EDRC
Energy Demand Research Centre

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

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Tyndall Centre Conference

Tim Foxon

EDRC Governance Theme

SPRU, University of Sussex

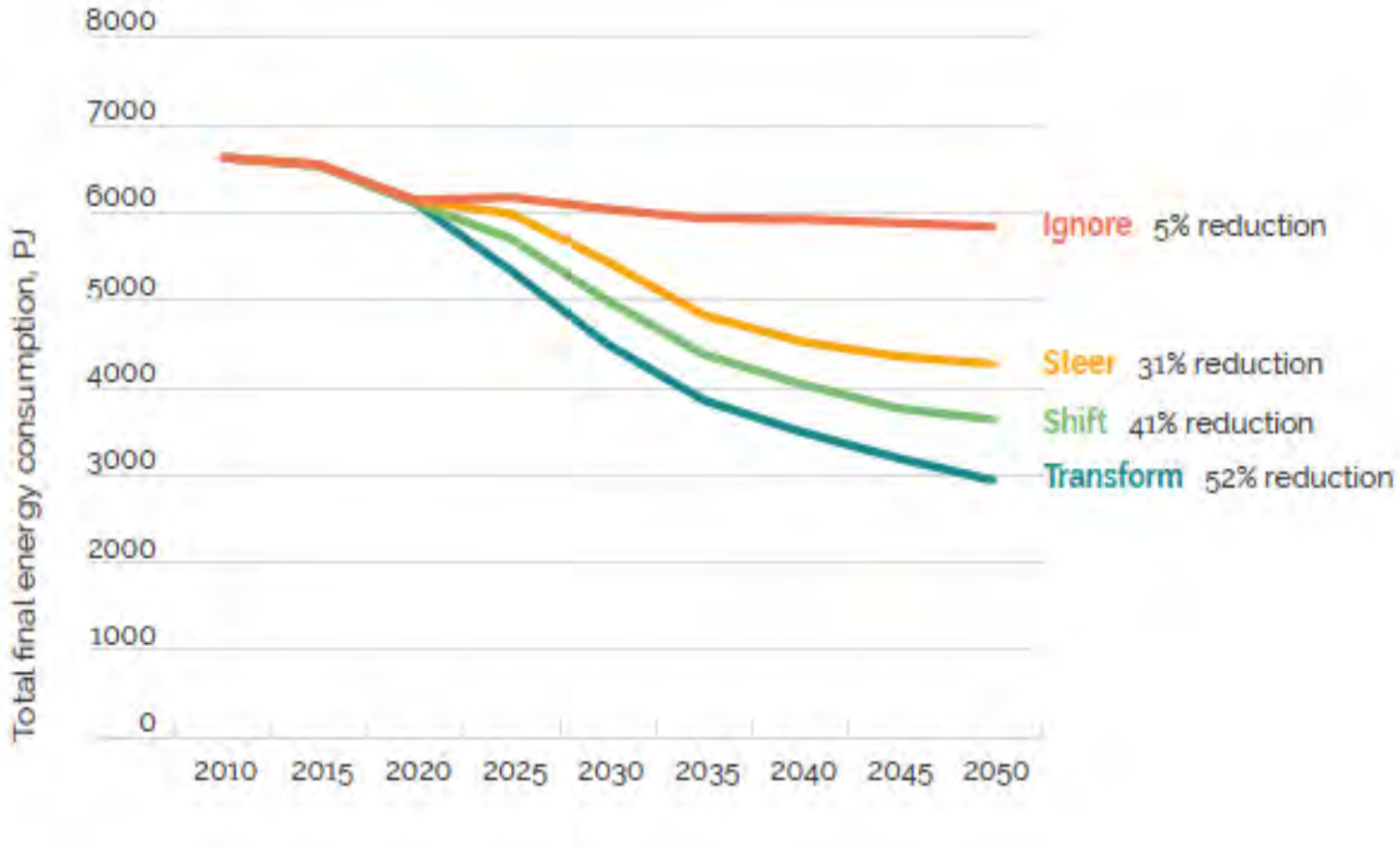
Car-dependent transport systems (Mattioli et al., ERSS, 2020)

