# Our Energy Futures

## The EDRC Citizens' Panel

**19 December 2025**          **Steve Pye**

LCS-RNet 16th Annual Meeting

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# What we'll cover

- The policy context

- Previous work on energy demand reduction (EDR)

- Running a Citizen's Panel

- Emerging insights

**Project team:**

# Policy context

- UK GHG emissions have fallen by over 50% since 1990 (current just over 400 MtCO2e)

- Mainly decarbonisation of energy supply and industry

- Net zero will require significant actions in end use sectors (notably buildings & transport)

- Strong policy focus on supply side – what about energy demand reduction (EDR)?



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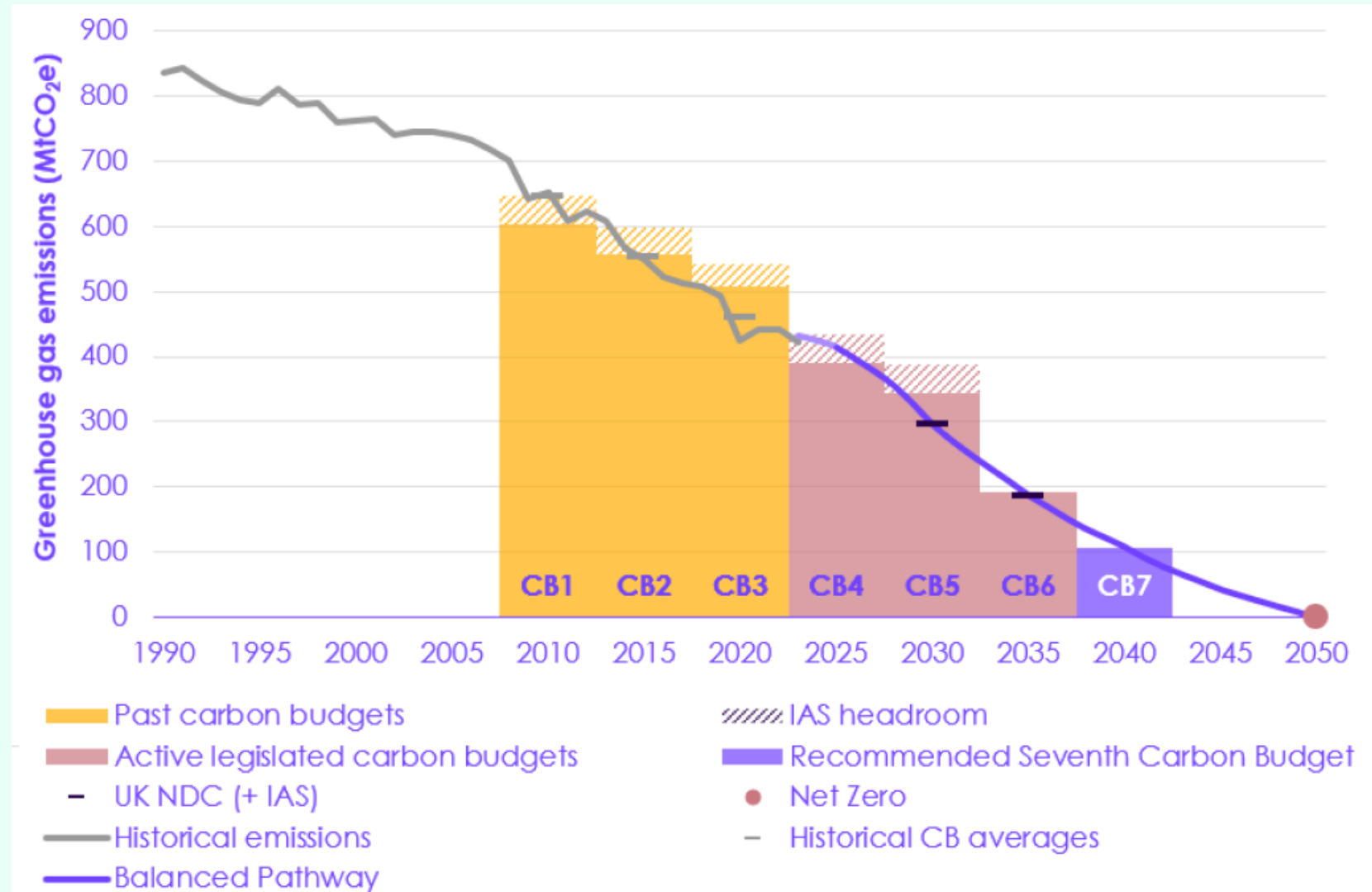
# Energy demand reduction (EDR) research

