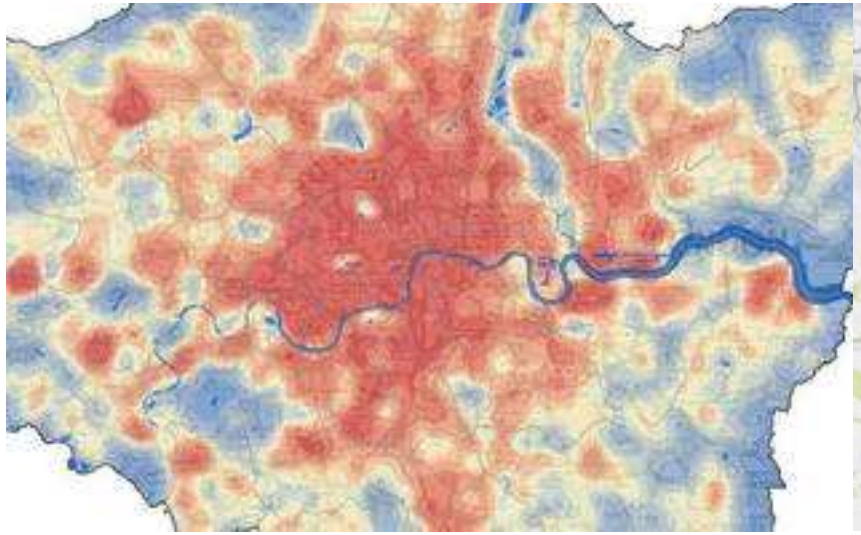
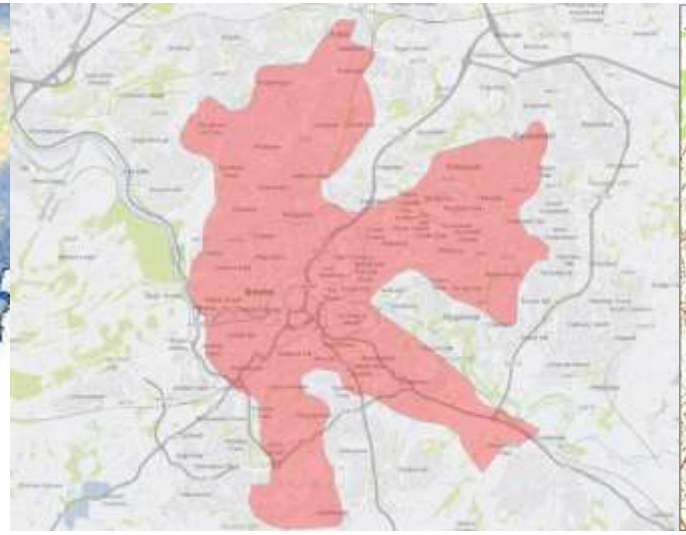
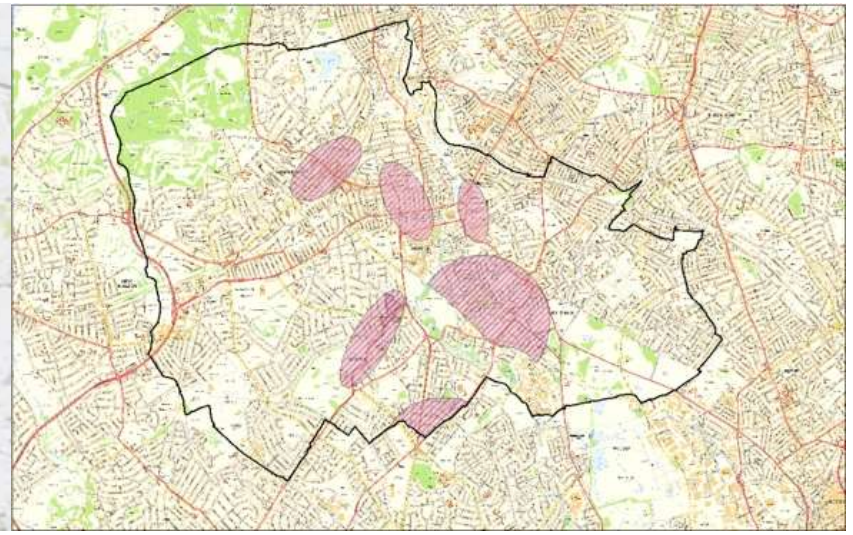
What do these opportunity areas have in common?







