

# Assessing wellbeing for energy demand reduction measures for a net zero transition



**10<sup>th</sup> September 2025**

**Tyndall Centre Conference**

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EDRC Governance Theme

SPRU, University of Sussex

## Car-dependent transport systems (Mattioli et al., ERSS, 2020)

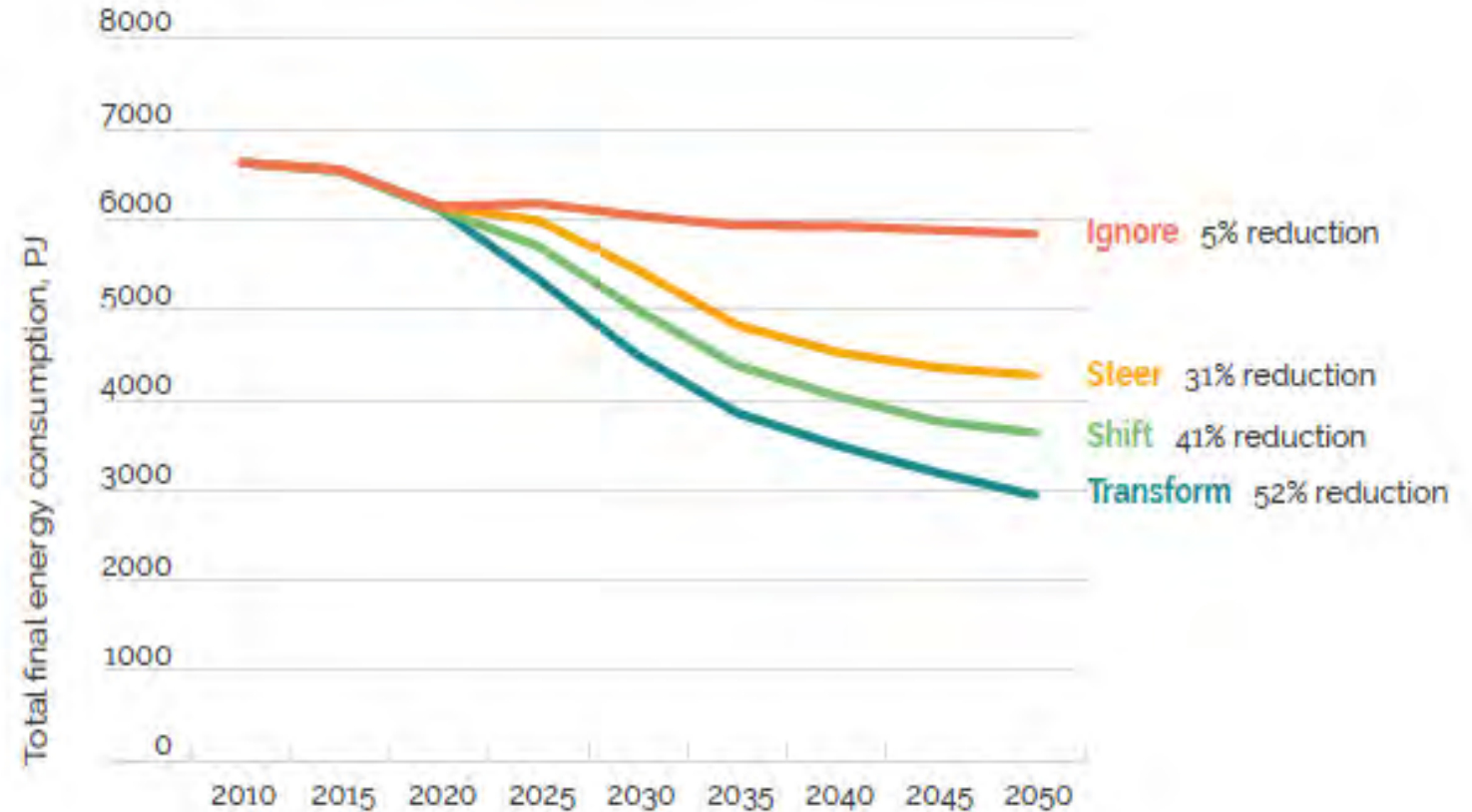
- Automotive industry
  - Industrial power, lobbying efforts
- Car infrastructure
  - Roads as key infrastructure, supporting economic growth
- Land use patterns
  - Car-dependent housing development
- Undermining of public transport
  - Lack of investment
- Car culture
  - Habits, practices and trends