Two pieces of research – i) **technical potential** of EDR in the UK (left) and ii) **engagement by policy makers** on EDR

**OPEN**

## Energy demand reduction options for meeting national zero-emission targets in the United Kingdom

John Barrett[1,2], Steve Pye[1,4], Sam Betts-Davies[1,2], Oliver Broad[3], James Price[4], Nick Eyre[1], Jillian Anable[1,5], Christian Brand[1,6], George Bennett[1,4], Rachel Carr-Whitworth[1,2], Alice Garvey[2], Jannik Giesekam[1,7], Greg Marsden[1,5], Jonathan Norman[1,2], Tadj Oreszczyn[1,4], Paul Ruyssevelt[4] and Kate Scott[8]

In recent years, global studies have attempted to understand the contribution that energy demand reduction could make to climate mitigation efforts. Here we develop a bottom-up, whole-system framework that comprehensively estimates the potential for energy demand reduction at a country level. Replicable for other countries, our framework is applied to the case of the United Kingdom where we find that reductions in energy demand of 52% by 2050 compared with 2020 levels are possible without compromising on citizens' quality of life. This translates to annual energy demands of 40 GJ per person, compared with the current Organisation for Economic Co-operation and Development average of 116 GJ and the global average of 55 GJ. Our findings show that energy demand reduction can reduce reliance on high-risk carbon dioxide removal technologies, has moderate investment requirements and allows space for ratcheting up climate ambition. We conclude that national climate policy should increasingly develop and integrate energy demand reduction measures.

## Policymaker-led scenarios and public dialogue facilitate energy demand analysis for net-zero futures

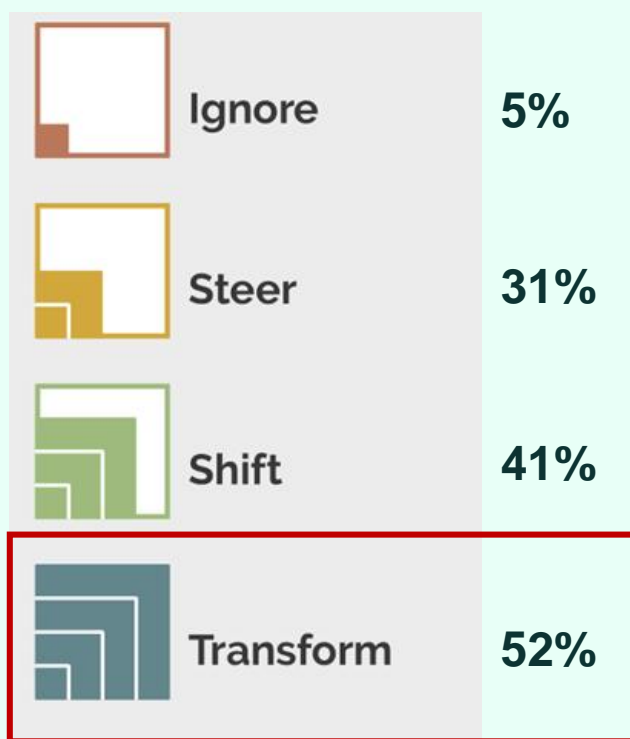Maria Sharmina[1], Oliver Broad[2], John Barrett[3], Christian Brand[4], Alice Garvey[3], Harry Kennard[5], Jonathan Norman[3], James Price[6], Steve Pye[6], Jack Snape[7] & Emily White[8]
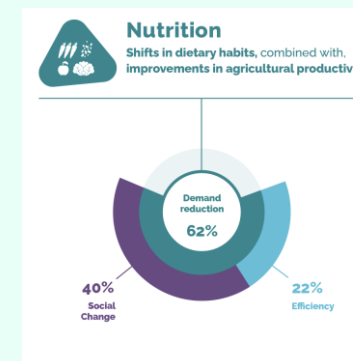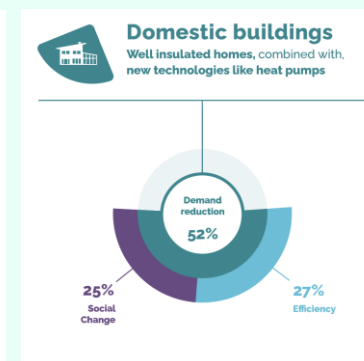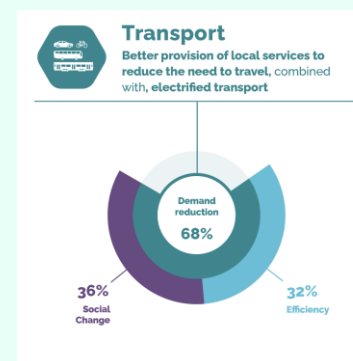
Demand-side energy reductions have so far received less policy support than supply-side net-zero technologies. Here we undertake a demand-focused process for energy scenario analysis, led by policymakers and evaluated through public dialogue. We codesign, describe and model four societal futures that aim to achieve the UK's 2050 net-zero target. The uniquely close involvement of policymakers leading the project generates markedly different narratives that reflect policymakers' concerns while still leading to scenarios with reductions in energy demand of 18–45%–exceeding what policies normally suggest. By 2050, technology-focused systems cost 20–100% more than lower-demand ones. While intensive cocreation requires more complex interactions compared with academic-led research, it provides space for important, and otherwise absent, energy demand conversations. This work demonstrates how engaging policymakers to colead energy scenarios can challenge conventional policy assumptions on energy demand while offering an approach to support global climate mitigation efforts.