Heat Map Condition

District Heat Networks – London Heat Map:

‘Unless otherwise agreed in writing by the Local Planning Authority, no part of the development hereby approved shall be used or occupied until evidence has been submitted to the council confirming that the developer has provided appropriate data and information pertaining to the sites Combined Heat and Power (CHP) system to the Greater London Authority (GLA, environment@london.gov.uk) to allow the site to be uploaded to the London Heat Map (https://www.london.gov.uk/what-we-do/environment/energy/london-heat-map).’

Reason:
To ensure that the development contributes to the London Plan targets for decentralised energy production and district heating planning. Development Plan policies for Merton: policy SI3 of the London Plan [Date] and policy CS15 of Merton's Core Planning Strategy
2011.

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Policy Hierarchies

BCS14 - Sustainable Energy

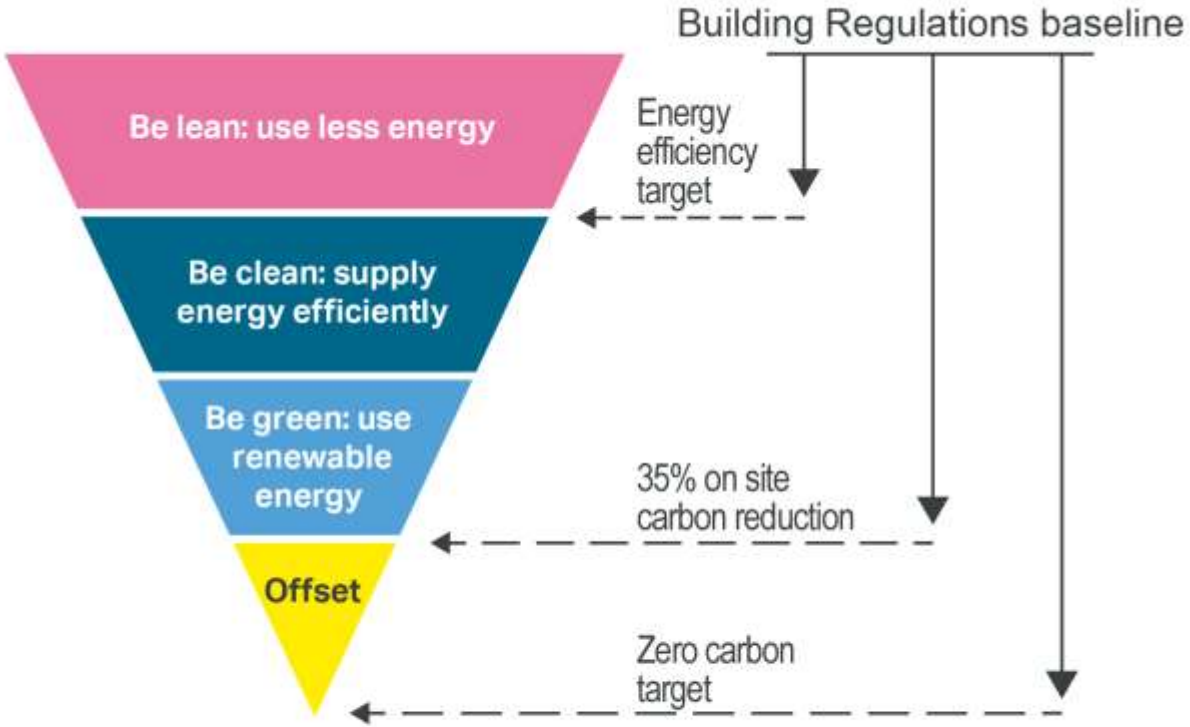
The Energy Hierarchy

1. Minimising energy requirements;
2. Incorporating renewable energy sources;
3. Incorporating low-carbon energy sources.