Photo by [Quaid Lagan](#) on [Unsplash](#)

# CREDS Low energy demand scenarios

- Delivering net zero could be achieved with a >50% reduction in energy demand (or usage), whilst maintaining or enhancing citizens' quality of life
- This depends on how citizens value co-benefits (health, economy, social, local environment)
- Most energy saving activities must be devised and delivered locally
- This will require social change: structural change as well as individual behavioural change



Source: Barrett et al. (2022), *Nature Energy* and <https://low-energy.creds.ac.uk/>

# Focus groups with citizens – multi-criteria assessment

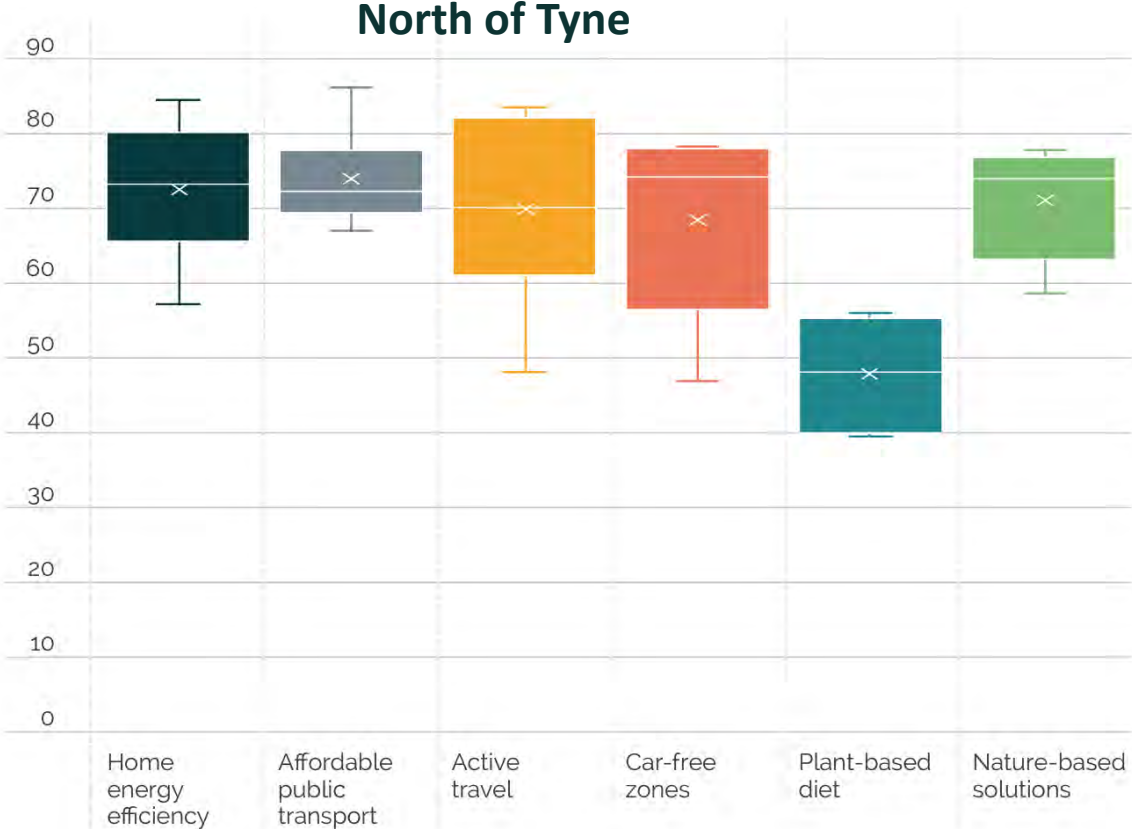
- 6 policy options:

| Options                     | Description  |
|-----------------------------|--|
| Home energy efficiency      | 2,000 houses retrofit to EPC 'C'                         |
| Affordable public transport | 50% bus fare reduction                                   |
| Active travel               | Expansion of cycle-hire & bike lanes                     |
| Car-free zones              | Car-free zones restricting driving through town centres  |
| Nature-based solutions      | Re-wilding of local countryside, new nature reserves     |
| Plant-based diets           | Public building & school meals vegetarian and dairy free |