# Technical potential of EDR

**Halving** of final energy by 2050, smaller supply system making transition to Net Zero more manageable, and less reliance on carbon dioxide removal…….



Ignore — 5%

Steer — 31%

Shift — 41%

Transform — 52%

By 2050, a 52% reduction in total energy demand is possible.

Total demand reduction 52%

29% Social Change

22% Efficiency

**Transport**
Better provision of local services to reduce the need to travel, combined with, electrified transport
Demand reduction 68%
36% Social Change
32% Efficiency

**Domestic buildings**
Well insulated homes, combined with, new technologies like heat pumps
Demand reduction 52%
25% Social Change
27% Efficiency

**Nutrition**
Shifts in dietary habits, combined with, improvements in agricultural productivity
Demand reduction 62%
40% Social Change
22% Efficiency

**Materials and products**
Radical changes in how we consume products and packaging, combined with, industrial efficiency measures
Demand reduction 26%
21% Social Change
5% Efficiency

….but what do citizens think about such changes?

# Why a Citizen's Panel?



- What is the **social mandate** for substantial reductions in energy demand to help achieve net zero?

- What are the **conditions** necessary to enable those reductions?

- How can a deliberative process contribute to developing more **socially-informed modelling**?

*EDRC Citizens' Panel Meeting. Photo source: Andy Yuille*
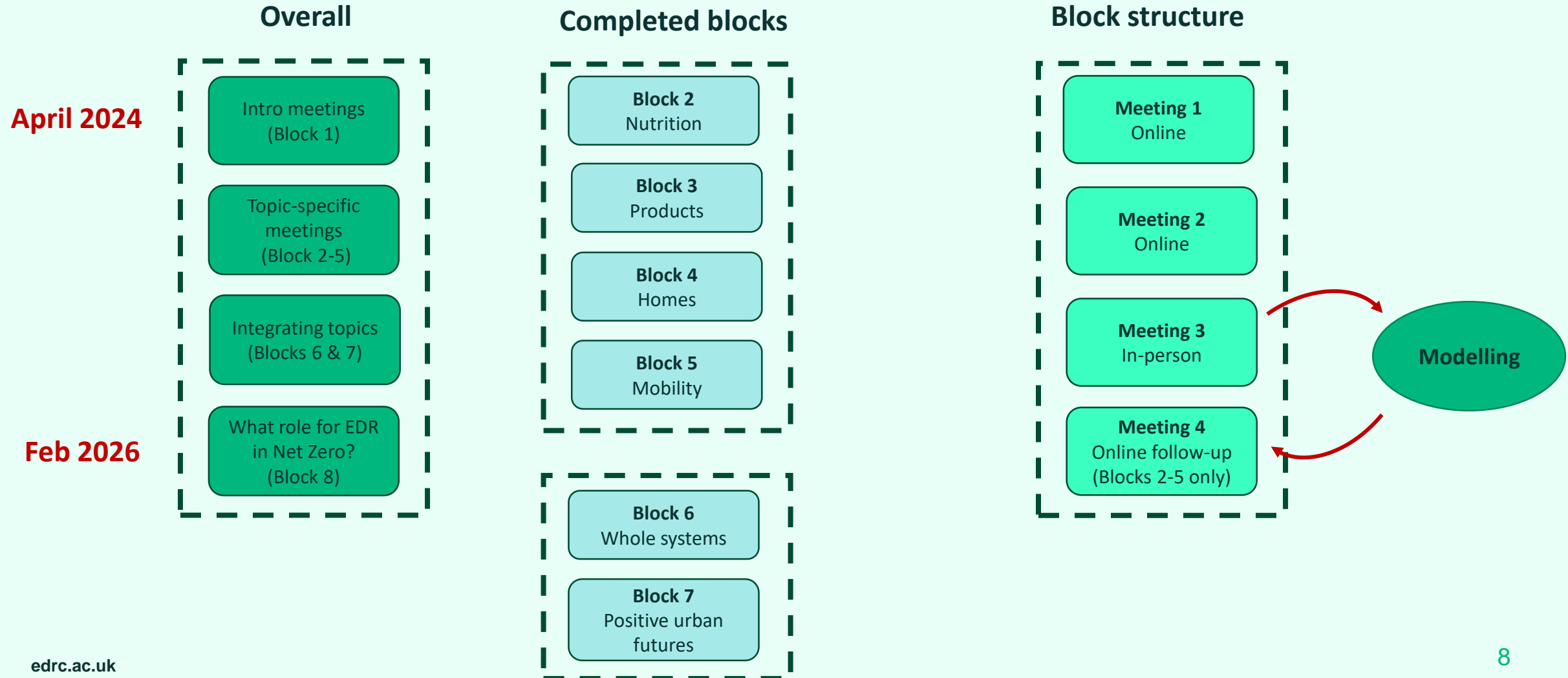
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# Running a Citizen's Panel



- 40 person panel selected for representativeness

- Deliberative approach: small group discussions, semi-structured & exploratory – allowing for openness, depth, conditionality

- Novelty of approach in integrating modelling into deliberative process

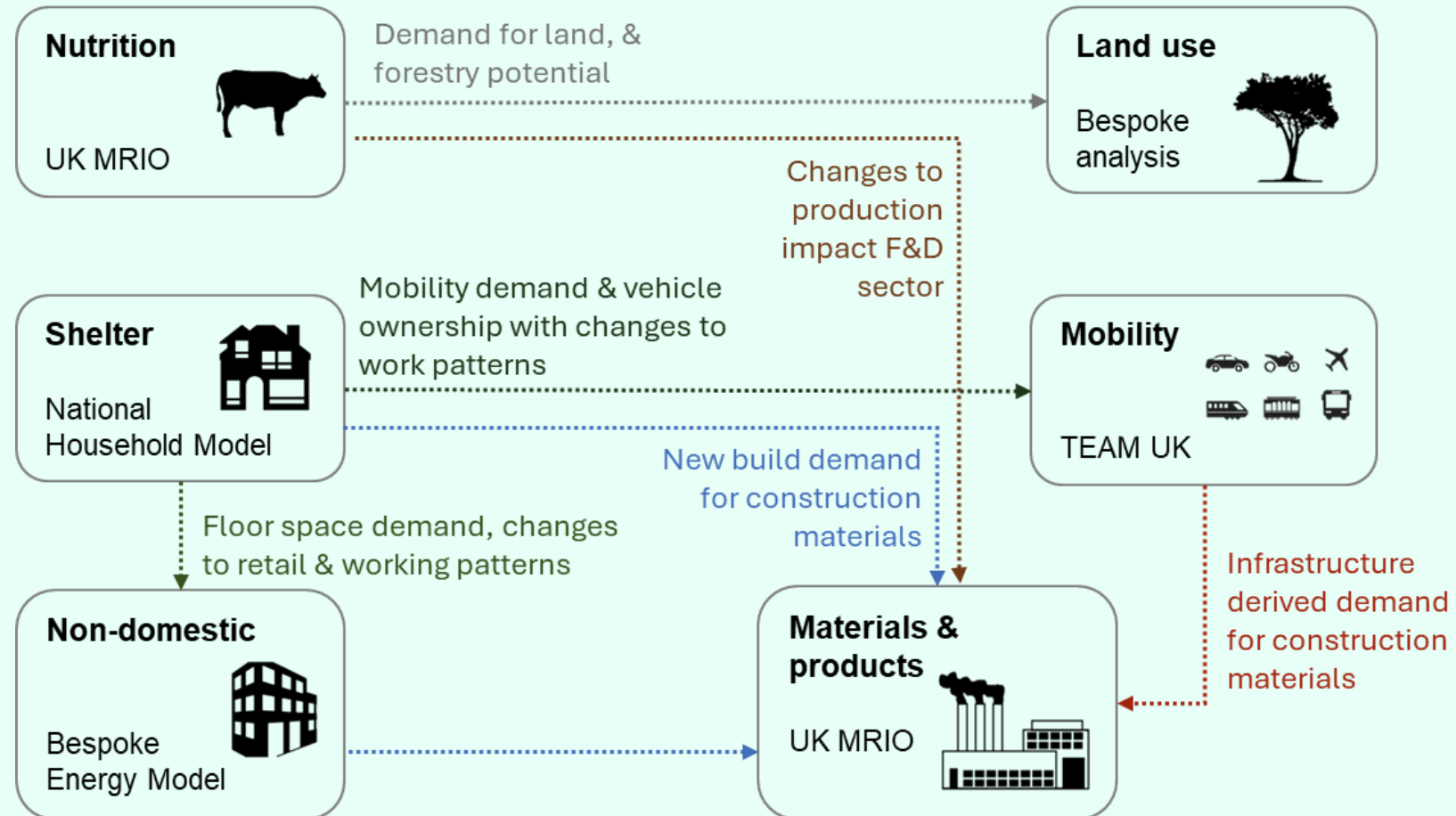- Panel selection and facilitation by Involve

