Energy Superhub Oxford

Local Trials

Oxford Energy Day, 2022

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Environmental Change Institute

University of Oxford

What is Energy Superhub Oxford?

Energy Superhub Oxford (ESO) integrates power, transport and heat innovation to accelerate Oxford's journey to zero carbon.

- Battery energy storage
- Electric vehicle infrastructure
- Low carbon heating

Oxford City Council

pivot power

Habitat Energy

Kensa Contracting
A Kensa Group Company

Invinity Energy Systems

University of Oxford

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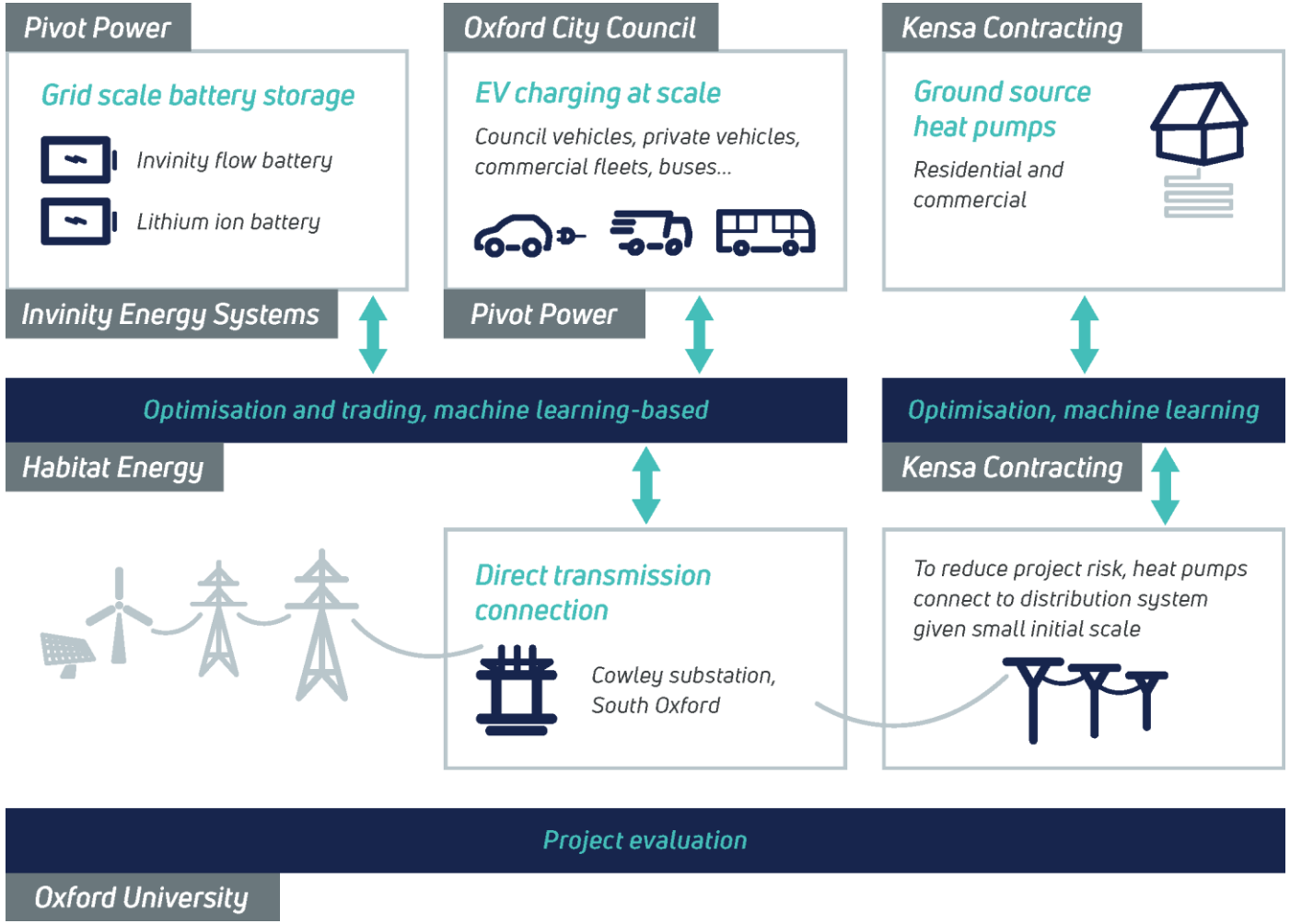
ESO scope, partners & roles



