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Low carbon heat: the business case for district heating

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SFT's mission

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'To improve the efficiency & effectiveness of infrastructure investment & use in Scotland by working collaboratively with public bodies & industry, leading to better value-for money & ultimately improved public services.'

Support for heat networks

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Heat Network Partnership

Coordinated programme of support

- Project directory
- Knowledge Hub - guidance, technical information, reports
- Co-funded feasibility studies
- Project development support

HEAT NETWORK PARTNERSHIP FOR SCOTLAND

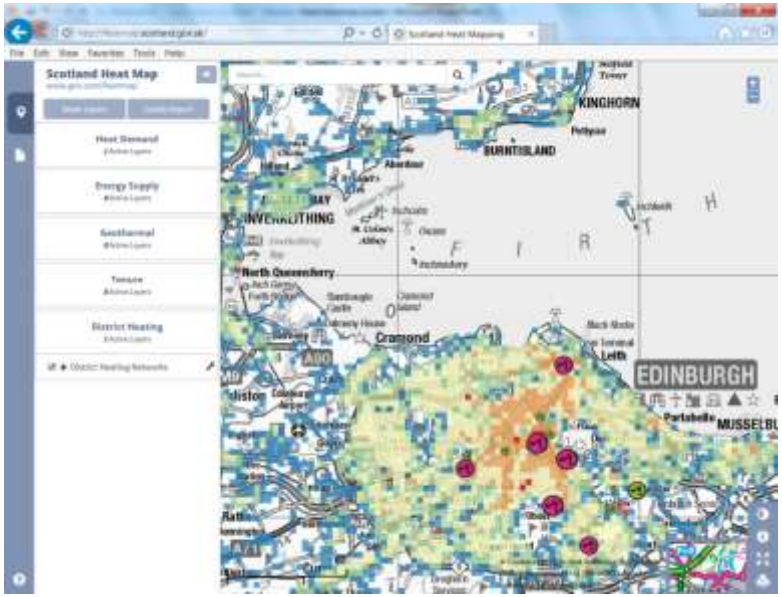
The Scottish Government Riaghaltas na h-Alba

energy saving trust

Scottish Enterprise

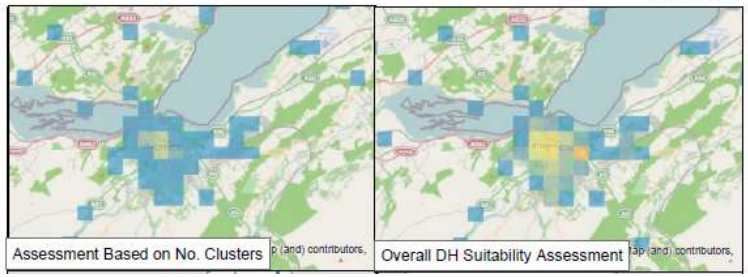
Low Carbon Infrastructure Transition Programme

- £76m programme, part-funded by ESF, to boost growth in Scotland's low carbon sector.
- Scotland wide, cross-sector project development unit, to support the development and acceleration of low carbon infrastructure projects in the next 3 years.



RAMBOLL **Scotland Heat Map Analysis**

The Scottish Government



www.gov.scot/heatmap

SFT's role / support

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Focussed on business models & financing

- What is the right delivery model for your project?
- Financial structuring
- Governance

Guidance

- Legal powers of public bodies / procurement
- Delivery structures for heat networks, setting up ESCOs
- Guide for project sponsors, Heat Supply Agreements

Examples of DH/LC solutions

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Campus district heating solutions

- Queen Margaret University (biomass)
- Edinburgh University (gas CHP x4)
- Dundee University (gas CHP)
- Glasgow University(gas CHP)
- St. Andrews (biomass)
- Strathclyde University (gas CHP)
- Stirling University (gas CHP)

Individual buildings with LC heat supply

- Borders College (sewage heat recovery)