The Heating Hierarchy

1. Connection to existing CHP/CCHP distribution networks
2. Site-wide renewable CHP/CCHP
3. Site-wide gas-fired CHP/CCHP
4. Site-wide renewable community heating/cooling
5. Site-wide gas-fired community heating/cooling
6. Individual building renewable heating

The London Plan energy hierarchy



Source: Greater London Authority

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Hierarchy of Policies

Core strategies: Energy and Heating hierarchies

Qualitative priorities that provide overarching objectives.

Kept simple and changed infrequently.

Supplementary Planning Documents: Policies that support delivery

Introduction of triggers and definitions of compliance with deferent levels of the core strategy hierarchies.

Relies on policy hooks in core strategy but reduces subjectivity and provides clarity on policy interpretation.

Climate Change and Sustainability Practice note: Detailed description of application requirements and policy interpretation

Quantitative information linked to adopted policy.

Easily updated and refreshed.

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Key points

Make better use of conditions:

Planning conditions can be used to improve and ensure delivery and help develop future networks and policy.

Move towards dynamic mapping:

Policy maps need to keep pace with evolving opportunity areas.

End the over reliance on high level policy hierarchies:

Hierarchies are good for high level policy documents but need to be supported by supplementary policy and guidance.

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Questions?

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Faye Tomson

District Eating

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Measurable social benefits

Improved network efficiency and heat sales revenue

Sustainable food production

District Eating

Maximising efficiency while unlocking the social and edible benefits of low carbon energy

District Eating Ltd are low carbon energy and advanced horticulture specialists with unique expertise in locating and developing waste heat sources for use in horticultural applications in order to provide climate resilient food structures for your community. We provide consultancy services, and act as matchmaker between heat and CO_2 producer, setting up ideal growing spaces with low cost low carbon heat sources for commercial and community growers across the UK.

Why build an urban farm heated with waste heat?

Excess heat + CO_2 + advanced agriculture =

- Improved efficiency of district energy networks, and business case
- Food security and resilience
- Local economic growth
- Reduced food miles / emissions / air pollution

Food Security-The Challenge!

- "It is predicted that 60% more food will be needed worldwide by 2050 to feed the increasing global population. To do this we need to produce food in more resilient, sustainable and efficient ways."
  UK Research and Innovation Chief Executive, Professor Sir Mark Walport

- The UK imported 84% of its fruit and 43 per cent of vegetables in 2017.
  The New Scientist

- Agriculture is one of the most vulnerable sectors to the impacts of climate change, as well as the fourth highest greenhouse gas emitting sector globally. *UK Government POST Note*

Example – 2x Hectare Greenhouse on brownfield Midlands

- 5,108MWh$_{th}$/yr = £102,000/yr (24degC @ 2p/kWh$_{th}$)
- 15,918MWh$_{e}$/yr = £1.4 million/yr (@9p/kWh)
- Could use 2,000 tonnes CO_2 /yr from flue gases. Scrubber required
- 1 skilled grower plus 20 low skilled jobs
- 900 tonnes tomatoes/yr

Example – Jones Food Company

- Industrial estate – insulated cold store
- Uses power all year round
- Has large scale chillers for summer
- Refrigerated cooling for produce all year round
- Bought out (58%) by Ocado
- Estimated power use (not actual!)
- At least 8MW – lighting only
- 29,200MWh$_e$/yr = £2.92million (@10p/kWh)

Next projects and steps…

- AD plants – gas to grid, CO_2
- Heat pumps and CHP combinations
- Wastewater treatment
- Brent Council
- Bord Na Mona
- Sheffield Innovate UK
- Africa…

Does your heat network have available waste heat and CO_2?