- 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

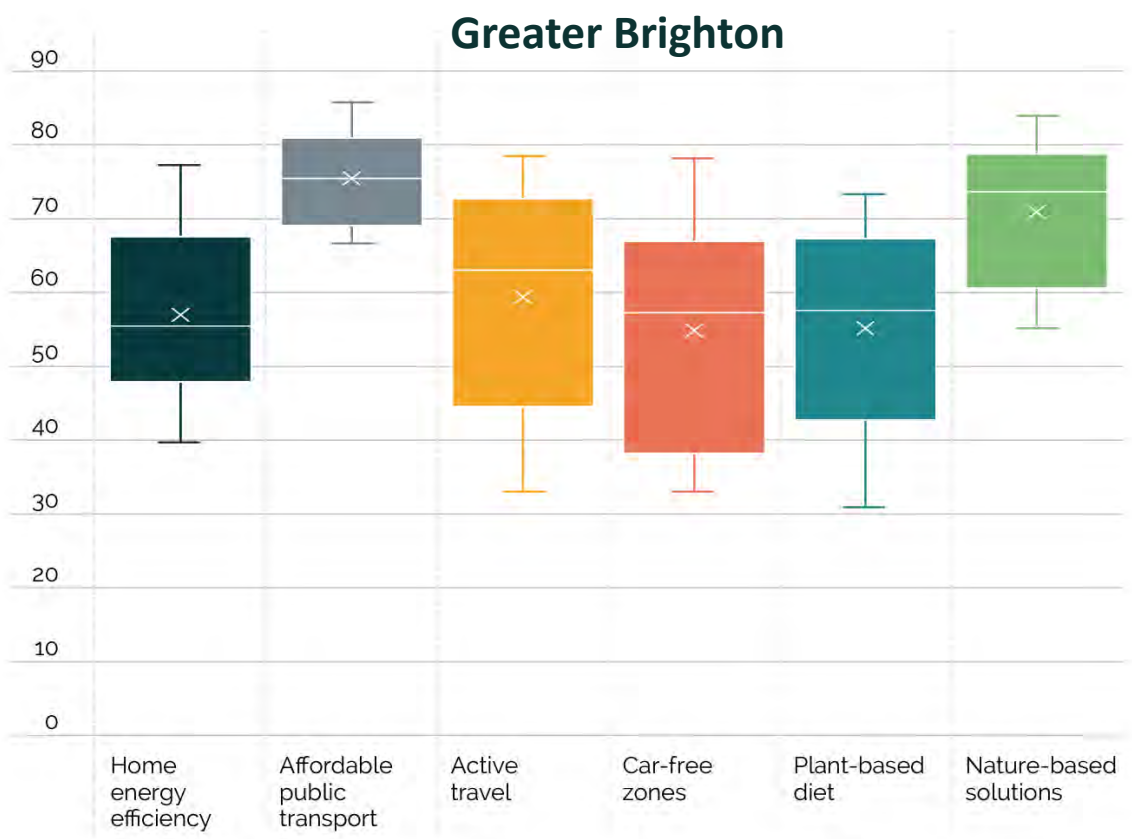
- 6 policy options:

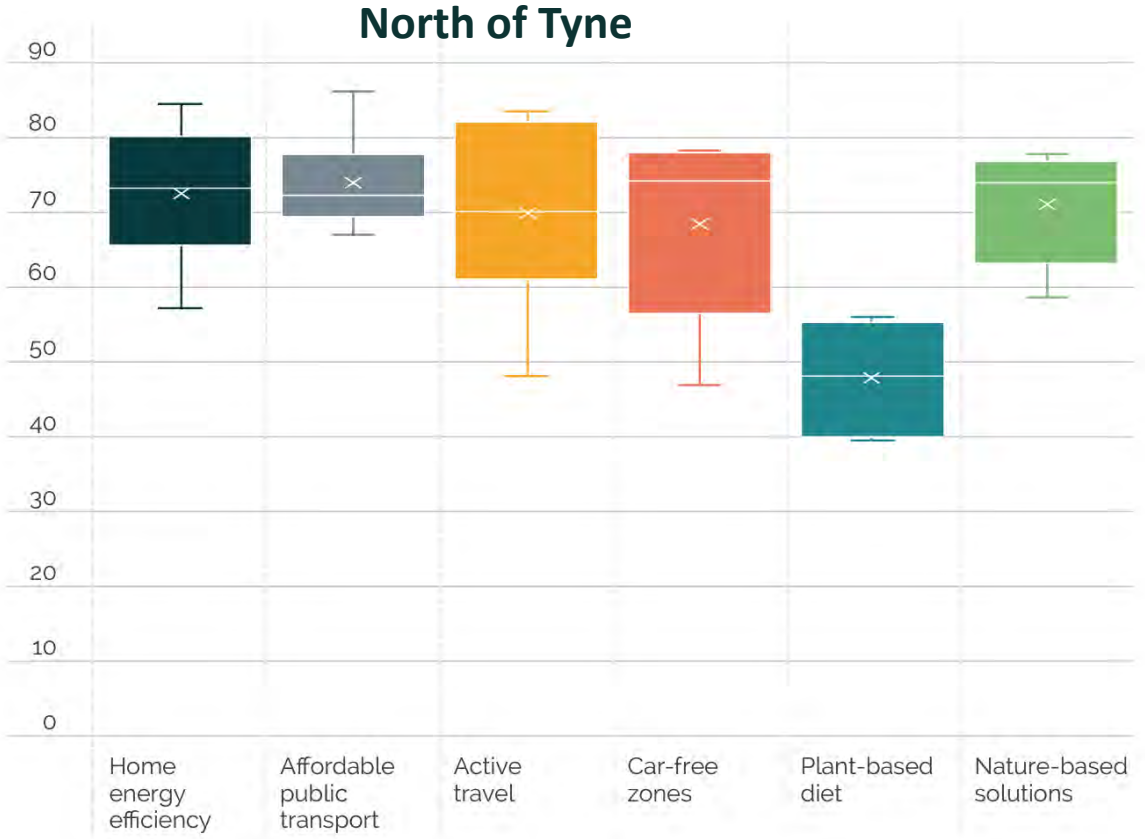
Options	Description
Home energy efficiency	2,000 houses retrofit to EPC 'C'
Affordable public transport	50% bus fare reduction
Active travel	Expansion of cycle-hire & bike lanes
Car-free zones	Car-free zones restricting driving through town centres
Nature-based solutions	Re-wilding of local countryside, 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





Source: Mininni et al. (2024), Increasing wellbeing through energy demand reduction for net zero: Citizen perceptions of co-benefits of local measures Energy Research & Social Science 108, 103799

Key themes highlighted by focus group participants

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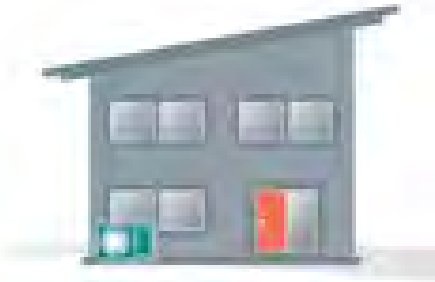
1) Fairness – distribution and access