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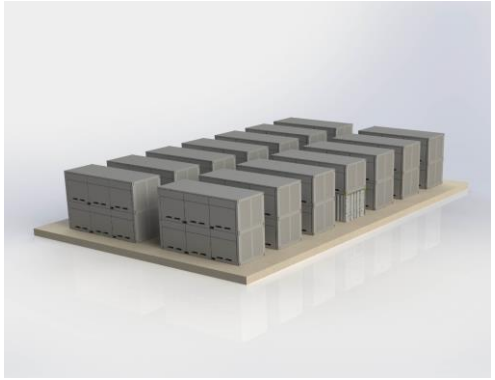
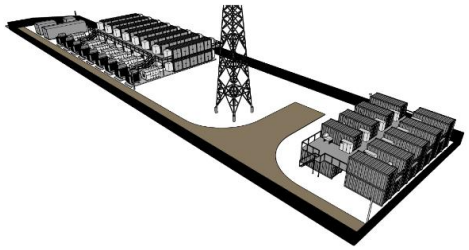
Power innovation

Enabling more renewable energy



- World’s largest hybrid battery energy storage system
- Hybrid battery will combine 50MW lithium-ion and 2MW vanadium flow
- Maximises use of renewable energy
- Trading in various energy markets



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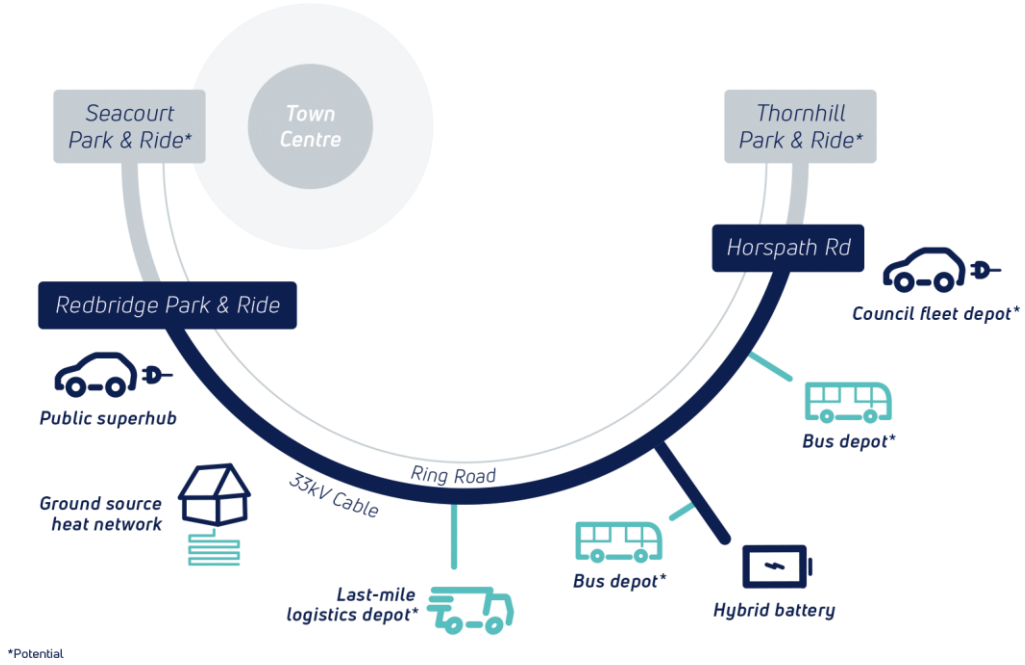
Transport innovation

- 34 electric vehicles funded as part of Oxford City Council plans to electrify 25% of its fleet by 2023
- Support for Hackney Carriage drivers to go electric
- 38 public chargepoints at Redbridge Park & Ride
- Council fleet depot charging
- 8km transmission-connected private wire network delivering up to 25MW of power



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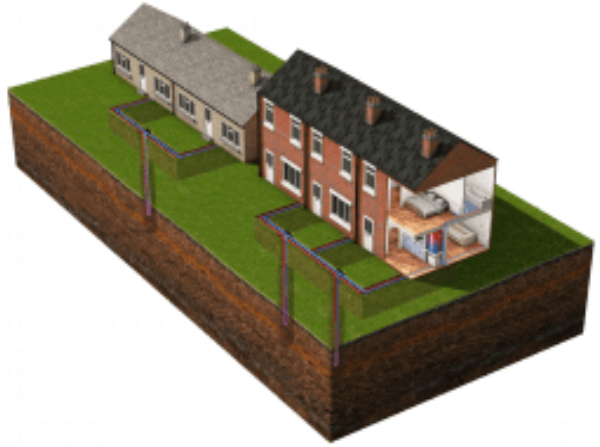
Heat innovation



