

Theory of Change

Technical Annex for Clean Heat
2040

ade
Heat Networks



Context/Problem statement

Template

Inputs

Activities

Short term
outcomes

Inputs

Outputs

Short term
outcomes

Medium term
outcomes

Inputs

Activities

Short term
outcomes

Medium term
outcomes

Outputs

Long term outcomes



People need heat and it cannot cost the earth

Legacy systems give poor outcomes to vulnerable people with not enough capital to fund improvements

Increase HNES funding or other mechanism to meet challenge, public and/or housing sector funding plugs gap

No more vulnerable people on poor performing legacy systems

Reduction in fuel poverty

Increased consumer trust

Cost of heat via electricity is too high

HMT takes costs from electricity bill and cover them elsewhere for incentive to switch

Industry innovates to reduce cost

Regulator ensures cost savings are passed through to heat networks

Consumers see economically rational choice to switch

Interest amongst consumers exists for the heat transition

Uptake increases and market forces realise economies of scale for heat pumps and networks

Consumer awareness of low-carbon options is low. Warm Homes Agency created with engagement remit

National engagement campaign

Consumers have relevant information available to them when switch is possible

Energy transition relies on high capex, low opex technologies. Revenue support has helped managed high capex for low carbon power

HMT backs revenue support is extended to heat networks

Project can clear FID as investors are confident on returns and construction/connection costs can be managed, whilst government has a lever for managing cost and bills are kept under control

Heat networks develop in areas of need

Consumers are protected

More projects can move through the pipeline at a higher pace of delivery with greater investor and consumer confidence

Low-carbon heat networks are cost competitive to gas boilers and fuel poverty will significantly reduce

Communities need support and information to access resources and create local opportunities

Zoning currently provides useful mapping of lowest cost to serve

Heat today is wasted rather than recovered and used

More heat sources are emerging, data centres are an example

Internationally heat networks provide cooling and insulate fuel poor from gas price spikes

NESO have been tasked with energy system planning

Local skilled resource has been built around gas and water networks

Local authority resourcing and budgets have been under pressure

Local authorities and social housing providers own legacy systems

Continue zoning with aim of connecting recoverable heat

Repeat zoning to absorb opportunities as they emerge

Repeat zoning to target fuel poor areas and need for cooling

Repeatedly feed in outcomes of zoning to optimise outcomes across energy system

RESPs building skills transfer into scope

Zoning Authority and coordinator roles give funding to Warm Homes Agency and relevant Combined Authorities

Utilises current and emerging recoverable heat on heat networks

Highlights new opportunities for heat related networks

Energy system savings can be realised and passed through

Plan can be created for just transition within heat transition

Local authorities have the resources they need to create the transition that works for their area