- 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

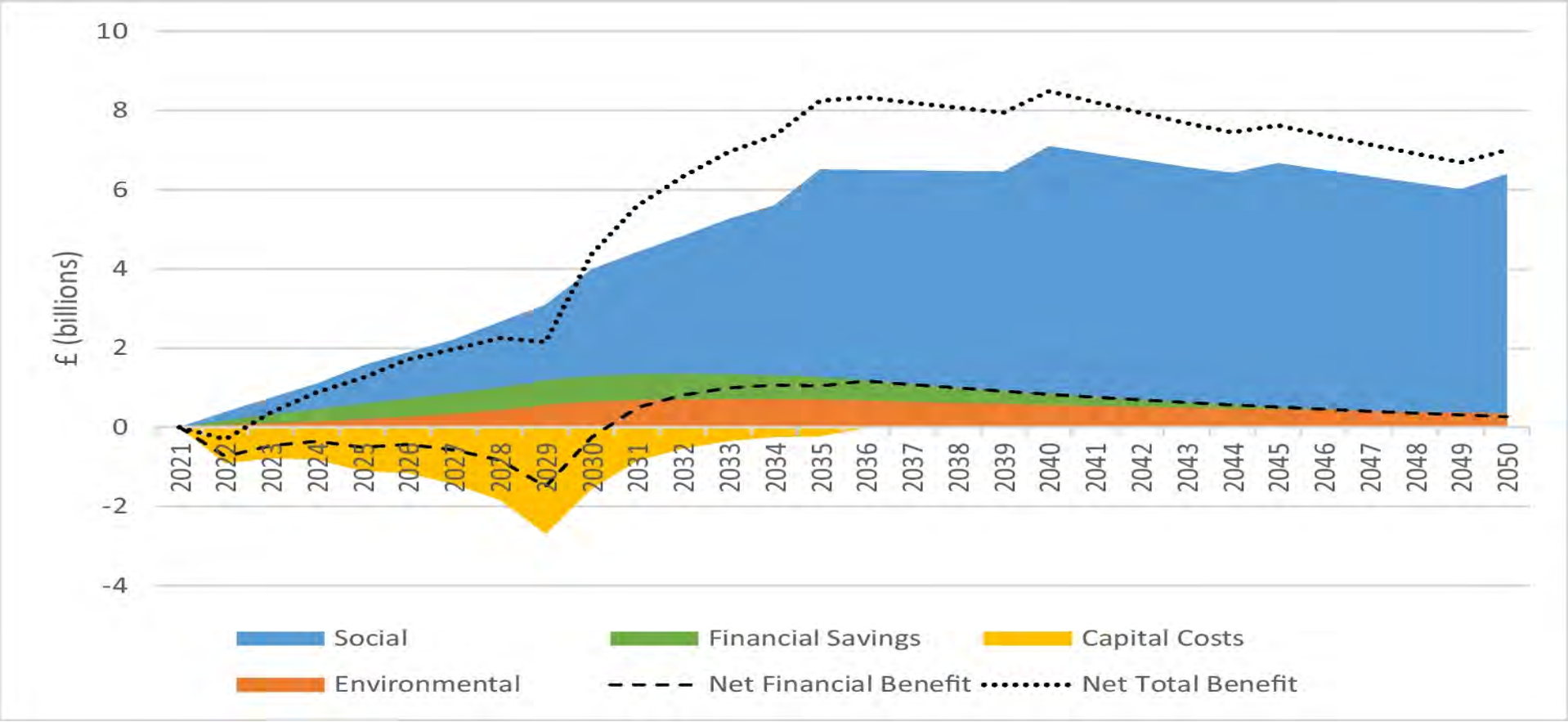
Two broad approaches to assessing co-benefits:

- 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 6th carbon budget in 6 urban regions