FHE buildings supplied by third party networks

- Leicester University / ENGIE network

Heat network operations

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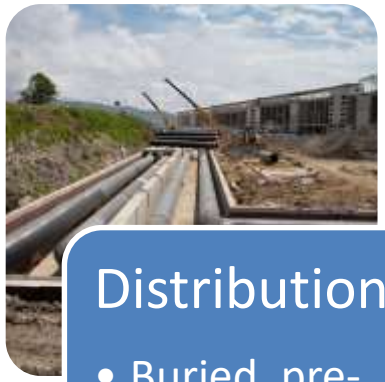
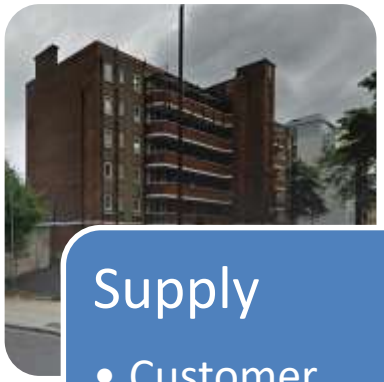
Generation

- Energy centre
- Waste heat recovery



Distribution

- Buried, pre-insulated pipework



Supply

- Customer interface
- Metering & billing

- Separate asset classes – different risk profiles
- Often all assets under common ownership (e.g. campus scheme / LA / RSL)
- Larger networks may separate into different businesses

Potential roles for FHE bodies

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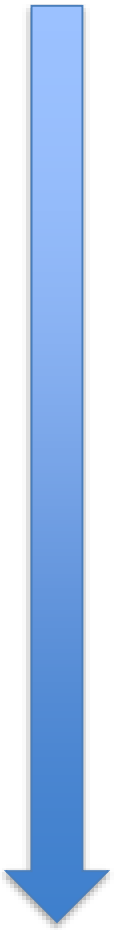
Lower risk & control

Higher risk & control



Customer

- Procure a private sector partner to develop a heat network and provide a heat (and potentially cooling / electricity) supply
- Offer up anchor loads for exclusive supply by the partner
- Could form part of a wider public sector concession
- Guarantee a minimum heat load (NB: estate strategy / EE)

Network operator

- Develop, own and operate your own heat network
- Procurement of D&B / O&M / M&B contracts
- Self-supply to own buildings

Supplier

- Develop, own and operate network
- Self-supply + responsible for supply to third-parties
- Charge third-party heat generators to access network

What shapes the model?

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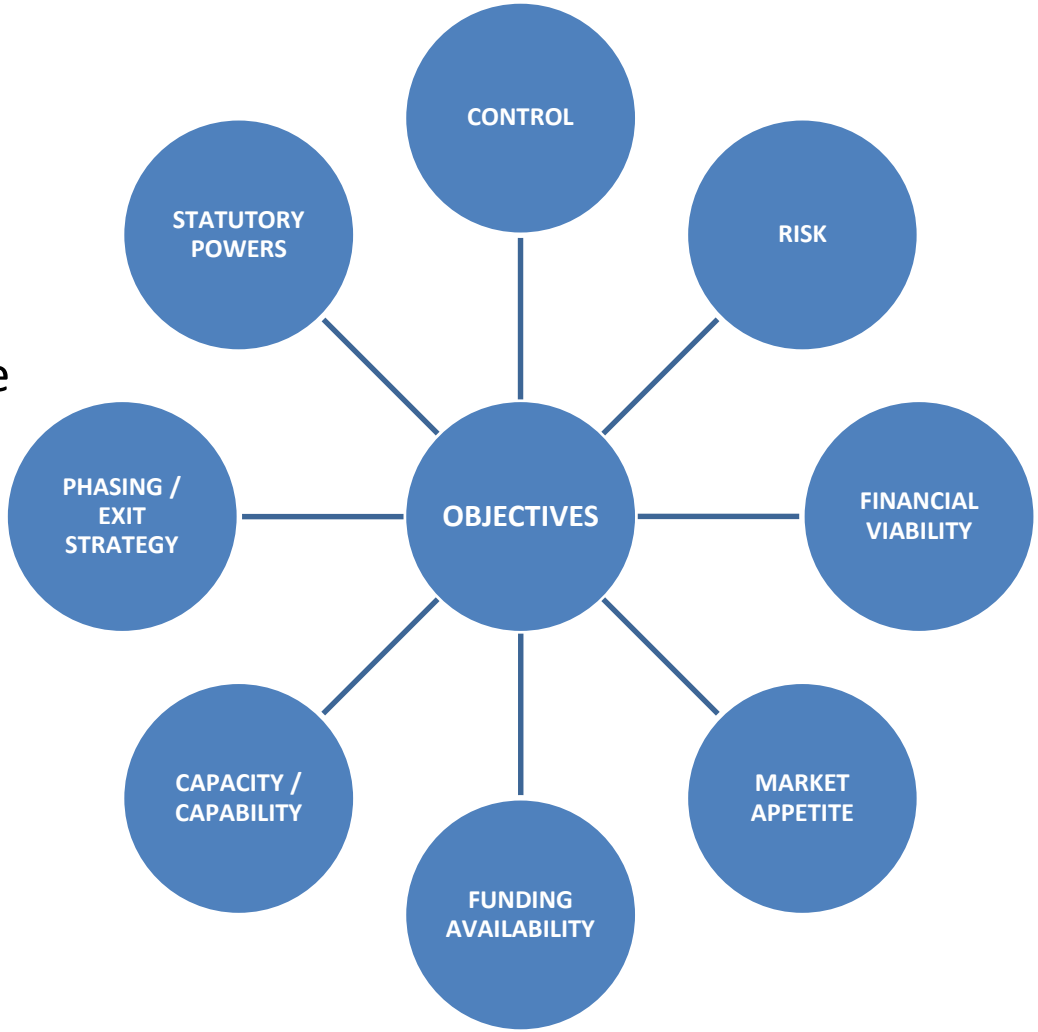
Objectives
- Economic / environmental / social
- Multiple stakeholders