Micro feasibility study

under £5k

District Eating

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HEAT AND THE CITY

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Local Heat and Energy Efficiency Strategies (LHEES)

And

Heat Network (Scotland) Bill

Vanguards – Sheffield 2020

Date: 10th March 2020

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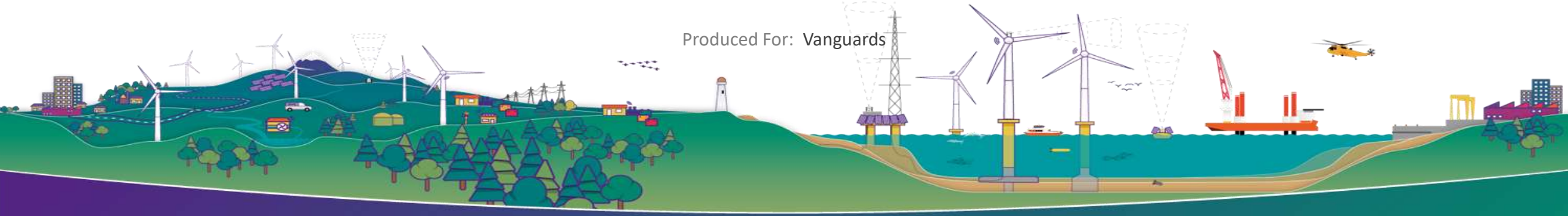
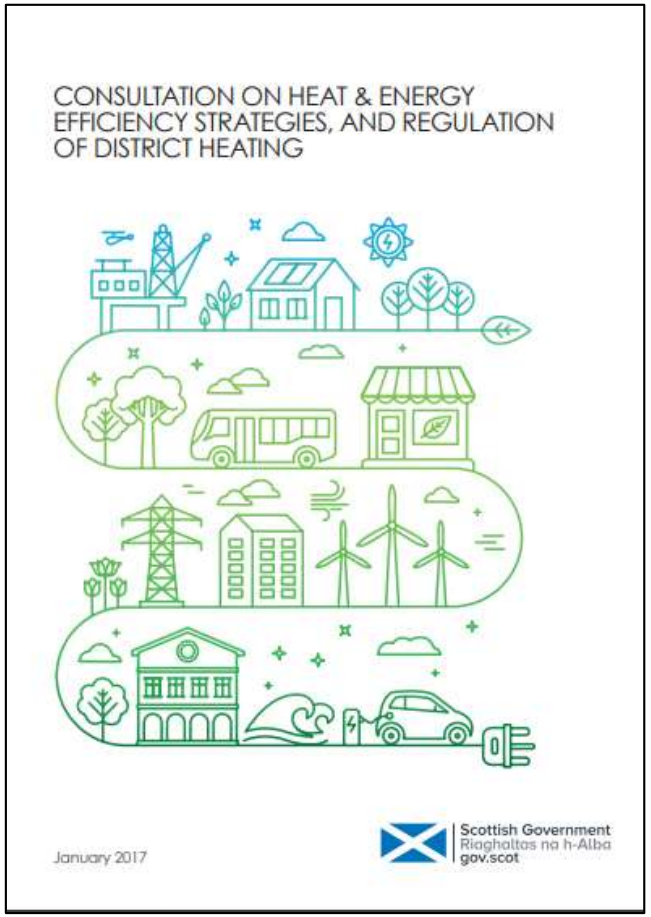
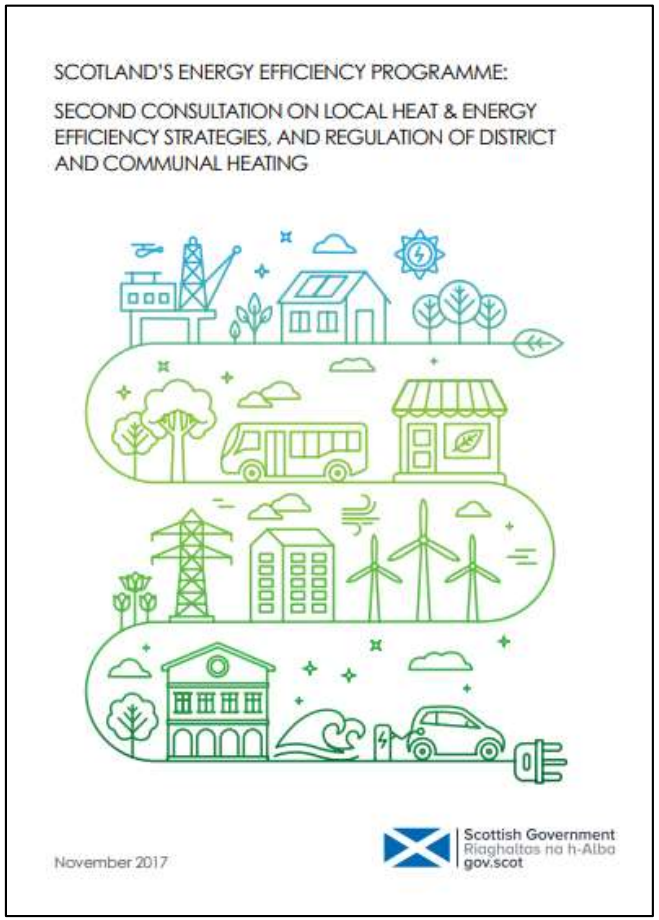