*EDRC Citizens' Panel Meeting. Photo source: Andy Yuille*

# Project structure

## Overall

**April 2024**

Intro meetings
(Block 1)

Topic-specific
meetings
(Block 2-5)

Integrating topics
(Blocks 6 & 7)

What role for EDR
in Net Zero?
(Block 8)

**Feb 2026**

## Completed blocks

**Block 2**
Nutrition

**Block 3**
Products

**Block 4**
Homes

**Block 5**
Mobility

**Block 6**
Whole systems

**Block 7**
Positive urban
futures

## Block structure

**Meeting 1**
Online

**Meeting 2**
Online

**Meeting 3**
In-person

**Meeting 4**
Online follow-up
(Blocks 2-5 only)

**Modelling**

# Modelling approach

- Bespoke modelling used for each sector (blocks 2-5) to interpret panel-based deliberations

- For Block 6, sector modelling fed into a whole energy model (UKTM) to assess EDR in context of wider system



**Nutrition**
UK MRIO

Demand for land, & forestry potential

**Land use**
Bespoke analysis

Changes to production impact F&D sector

**Shelter**
National Household Model

Mobility demand & vehicle ownership with changes to work patterns

**Mobility**
TEAM UK

New build demand for construction materials

Floor space demand, changes to retail & working patterns

**Non-domestic**
Bespoke Energy Model

**Materials & products**
UK MRIO

Infrastructure derived demand for construction materials

# Block 4 example: Homes

**Framing question**

How could we reduce energy demand from heating the nation's homes in ways that are fair, save people money, and improve comfort and health?
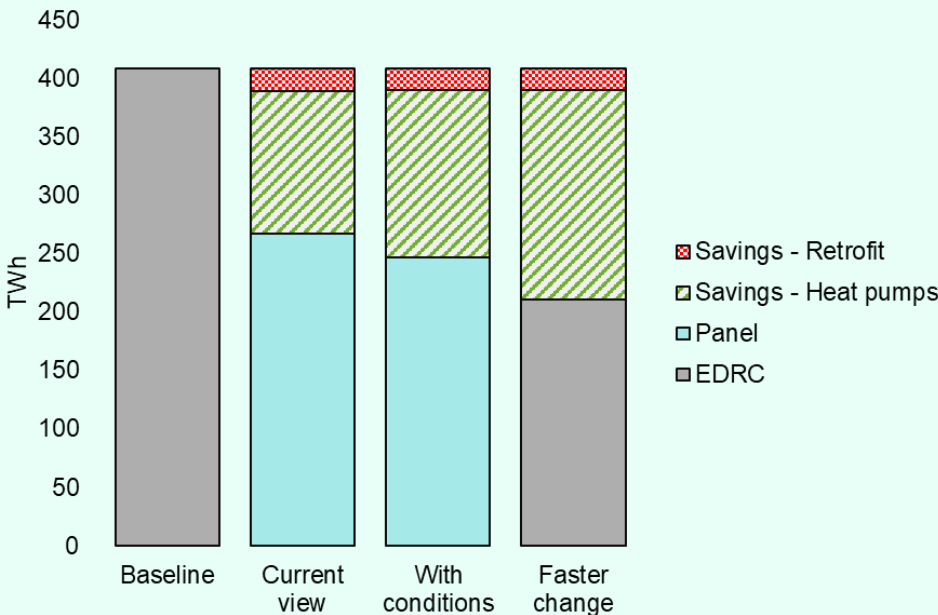
**Conditionality of take-up**