- 6 wellbeing criteria:

| Criteria                     | Description   |
|------------------------------|---|
| Health benefits              | Improved physical & mental health   |
| Safe & supportive community  | Community resilience, crime reduction, access to services for all         |
| Value for Money              | Public investments that consider both economic and social benefits        |
| Quality jobs                 | Good quality, flexible and long-term jobs, fair pay & working time        |
| Safe/clean local environment | Access to safe, clean, green spaces for living, leisure, and outdoor play |
| Climate Change               | Reduced fuel/energy consumption   |

# Citizen focus groups – weighted scores





# Key themes highlighted by focus group participants

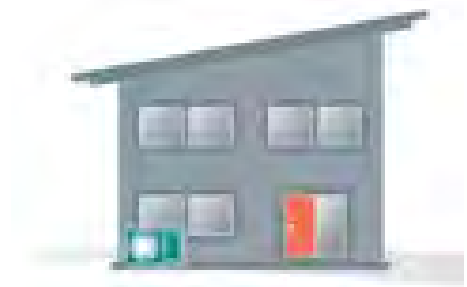
## 1) Fairness – distribution and access

- Fairness in distribution of benefits
- Ensuring segments of population are not excluded due to abilities or location



## 2) Affordability and reliability of services

- Affordability (value for money) of council initiatives and services
- Reliability of service delivery



## 3) Physical and mental health

- Enhancing people's mental and physical health, by being active and losing weight
- Reducing pollution (air quality) and boosting mood via opportunities to socialise



## 4) Environmental protection, leisure and feeling happy

- Benefits to future generations – tackling climate change
- Enhanced biodiversity, increased wildlife, wetland restoration, air quality



# How to assess co-benefits and wellbeing frameworks for energy demand reduction policy

## **Assessing co-benefits:**

Energy demand reduction measures can deliver a range of co-benefits: health, energy security, economy, social, local environment

