LoT-NET

Advisory Board Meeting 5th October 2021

Parts 3: Decarbonisation, Replication, Dissemination

Low Temperature Heat Recovery and Distribution Network Technologies

Agenda

- Discussions & Advice from the last AB
- What we see as the evolving context
  - From Government, CCC, etc.
- EnergyREV policy review on decarbonizing heat in Smart Local Energy Systems (SLES)
  - With Jeff Hardy & Madeline Morris of EnergyREV/Imperial
- Discussion
- Approach and actions for Lot-NET

From the last AB….

Questions the team asked….

- What will the CCC's 20% of heating from heat networks actually be?
- How can LoT-NETs help PFER projects be integrated, multi-vectoral systems, not just an assembly of activities?
- How can LoT-NETs make local energy systems smart and flexible?

Advice the AB offered….

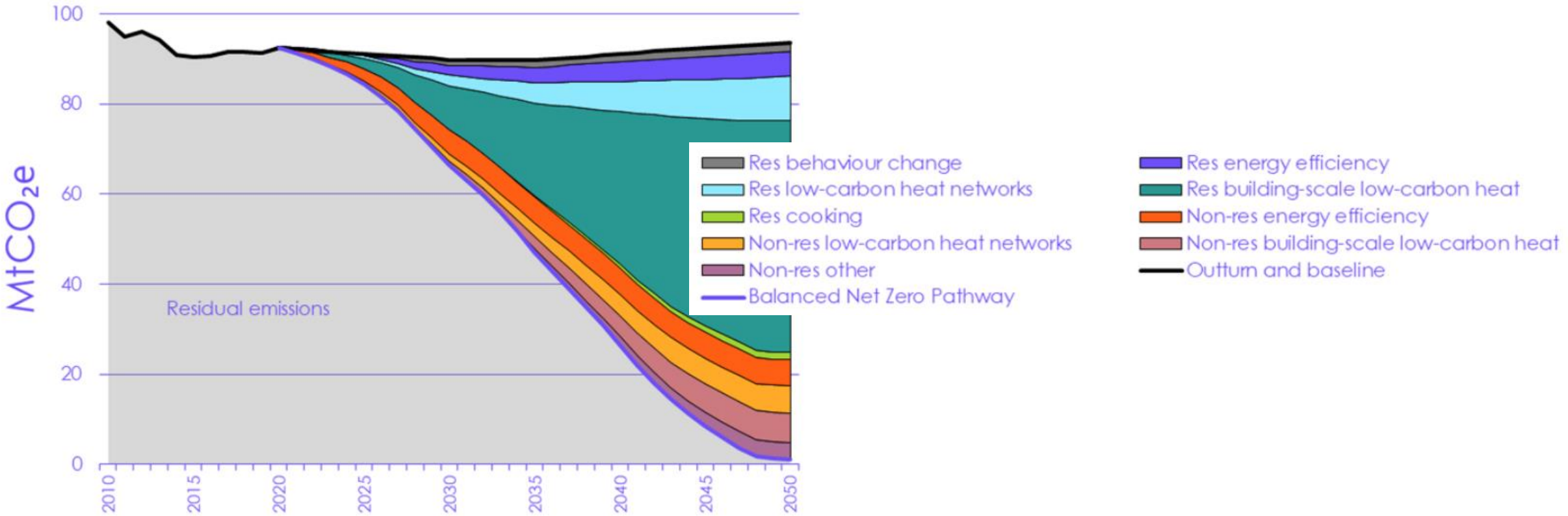
- Produce a low temperature network "playbook"
- How can LoT-NETs…
  - Work with existing buildings/retrofits?
  - Manage real time flexibility and address peaks?
  - Represent an "upgrade" to existing heat networks?
  - Inform building standards
- What is the most effective dissemination for the work in LoT-NET?