- Lower / comparable running costs
- Support for high upfront costs
- Approved supplier & long guarantees
- Mechanism for renters to benefit
- Information & advice

**Model translation**

Based on i) acceptance of measure; ii) speed of uptake and iii) conditionality
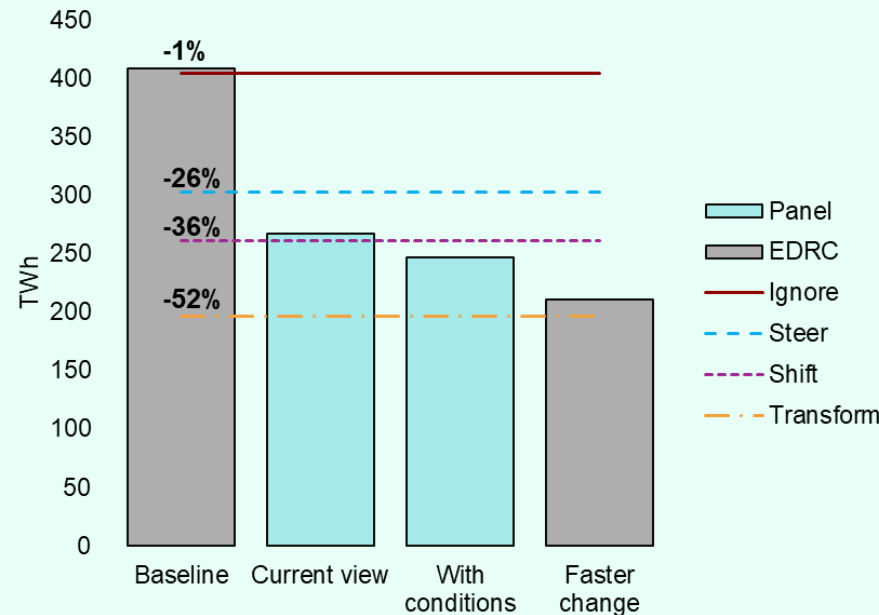


**Panel EDR reductions relative to PLEF scenarios**



**Panel EDR reductions by aggregate measure**

# Block 6 example: Whole system

- Develop 6 panel informed scenarios – with differing levels of EDR based on sector based deliberation (Blocks 2-5)

- Explore trade-offs between energy demand reduction, energy supply and carbon dioxide removal – using dashboard