January 2017



November 2017

Heat, Energy ***Efficiency*** are devolved

Some aspects of Energy Policy (including gas and electricity) are reserved, or in the process of being devolved.

LHEES is reflective of the evolving nature of devolution

Heat, Energy ***Efficiency*** and Planning are devolved

Some aspects of Energy Policy (including gas and electricity) are reserved, or in the process of being devolved.

LHEES is reflective of the evolving nature of devolution.

Policy is ***decided*** at a national level

BUT

Implementation is ***directed*** at a local level

"Recognising local differences"

What is an LHEES?

It’s a process not a plan

Stage 1:
- An assessment of existing local and national strategies and data availability.

Stage 2:
- Authority-wide assessment of existing building stock’s energy performance and heat supply

Stage 3:
- Authority-wide setting of aggregate targets for heat demand reduction and decarbonisation of buildings – for the short-term strategy period and for the long-term duration of SEEP.

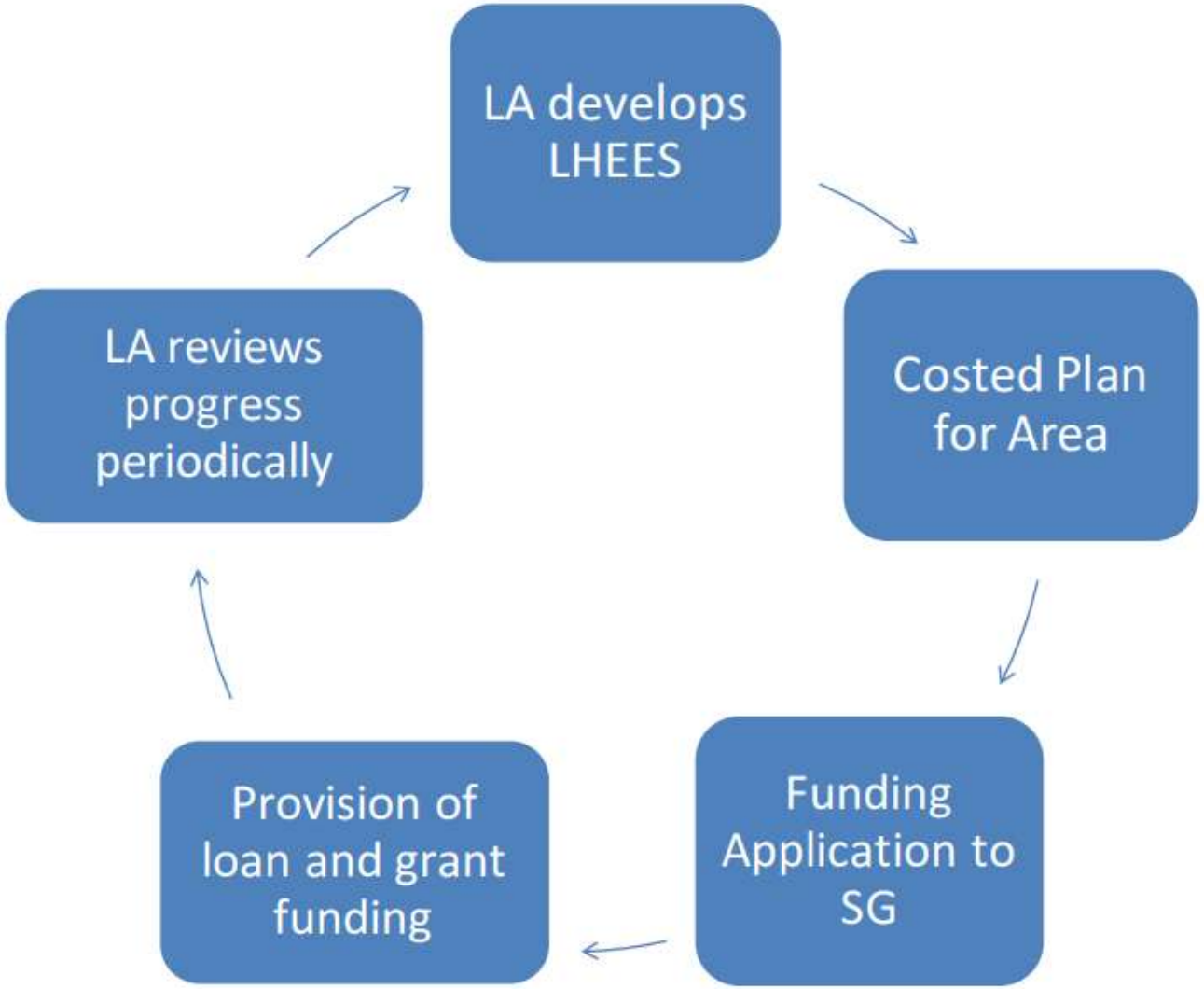
Stage 4:
- Conduct a socio-economic assessment of potential energy efficiency and heat decarbonisation solutions.