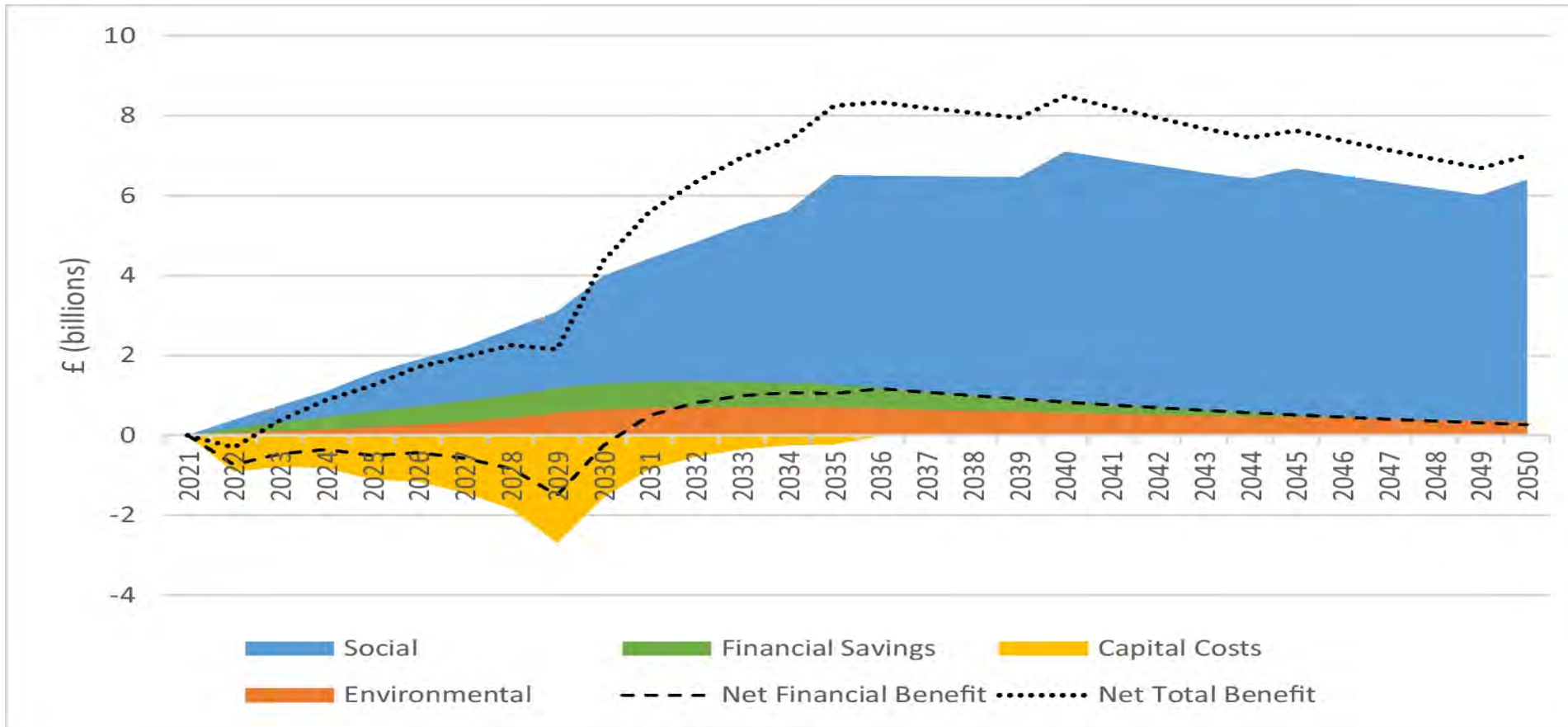
Two broad approaches to assessing co-benefits:

- Putting a monetary value on these within a cost-benefits analysis framework
- Using a multi-criteria analysis or wellbeing framework to assess trade-offs

## **Some examples of co-benefits frameworks:**

- University of Edinburgh Quantitative economic assessment framework
- CAST Carbon and Co-benefits Decision Support Tool for local authorities
- Doughnut economy model – ecological ceiling/social foundation at local/global levels

# Costs and benefits of actions to meet UK's 6<sup>th</sup> carbon budget in 6 urban regions



Source: Sudmant, A et al. (2024) [Climate policy as social policy? A comprehensive assessment of the economic impact of climate action in the UK](#), Journal of Environmental Studies and Sciences



# CAST Carbon and Co-benefits Decision Support Tool

- Impacts Questionnaire divided into 9 Impact Areas:
  - 1. Equality and Inclusion
  - 2. Health
  - 3. Resilience and Adaptation
  - 4. Housing
  - 5. Economy
  - 6. Mobility and Connectivity
  - 7. Carbon, Nature and Environment
  - 8. Consumption and Production
  - 9. Climate Change Target
- For each Impact Area, policy developer is asked to assess whether the impact of proposed action has long-term or short-term **positive** or **negative** impacts on different aspects or groups
- Source: <https://cast.ac.uk/resources/carbon-and-co-benefits-decision-support-tool-resources/>

# Use of tool for Greater Manchester Combined Authority Net Zero Homes Plan

Delivering 30000 Net Zero Carbon Social Rented Homes Initial Implementation Plan.pdf - Adobe Acrobat Reader DC (32-bit)

