
Evidence on Care Home Decarbonisation: A Scoping Review and the proposed GREEN CARE Study

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Collaborators

- **Queens University Belfast**
 - Dr Gary Mitchell, Dr Stephanie Craig, Ms Tara Anderson (School of Nursing and Midwifery) Mrs Sarah Walker (PPIE)
- **University of Leeds**
 - Dr Dan Hind (Leeds Institute for Health Science)
 - Professor John Barrett, Dr Jonathan Norman (School of Earth, Environment and Sustainability)
- **London School of Economics**
 - Professor Martin Knapp, Dr Magdalena Walbaum (Care Policy and Evaluation Centre)
- **Oxford Brookes University**
 - Professor Rajat Gupta
- **Care England**
 - Mr Richard Ayres

Why care homes matter for sustainability

- 410,000+ residents, 11,000+ facilities, 24/7 energy-intensive operation.
- Healthcare = 4–5% of global emissions, but care homes are overlooked in research and policy compared to hospitals.
- Aged care contributes comparable emissions to health services.
 - 48% of total emissions from a health provider across all three scopes.¹

1. Desmond, S, *et al.* Gathering the evidence: Health and aged care carbon inventory study. *Australian Health Review* 2023, 47, 634–640.

The Evidence Gap

- No sector-wide carbon baseline exists.
- Providers don't know their footprint. Hospital-based interventions can't transfer directly.
- Distinctive challenges:
 - Can't close for retrofits
 - Vulnerable residents
 - Tight margins
 - Mixed-economy providers (unlike NHS).

Scoping Review



sustainability



Review

Mapping the Evidence on Care Home Decarbonisation: A Scoping Review Revealing Fragmented Progress and Key Implementation Gaps

Tara Anderson ^{1,*}, Stephanie Craig ¹, Gary Mitchell ¹ and Daniel Hind ^{2,*}

Scoping Review: Aims & Methods

- **Population:** Care homes (facilities, residents, and/or staff)
- **Concept:** Decarbonisation (energy performance, carbon footprint, efficiency, and experiences of decarbonisation strategies)
- **Context:** Any geographic location; studies monitoring energy consumption, implementing/modelling decarbonisation strategies, or exploring experiences of such strategies
- Data extracted using GHG Protocol (Scopes 1, 2, 3)

Characteristics of included studies

- 6,735 records → 3,165 after deduplication → 75 full-text
- 22 studies, 2014–2025 (20 since 2019) from 14 countries
- Predominantly quantitative (20), only 2 qualitative (both UK).
- Mostly modelling studies.
- Care home ownership rarely reported.

Scope 1 Findings (Direct Facility Emissions)