Stage 5:
- Selection of areas/prioritisation of opportunities for energy efficiency and/or heat decarbonisation, leading to the designation of zones.

Stage 6:
- Costing & phasing of delivery programmes

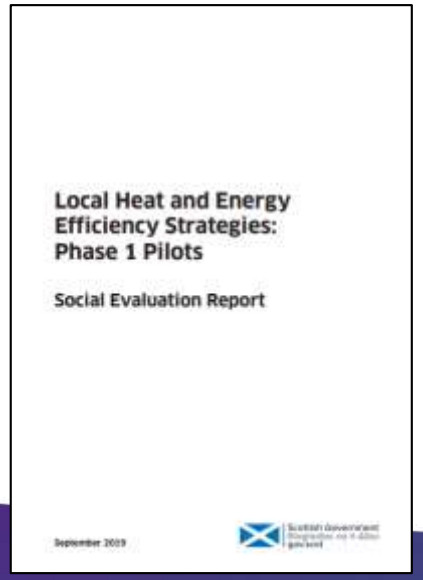
LHEES

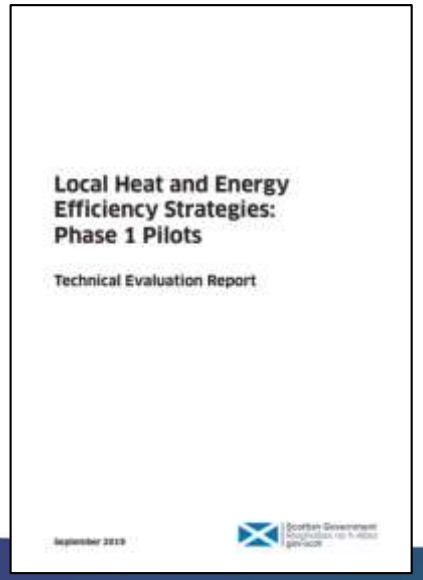
Iterate and keep current



Pilot Phase 1 (Delivered by SEEP)

- Between September 2017 and March 2019, 12 local authorities participated in the first round of LHEES pilots
- Funding of between £50-70k was provided to each LA
- The aims of the pilots were:
  - to test and develop methods for creating an LHEES,
  - identify relevant sources of data (and any data gaps),
  - gain a fuller understanding of the resources and capabilities required to deliver an LHEES