File Edit View Sign Window Help

Home Tools Delivering 30000 N... x

3 / 27 46.7%

### Equalities Impact, Carbon and Sustainability Assessment:

#### Impacts Questionnaire

| Project Indicator  | Result | Justification/Mitigation  |
|--|--------|---|
| Equality and Inclusion                                       | Green  | New social housing will be accessible by and accessible part targeted specifically at people with protected characteristics. New social housing will be accessible by and targeted specifically to support equality and economically disadvantaged people. New social housing developments should be planned to encourage access to public services.  |
| Health   | Green  | New social housing provides a long term, sustainable solution to housing needs and gives a stable base for communities to grow stronger. Safe, permanent, warm and healthy homes will be provided for households in housing need. New social housing developments will be designed with the need for access to open space and provision for active travel considered.   |
| Resilience and Adaptation                                    | Green  | New social housing provides a long term, sustainable solution to housing needs and gives a stable base for communities to connect with each other. Delivery of net zero carbon homes as a pilot will contribute to the transformation of GMR housing stock in line with carbon reduction targets. Homes provided will be affordable, net zero carbon and permanent, providing a safe and stable base for people otherwise likely to be made vulnerable by their existing housing circumstances. Homes will be developed in line with Place for Everyone and other relevant policies on blue and green infrastructure.   |
| Housing  | Green  | Safe, permanent, warm and healthy homes will be provided for households in housing need, including those experiencing homelessness. Places will be set at local rent levels, and accessed via local authority housing registers. Delivery is likely to be substantially on brownfield sites, and there may be a net release of existing buildings. All homes under this proposal will be net zero carbon standards, as set out in Places for Everyone.  |
| Economy  | Green  | Accident activity generated by design, financing, construction and supply chain associated with housing delivery. Employment will be generated by design, financing, construction and supply chain associated with housing delivery, and by subsequent management and maintenance. Through anticipated transition to off-site manufacture construction technique, one objective will be to transition the working environment of the construction sector. Through contribution to long term preparation of delivery of net zero carbon new homes, likely to be a substantially owned and managed by social housing provider based and run in place. Innovation in design, manufacture, construction and maintenance of new homes will be needed to achieve this strategy. Increased investment in the supply chain is expected as part of the drive to innovation. New skills and education will be needed to deliver via the new methods outlined. |
| Mobility and Connectivity                                    | Green  | By adopting Place for Everyone policies, positive long-term and overall impacts should be achieved on active and environment. Net zero carbon homes delivered at scale will have significant positive impacts on carbon emissions, and indirectly will lead to further reduction in costs for market delivery of net zero carbon homes. During construction phase, negative impacts are likely to the level of noise, light or dust emissions to the environment.   |
| Order, Nature and Environment                                | Yellow | Proven and technical innovation required to deliver this strategy will significantly reduce waste generated by housing building. One of the key anticipated changes to be driven by this strategy is to minimise construction waste. Resource efficiency and resource circularity are potential benefits from the transition to modern methods of construction.   |
| Consumption and Production                                   | Green  | Homes built under this strategy will be energy efficient, affordable, are likely to incorporate low and net zero carbon energy generation & storage, clean technology innovation, be better adapted to climate change impacts, contribute to increased biodiversity and the improvement of local air quality and the use of sustainable blue and green infrastructure. Transforming the skills and capacity of the construction sector to deal with the delivery of these objectives and will be supported by the implementation plans to be.   |
| Contribution to achieving the Net Carbon Neutral 2030 target | Green  | Equalities Impact Assessment and Carbon Assessment  |

Further Assessment(s):

- Positive impacts overall, whether long or short term.
- Use of positive and negative impacts table: efforts to achieve.
- Minor negative impacts, with an overall positive impact: efforts to consider.
- Negative impacts overall: efforts to consider.

### Carbon Assessment

| Overall Score                                | Result | Justification/Mitigation  |
|--|--------|---|
| Buildings                                    | Green  | Energy performance of new residential buildings will be EPC A. All homes will be net zero carbon - other options to Phase 1/2 may prove suitable. Biodiversity impact assessment will need to be undertaken on site by site basis. On-site renewable energy will be assessed on site by site basis but likely to be common feature. |
| New Build residential                        | Green  |   |
| Residential building(s) renovation/extension | Green  |   |
| New Build Commercial/Industrial              | N/A    |   |
| Transport                                    | N/A    |   |
| Active travel and public transport           | N/A    |   |
| Roads, Parking and Vehicle Access            | N/A    |   |
| Access to amenity                            | N/A    |   |
| Vehicle procurement                          | N/A    |   |
| Land Use                                     | Green  |   |
| Land use                                     | Green  |   |