- 57 social housing properties in Oxford

STONEWATER

- Ground source heat pumps with shared ground loop arrays

Kensa Contracting
A KENSA GROUP COMPANY

- Shoebox' heat pumps

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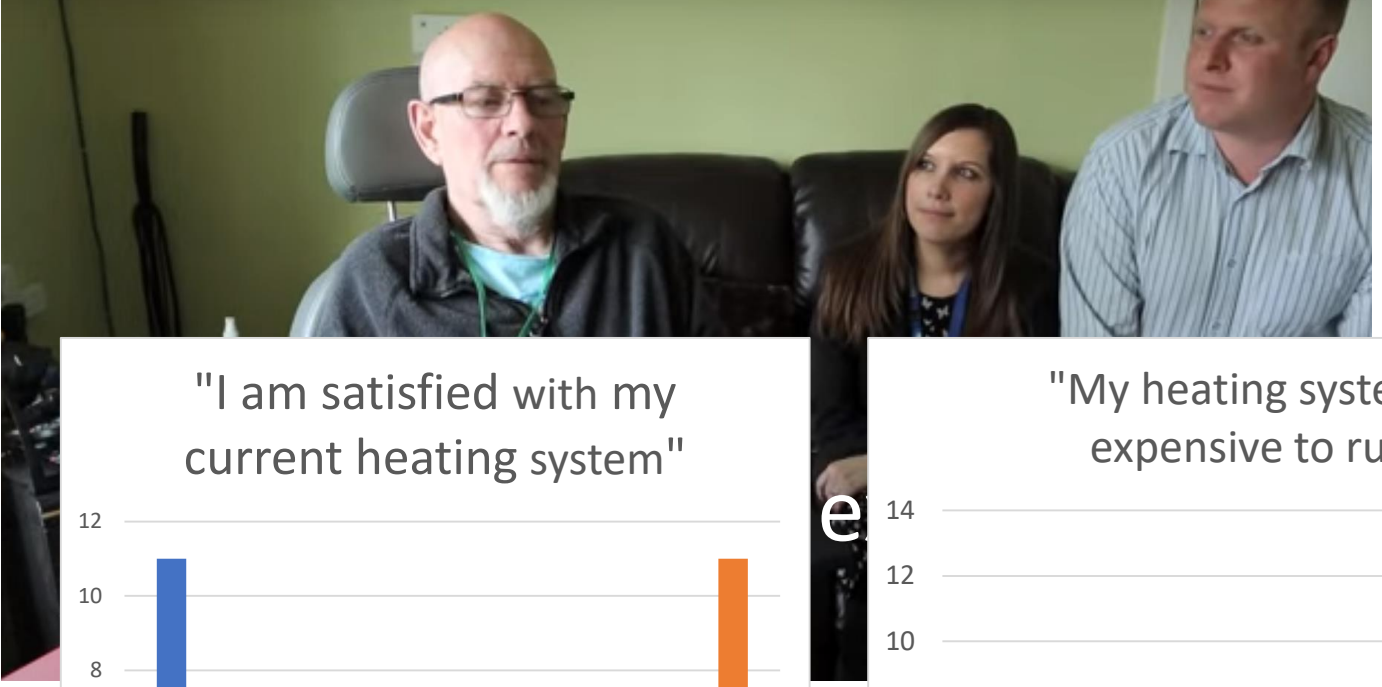
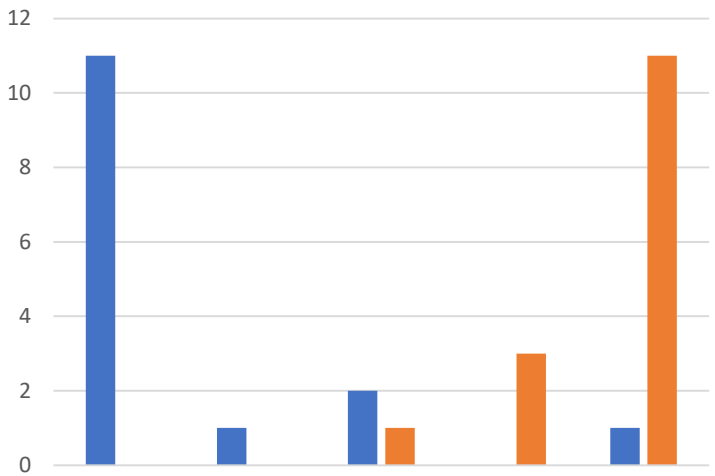
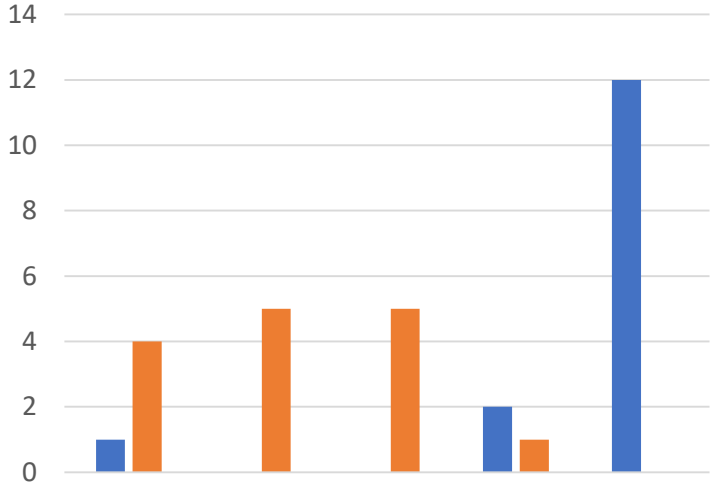