Pilot Phase 2 (Delivered by SEEP)

- Further 11 local authorities participated in the second round of LHEES pilots
- Work is ongoing and analysis of findings is about to start

Pilot Phase 3 (Delivered by EES)

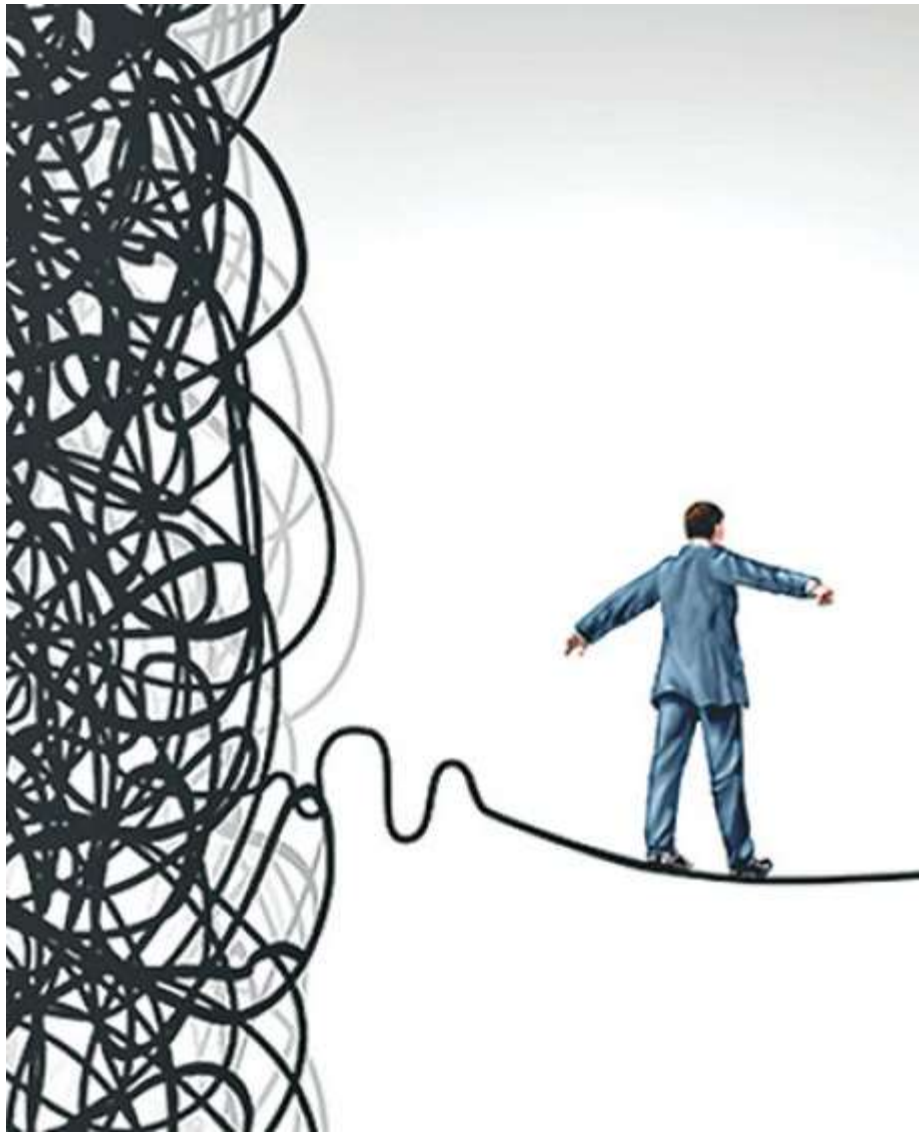
- Final 9 local authorities invited to undertake a pilot LHEES study
- Funding round closed October 2019

Issues

- Lots of questions
- Limits of substantive control
- Interdependency on other strategies / policies
- Resourcing