### Equalities impact

The provision of 30,000 additional net zero carbon social rented homes will add significantly to the availability of secure, safe, warm and affordable homes to households in housing need across the city region and has the potential to significantly address housing inequalities. The new homes will be allocated through local Housing Registers. We know that people can be disadvantaged in meeting their housing need on the basis of protected characteristics, can face discrimination in the housing market or difficulties in accessing suitable homes to meet their needs and aspirations. As the programmes sketched out in this report are further developed, we will use evidence of past and current issues to help design the implementation and priorities for delivery of the 30,000 homes, and directly involve communities to ensure any adverse impacts are minimised and the potential to reduce discrimination is maximised.

Source: <https://cast.ac.uk/resources/carbon-and-co-benefits-decision-support-tool-resources/>

# Economic vs wellbeing assessment frameworks

## HM Treasury Green Book



Source: [HM Treasury Green Book](#)

## Cornwall Council Development and Decision wheel



Source: [The Cornwall Development and Decision Wheel](#)

# Green growth vs post-growth economic frameworks

## Green growth

- Goal of increasing GDP growth
- Investment in industrial development, such as green industrial clusters, leading to job creation and economic growth
- Public investment as 'de-risking' private investment
- 'Trickle-down' impacts of economic growth, enabling higher levels of consumption
- Increasing tax revenues to government enabling higher public spending on health, education, welfare etc.

## Post-growth

- Goal of improving human wellbeing within planetary boundaries
- Investment in key industries, e.g. renewables, but contraction of harmful industries, e.g. fossil fuels, flying, finance sector
- Directly addressing wellbeing, e.g. universal basic services, such as energy and water
- Promoting sufficiency, i.e. reducing intensive forms of consumption, as well as efficiency
- Increasing government spending, while using price controls etc to contain inflation

# Social change for climate action?

- Need to think about changing locked-in systems, not just individual behaviour change
- Low energy demand pathways offer potential for reaching net zero without risky technological options, whilst enhancing people's quality of life
- People value wider social, environmental and economic benefits of climate action, but we need useful tools for assessing these benefits in policy-making
- This approach is consistent with a post-growth economic framing, aiming to improve human wellbeing within planetary boundaries



# CREDS and EDRC research projects

- CREDS (Centre for Research into Energy Demand Solutions) Local Green New Deals project 2022-23, led by SPRU and New Economics Foundation
  - Donal Brown, Christian Jaccarini, Timothy J Foxon, Giulia Mininni, Claire Copeland, Marie Claire Brisbois, Siobhán Stack-Maddox, Beatriz Aguirre Martinez and Max Lacey-Barnacle (2023), [Local Green New Deals: A transformative plan for achieving the UK's climate, social and economic goals locally](#), CREDS report
  - Giulia Mininni, Timothy J Foxon, Claire Copeland, Beatriz Aguirre Martinez, Donal Brown, Marie Claire Brisbois, Gerardo A. Torres Contreras, Siobhán Stack-Maddox, Max Lacey-Barnacle, Christian Jaccarini (2024), [Increasing wellbeing through energy demand reduction for net zero: Citizen perceptions of co-benefits of local measures](#) Energy Research & Social Science 108, 103799
- EDRC (Energy Demand Research Centre) project 2023-25, Assessing co-benefits and wellbeing frameworks for energy demand reduction policy, Tim Foxon and Josh Lait
  - Lait, J. Foxon, T. J., McLachlan, C. and Sudmant, A. (2025), *Strategies for the Assessment of Co-Benefits in Energy and Climate Policy*. Available at SSRN: <https://ssrn.com/abstract=5229840>
  - Lait, J. and Foxon, T. J., (2025), *Decision-support tools for the assessment of co-benefits: Insights from UK energy and climate policy*. Available at SSRN: <https://ssrn.com/abstract=5286571>
- EDRC project 2025-27, Assessing economic framings for governing low energy demand pathways
  - How could a broader post-growth/ wellbeing framing help to deliver low energy demand pathways?