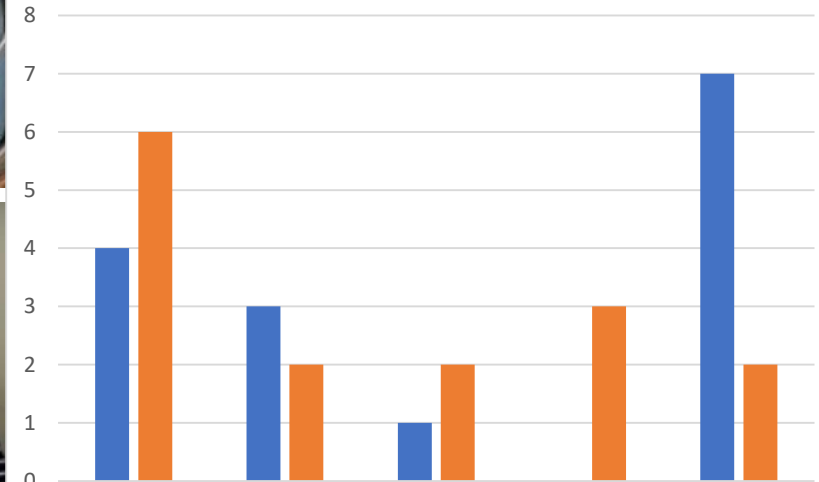
"I am satisfied with my current heating system"



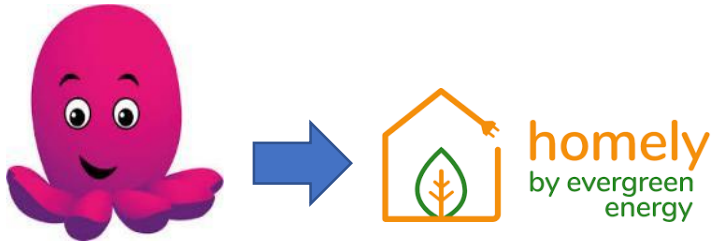
"My heating system is expensive to run"



"I often sacrifice my comfort to save money"



Designing for flexibility



Octopus Agile

homely by evergreen energy

Kensa Contracting
A KENSA GROUP COMPANY

- Heat pump equipped with load control capability
- Optimisation platform learns thermal loss characteristics, user preferences
- Heat pump schedule optimised to realise benefits from time-of-use tariffs
- Runs at cheaper/cleaner times of day (using pre-heating)