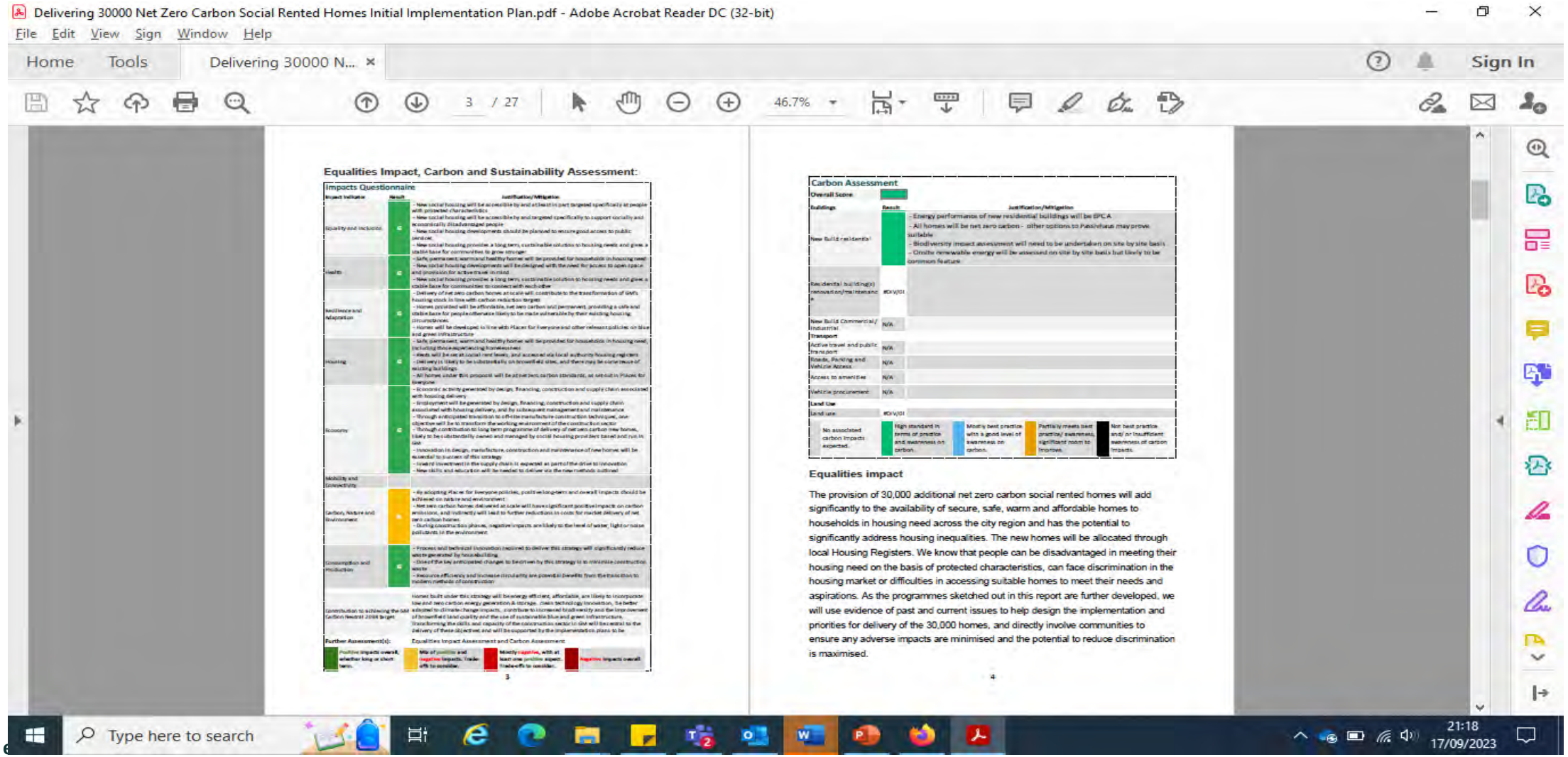


Source: Sudmant, A et al. (2024) Climate policy as social policy? A comprehensive assessment of the economic impact of climate action in the UK, Journal of Environmental Studies and Sciences

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/

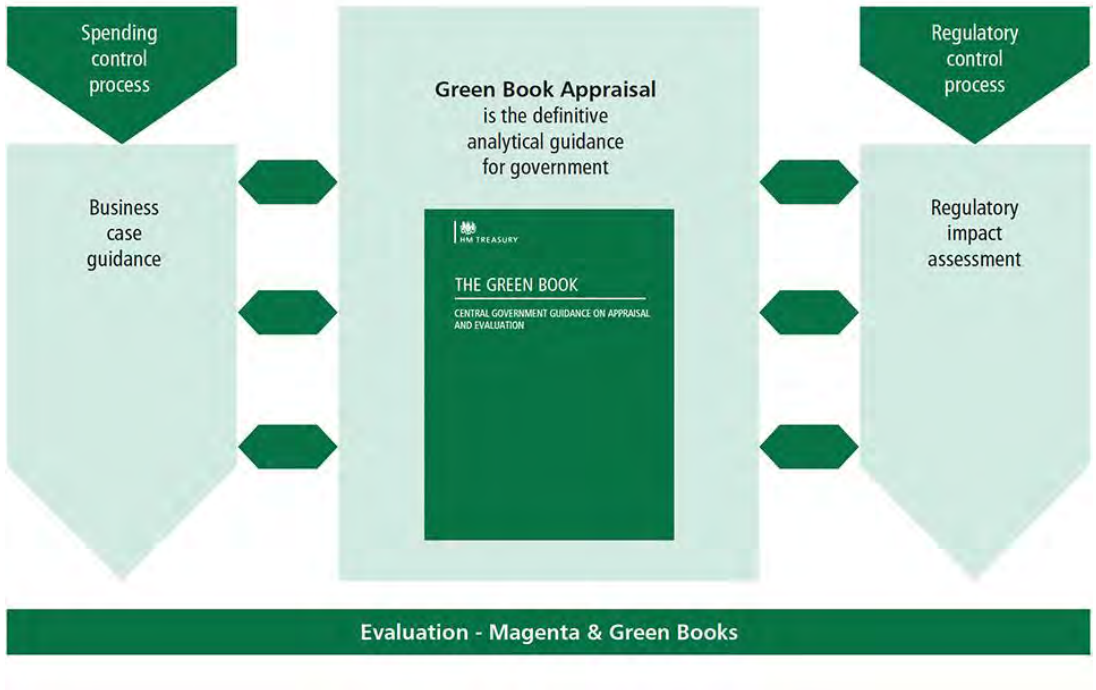
Use of tool for Greater Manchester Combined Authority Net Zero Homes Plan



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?