The Evolving Context

- The PM's Ten Point Plan for a Green Industrial Revolution (Nov 2020)
- The Energy White Paper: Powering our Net Zero Future (Dec 2020)
- From the Industrial Strategy to Build Back Better (March 2021)
- The long-awaited Heat and Buildings Strategy
  - 600,000 HPs per year by 2028, Natural Gas Boiler Ban, Shifting green costs to gas only, Clean Heat Grant, Future Homes Standard, National Retrofit Strategy
- The CCC's Sixth Budget (Dec 2020)
  - Sector Summary for Buildings: All buildings to EPC C, Scale up use of heat pumps, Expand use of low carbon heat networks in cities, Prepare for a potential role for hydrogen in heating

The CCC's Sixth Budget

Figure 3.2.a Sources of abatement in the Balanced Net Zero Pathway for Buildings



EnergyREV

LoT-NET Advisory Board Meeting

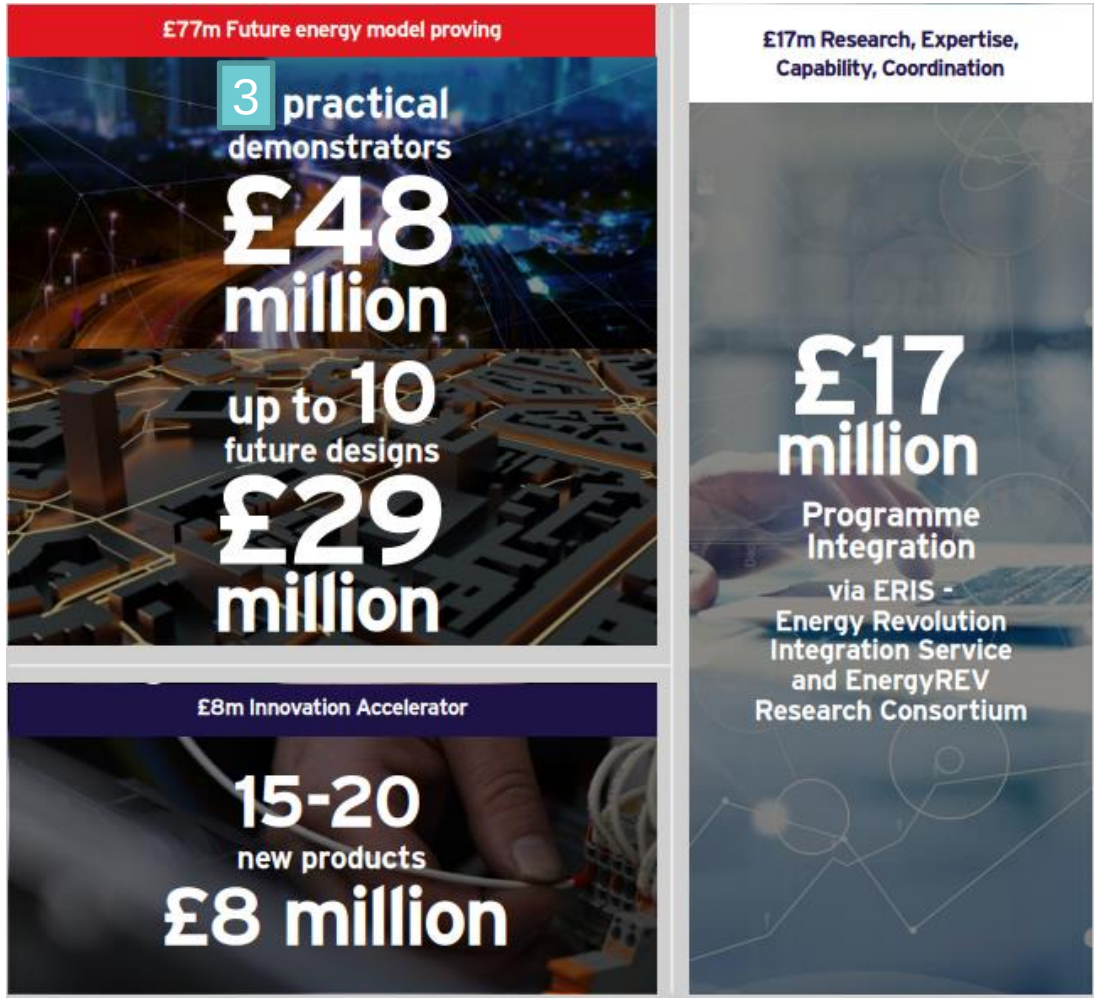
David Elmes, Jeff Hardy, Madeleine Morris