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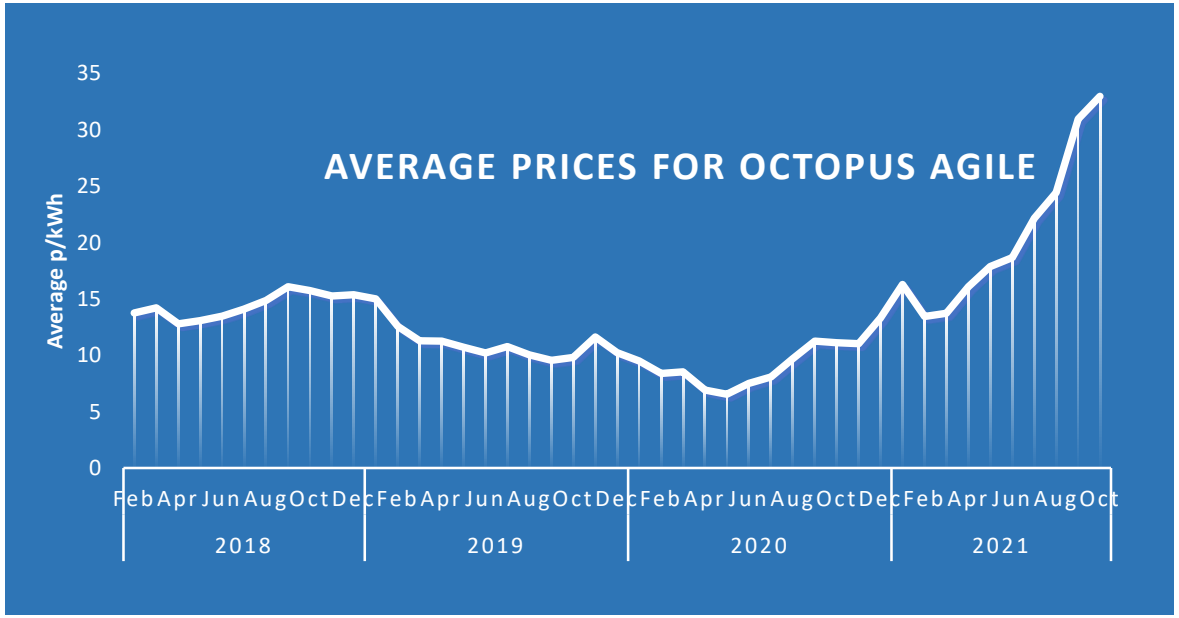
Difficulties achieving flexibility

- Pre-payment meters
- Inertia / reluctance
- Development of model
- Agile prices
- Access to Smart Meter data

… tenants use pre-payment meters



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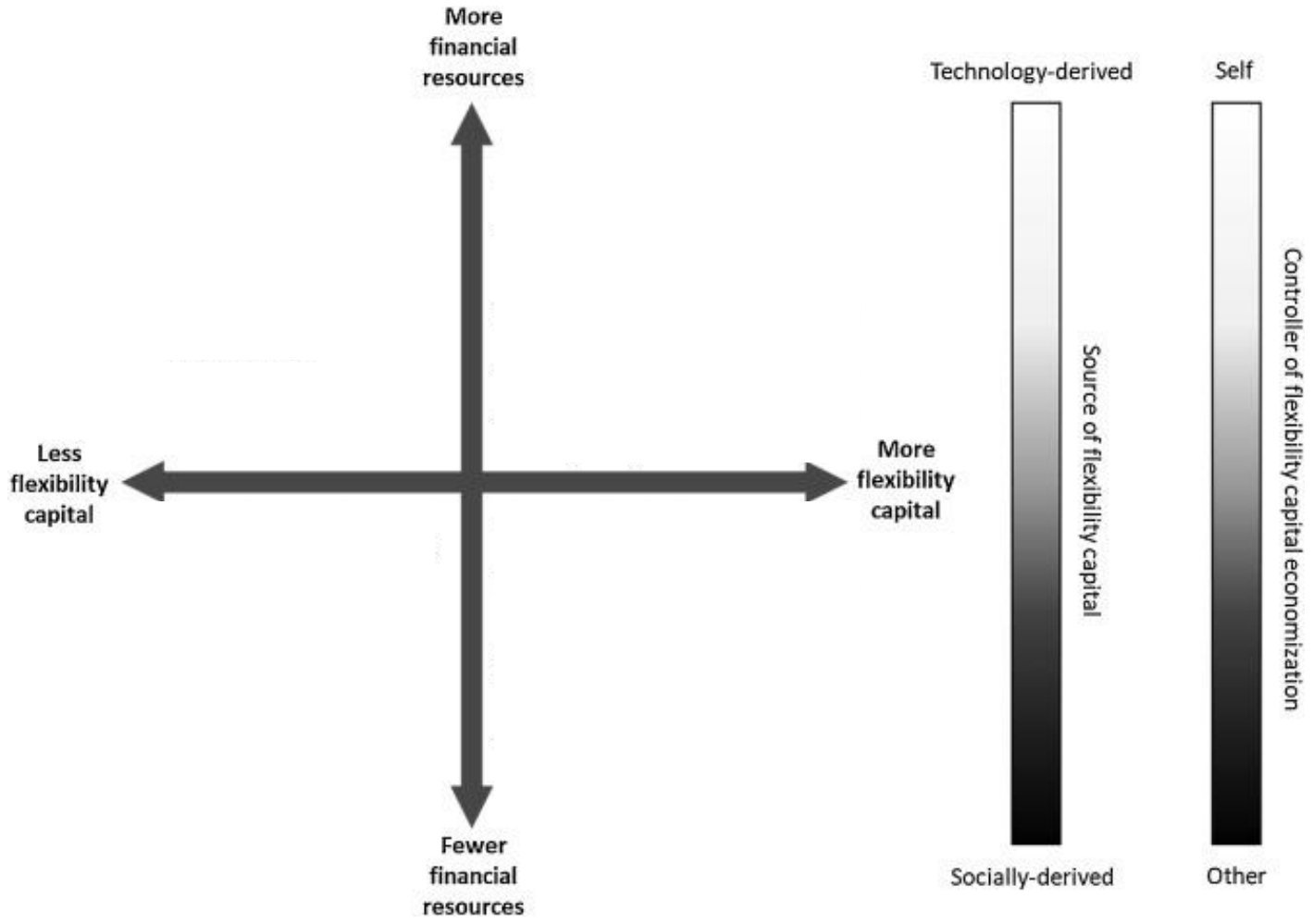
Achieving flexibility in social housing