Continually increases capacity and reach of networks

Realises benefits of heat networks beyond cost

Energy affordability stays in focus and overall consumer bills are kept down

Skilled labour can be carried over from relevant sectors

Comms with affected public sector inst. and businesses is effective

Drives down cost to serve from these heat networks

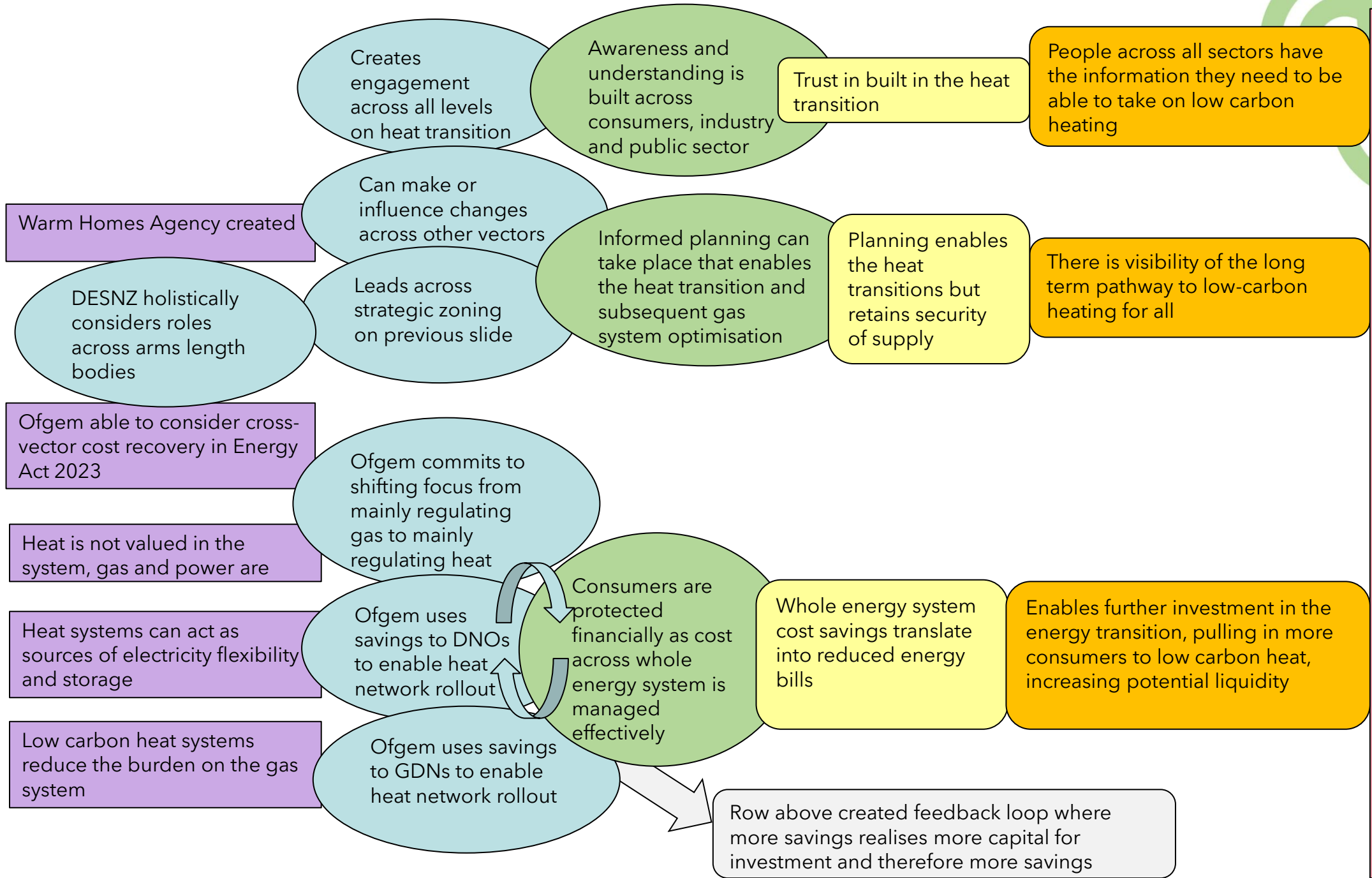
Benefits are shared with more communities with different needs

A managed transition from gas is possible once planning for the heat transition of whole areas has been executed

All sectors in an areas feel the benefits and have trust in the heat transition. They also play a role in skills and supply chain creation

Communities will utilise local heat opportunities and create 100,000 jobs by 2050

The energy system needs to put value in low carbon heat as it values low carbon power



A heat system will exist that helps realise benefits across the whole energy system

The economy needs to grow and needs to balance demand and supply of available resources to do so

National Wealth Fund tasked with pursuing growth

Key Gov target to grow the economy & create jobs

Key Gov target to build 1.5 million homes

Key Gov target to deliver climate action

Key Gov target to raise many from fuel poverty

Key Gov ambition to increase self-sufficiency in pursuit of national security

NWF sees action on building trust and investability across other slides

NWF is able to unlock funding and more support for the heat transition and heat networks sector

Cabinet office coordinates across multiple key targets and takes ownership for heat transition as a whole

Action is coordinated across civil service, public bodies and industry, including bringing in HMCLG to focus on role of housing sector, DBT to encourage international trade and MoD to reduce national security concern from gas exposure

Signals to international community and other private investors that there is potential in GB HN market

Signals to those looking to invest in gas infrastructure that there are diminishing returns

Long term certainty in support remains essential in realising full benefits in terms of jobs created and investment drawn in within the timeframe stated. External volatility concerning gas as a contrast to stability from a supported low-carbon heat and heat networks sector that is not tied to gas is a core part of this long-term certainty

Private investment is pulled towards GB heat networks opportunities from more mature heat networks markets primarily across Europe

Outcomes from across previous slides need to also be realised to move further down this chain and realise medium/longer term outcomes including:

- Consumer trust to be built
- Institutions involved have strong, clear powers that create certainty in the face of continuing uncertainty elsewhere
- HMT and others make consistent action on cost of heat and appropriate financial support to sector
- Strategic zoning helps realise full benefit of Heat Networks in UK and also helps highlight new opportunities as they emerge

£100bn of investment will be drawn to Heat Networks by 2050 and our exposure to gas linked volatility will end