Benefits

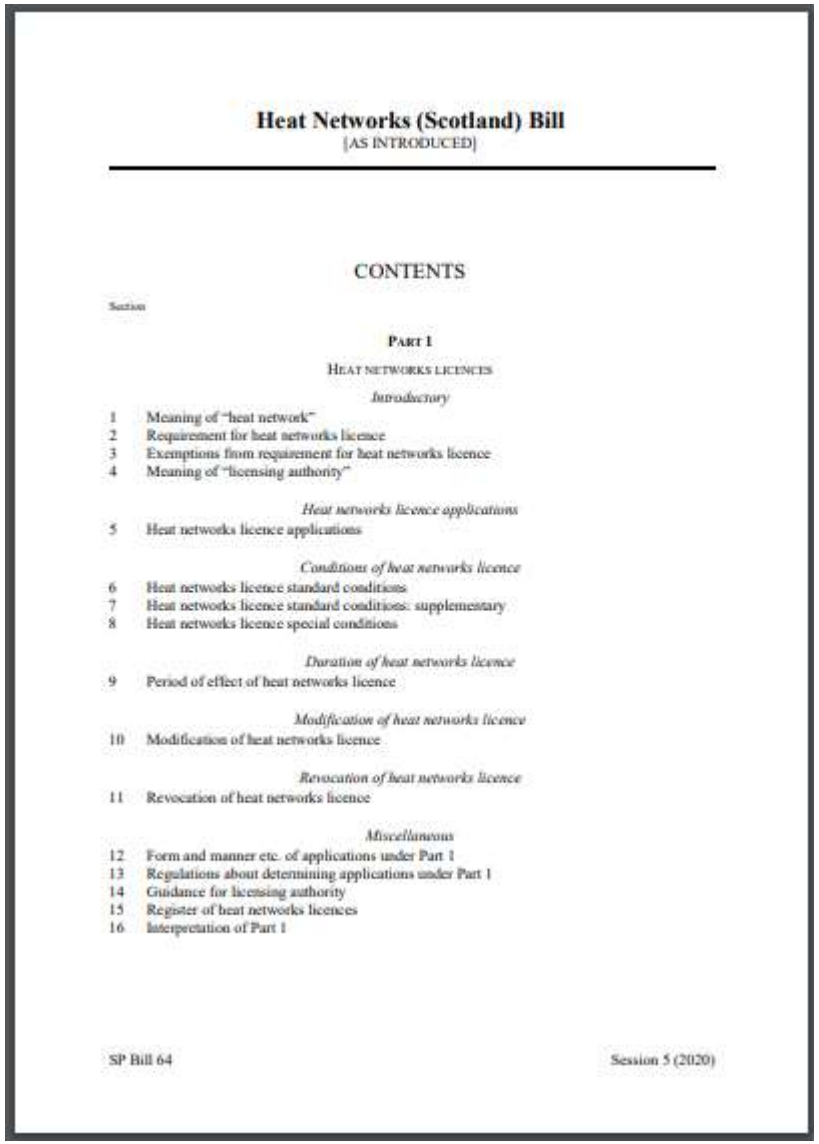
- Lots of questions
- Engagement
- Toolkits and processes
- Understanding the complexity of the problem



Heat Networks (Scotland) Bill

Key Principles

1. Licencing
2. Consenting
3. Zoning
4. Permitting
5. Powers



Heat Networks (Scotland) Bill
[AS INTRODUCED]

CONTENTS

Section

PART 1

HEAT NETWORKS LICENCES

Introductory

SP Bill 64 Session 5 (2020)

Greater Responsibility

1. Licencing

All heat network operators to hold a “Heat Networks Licence”

Consumer Protection (Ofgem / Scottish regulator)

Supplier of last resort for key assets

2. Consenting

Central Government awarding Heat Network Consent

Greater Powers

1. Powers

Licenced Heat Network Operators become “Statutory Undertakers”

- Wayleaves
- Compulsory acquisition of land
- Survey access
- Right to access land (roads to follow)

2. Consenting

Heat Network Consent = Deemed Planning Permission

Local Authority Gatekeepers

1. Zoning

Local authorities to designate Heat Network Zones.

2. Permitting

Heat Network Zone Permits

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