Powells, G., Fell, M.J., 2019. Flexibility capital and flexibility justice in smart energy systems. *Energy Research & Social Science* 54, 56–59.

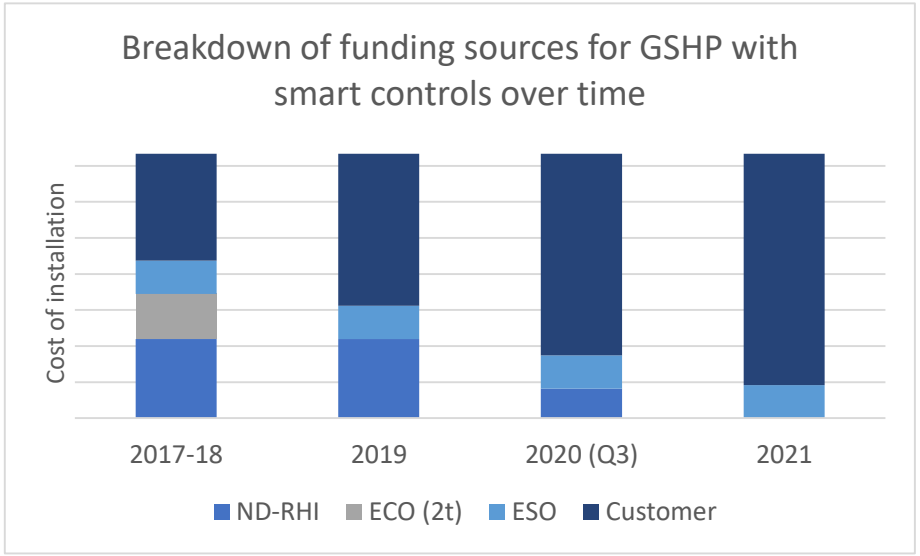
Scaling up

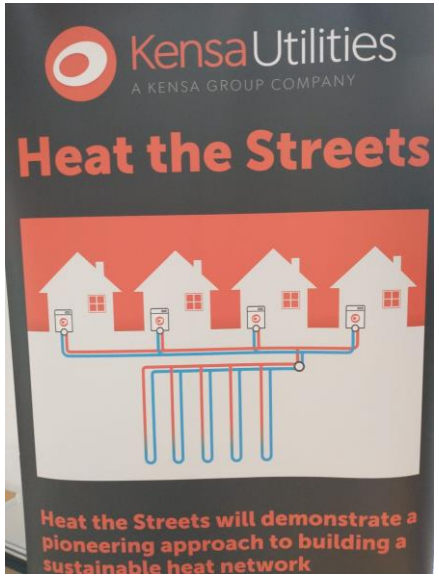
Challenges

- Removal of RHI

Opportunities

- Social Housing Decarbonisation Fund
- Energy price crisis?
- Motivated social landlords





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Thank you

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