Source: Our Energy Futures Dashboard
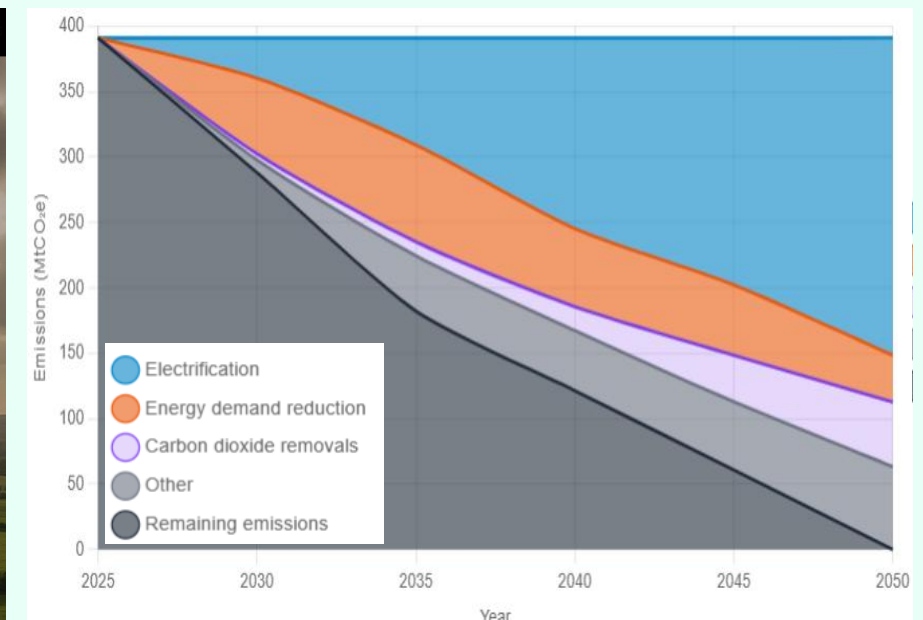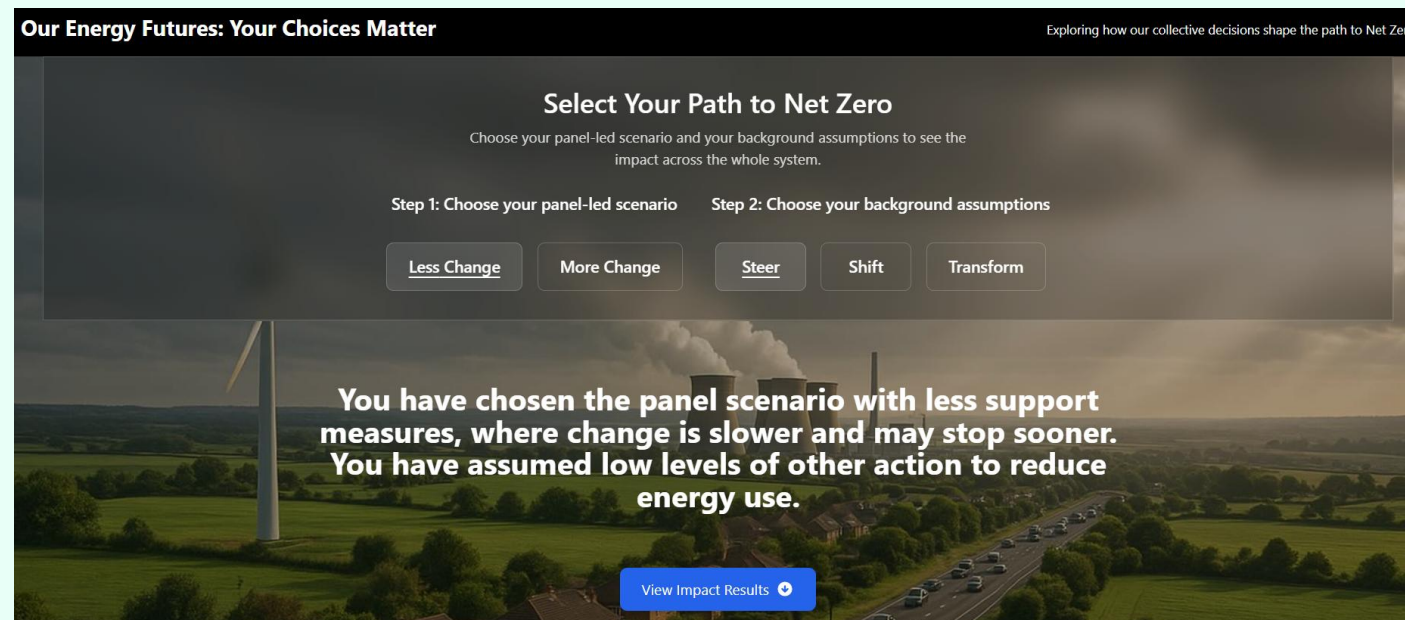
# Emerging insights

- Public are willing to provide a mandate for EDR – but conditionality is key

- Many measures are popular but the ability to make choices constrained by range of barriers

- Key evidence for decision makers on opportunities for EDR

- Deliberative-Modelling approach has benefits; i) provides quantified implicationsto panel of decisions e.g. on meeting Net Zero, on costs etc, ii) helps inform aspects of model feasibility

- However, challenging to 'parameterise' deliberative discussion into models!

# Questions?

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