Financial viability
- Funding availability/cost of finance
- NPV / IRR

Control & risk
- Desire for control
- Appetite for risk

Resources
- Capacity & capability

Note: very much an **iterative** process



Public v private delivery

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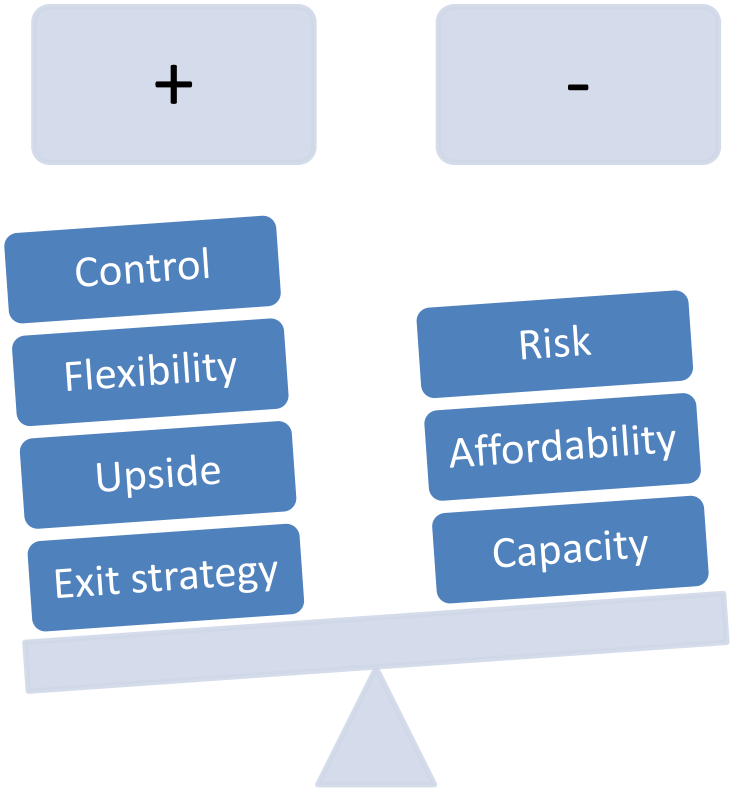
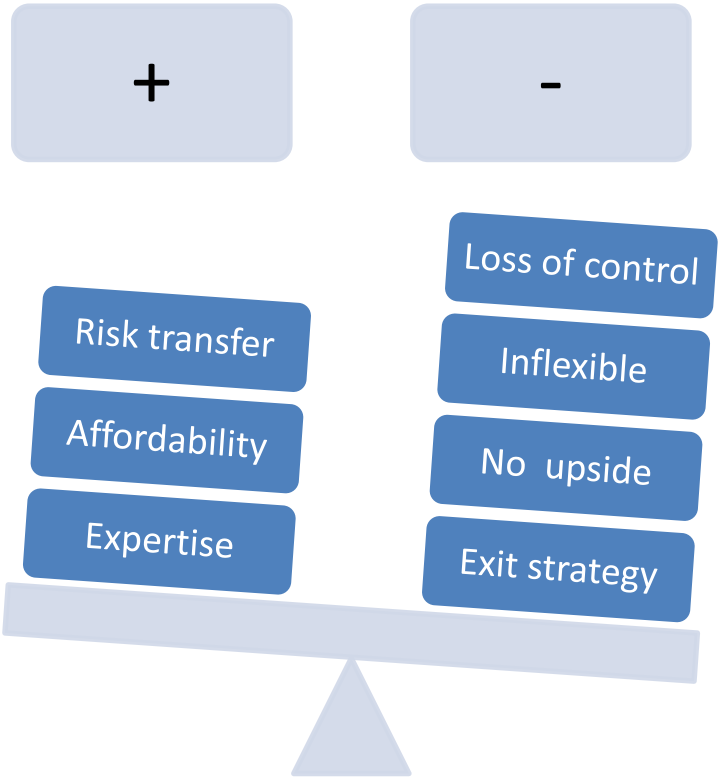
Public sector perspective:

Public sector led delivery



Private sector led delivery



The business case

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Guidance

- HM Treasury – Green Book / 5 Cases Model
- BEIS – Detailed Project Development Guidance
- SFT – Public bodies' powers, Delivery Models for Heat Networks, ESCOs

Strategic Outline Case (SBC)

- State rationale for project, strategic fit, likely scope, desired outcomes

Outline Business Case (OBC)

- Techno-economic options appraisal -> preferred option
- Demonstrate preferred option is affordable, deliverable and represents VfM

Full / Final Business Case (FBC)

- Develop design & tender documents, conduct procurement exercise
- Refresh OBC with actual costs following procurement. Verify affordability

Funding & financing

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SFC funding

- Grant scheme (2013) – Stirling, St. Andrews, Strathclyde Universities
- Financial Transactions (loans)

Scottish Government Low Carbon Infrastructure Transition Programme

- Various support mechanisms and funding calls
- E.g. Low Carbon Innovation Funding Invitation

Non-domestic Energy Efficiency Framework

- Energy Efficiency retrofit works and services
- Available across the public sector in Scotland

Third party finance & investment

- Including revenue financed solutions

Key issues (I)

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Governance

- Roles and responsibilities – who needs to be involved at each stage?
- Leadership & mobilisation
- Use of advisers (technical / legal / financial)

Objectives

- Be clear about what you are trying to achieve (rank / weight objectives)
- Identify constraints, dependencies (e.g. funding availability / grant conditions)

Techno-economic options appraisal

- Compare all options against realistic counterfactual ('business as usual')
- BAU should take into account estate strategy & energy efficiency measures
- Use cost of heat (not cost of gas) & appropriate indexation of fuel costs
- Consider all options over appropriate period (useful economic life of assets)
- Technology / performance risk

Key issues (II)

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Heat Supply Agreements

- Network HSA v Customer HSA
- Who am I contracting with?
- Nature of service to be provided?
- What are the service standards?
- How are these enforced?
- Customer & supplier responsibilities
- Physical & control interfaces
- Tariffs – and mechanism for varying
- See (new) SFT guidance

Key issues (III)

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Delivering the preferred option

- Financing strategy: funding availability & financial structuring
- Contracting structure: which risks should be retained / transferred? VfM?
- Procurement strategy: consider alternative routes to market (OJEU/framework)

Risk management

- Should be an active, rigorous and creative process
- Design development v scope creep
- Optimism bias
- Compliance with funding conditions / impact of non-compliance
- Stakeholders – are interests (still) aligned?

Sanity check

- Will the project deliver its original objectives, deliver anticipated benefits?
- Is the project value-for-money? Is it affordable? Is it deliverable?

Further information

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Questions?

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