5th October 2021

INDUSTRIAL STRATEGY

UK Research and Innovation

EnergyREV within Prospering from the Energy Revolution (PFER)



Informing projects' future plans for delivery and scaling

Systematic research and analyses of longer-term requirements and innovations

Integrating knowledge from global activities

EnergyREV

The policy & regulatory landscape review

"Do we have the appropriate policy, institutional and regulatory framework to realise the technical, economic and societal potential of Smart, Local Energy Systems?"

1. Search methods

- Crowdsourcing
- Systematic online search
- Background documents
- Citation search

2. Screen + Sift

- Inclusion/exclusion criteria applied to all
- **Include relevant**
- Exclude irrelevant

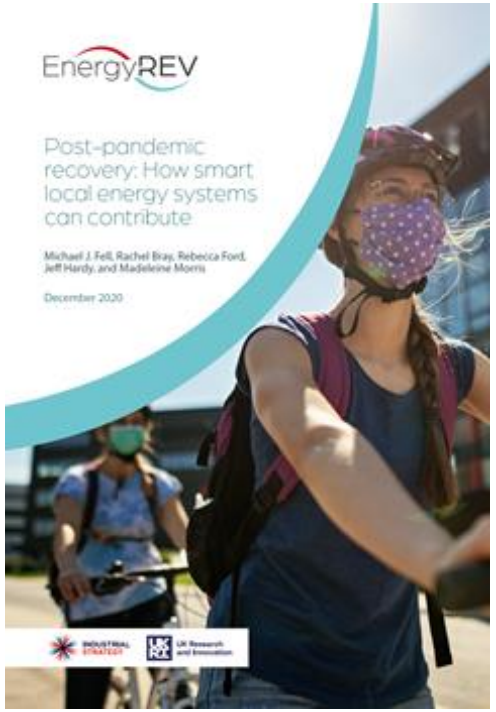
3. Analysis

- Inductive coding
- Thematic analysis
- Cross-cutting themes
- Value chain
- Tech/ activity

Outputs to date – rigorous systematic reviews

- Definitions matter
- Ownership and visibility
- Market access and stacking value
- User-centric smart design
- Create smart local energy systems today

- PFER opportunity to learn, demonstrate & inform on market/platform design
- DER unleashed by platforms – but trust essential
- ESO and DSO roles



- SLES approach could result in net-zero transition that is faster, has more benefits, and is fairer.

Working paper 3: Energy efficiency, heating and cooling & Paper on Co-benefits of smart local energy systems & Energy Justice

- Expected summer 2021
- Co-benefits, barriers and SLES aspects of heating and cooling
- Co-benefits of SLES
- Energy justice aspects of SLES

Working paper 3: decarbonisation of heat in smart local energy systems

- **Why decarbonising heat is inherently local**
  - Substituting fossil-fuel heat will cost two to three times more than a systems approach at local levels (ESC)
  - Heat demand varies locally due to building standards & consumption patterns (hence LEAPs, LHEESs, SLESs…)
- **Why decarbonising heat must be smart, flexible and viewed as a system**
  - Being smart and flexible increases benefits versus just substituting heat supply technologies
  - Smarter, system benefits will be needed as technology cost curves will not be fast enough
- **Why decarbonising heat needs new regulations and business models**
  - Regulation of heat networks still evolving (2014, 2015, 2020) and HaaS (ESC, UKERC, CREDS) is at an even earlier stage
  - Is regulation based on choice and competition the right approach for heat?
  - Investable business models need a level of regulatory confidence
- **Why decarbonising heat needs to consider behaviours and societal benefits**
  - Understanding behaviours with clear price signals (switching) has needed large scale trials and has taken time
  - Considering societal benefits can make heat decarbonisation fairer, faster and ultimately cheaper overall

Returning to the discussion…. Next steps for LoT-NET?

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