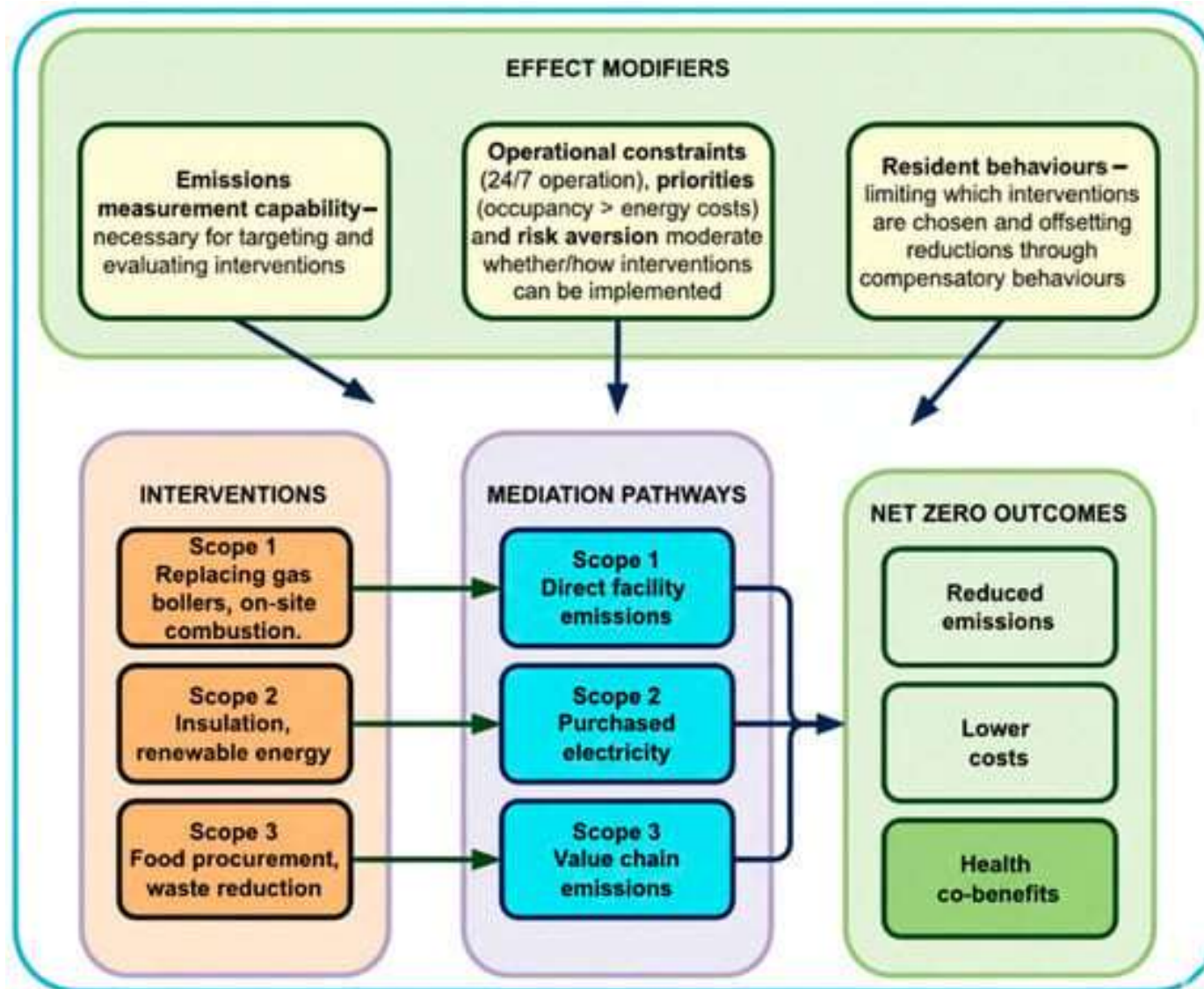
- Most neglected scope — only 3 studies.
- One EV shuttle modelling study (Japan).
- Two UK qualitative studies: low-carbon heating (heat pumps, underfloor heating) led to compensatory use of electric fires for “cosiness” and “glow”, potentially shifting Scope 1 savings into Scope 2 increases.
- Risk aversion among managers — unfamiliar technologies seen as threats to reputation and occupancy.

Scope 2 Findings (Purchased Electricity)

- Most studied scope — 14 studies.
- Retrofits and passive design achieved 28–89% energy reductions in modelling.
- Smart monitoring reduced consumption ~10%.
- Heat pump installation cut electricity use by 67%.
- Adaptive thermal comfort models saved up to 23%.
- But findings are climate-dependent and mostly modelled, not real-world evaluated.

Scope 3 Findings (Supply Chain)

- 5 studies, all focused on food/menus.
- Animal-sourced foods = ~75% of food-related impact.
- Shifting toward plant-based diets could cut food emissions 10–30% with minimal cost increases and nutritional improvements.
- No studies on procurement, waste, pharmaceuticals, or other supply-chain domains.



Key Gaps Identified

- No comprehensive baseline foot-printing across all 3 scopes.
- No cost-benefit analyses tailored to care homes.
- Limited implementation science.
- Health co-benefits rarely quantified.
- Qualitative/behavioural dimensions under-explored.
- Social care sector lagging behind NHS.



Reframing Decarbonisation as Care Quality

Mitchell, G., McLaughlin Borlace, N., Craig, S., Anderson, T., & Hind, D. (2026). From carbon reduction to care quality: A stakeholder-informed agenda for decarbonising care homes. [manuscript submitted for publication].

Key Gaps Identified

- Decarbonisation in care homes shouldn't be treated as a purely technical or environmental issue — it is a gerontological care-quality priority:
 - housing/public health literature linking indoor environments to health
 - emerging co-benefits evidence from the scoping review
 - and climate-and-ageing scholarship on residential vulnerability
- If the sector only talks about carbon metrics, it misses what will actually drive implementation.

Stakeholder Engagement

- November 2025 event at QUB — 80+ people:
 - Care home managers, nurses, care assistants, relatives, sector stakeholders.
- Sustainability is not experienced as an abstract net-zero target.
 - It is encountered through heating control, lighting, waste, food, procurement, workforce habits, financial constraints, and uncertainty about effects on resident comfort.
- Four recurring priorities:
 - Built environment; material and supply systems; workforce capability and culture; governance and measurement.

Stakeholder-Informed Conceptual Model

- Built environment (heating, ventilation, insulation, lighting).
- Material and supply systems (food, procurement, waste).
- Workforce capability and culture (knowledge, habits, training, confidence).
- Governance and measurement (leadership, accountability, baselines, meaningful metrics).
- The domains are interdependent:
 - A building upgrade staff can't operate does more harm than good
 - Measurement without leadership goes nowhere.

Cross-programme

Decarbonising the health and social care system

The NIHR Commissioned Call

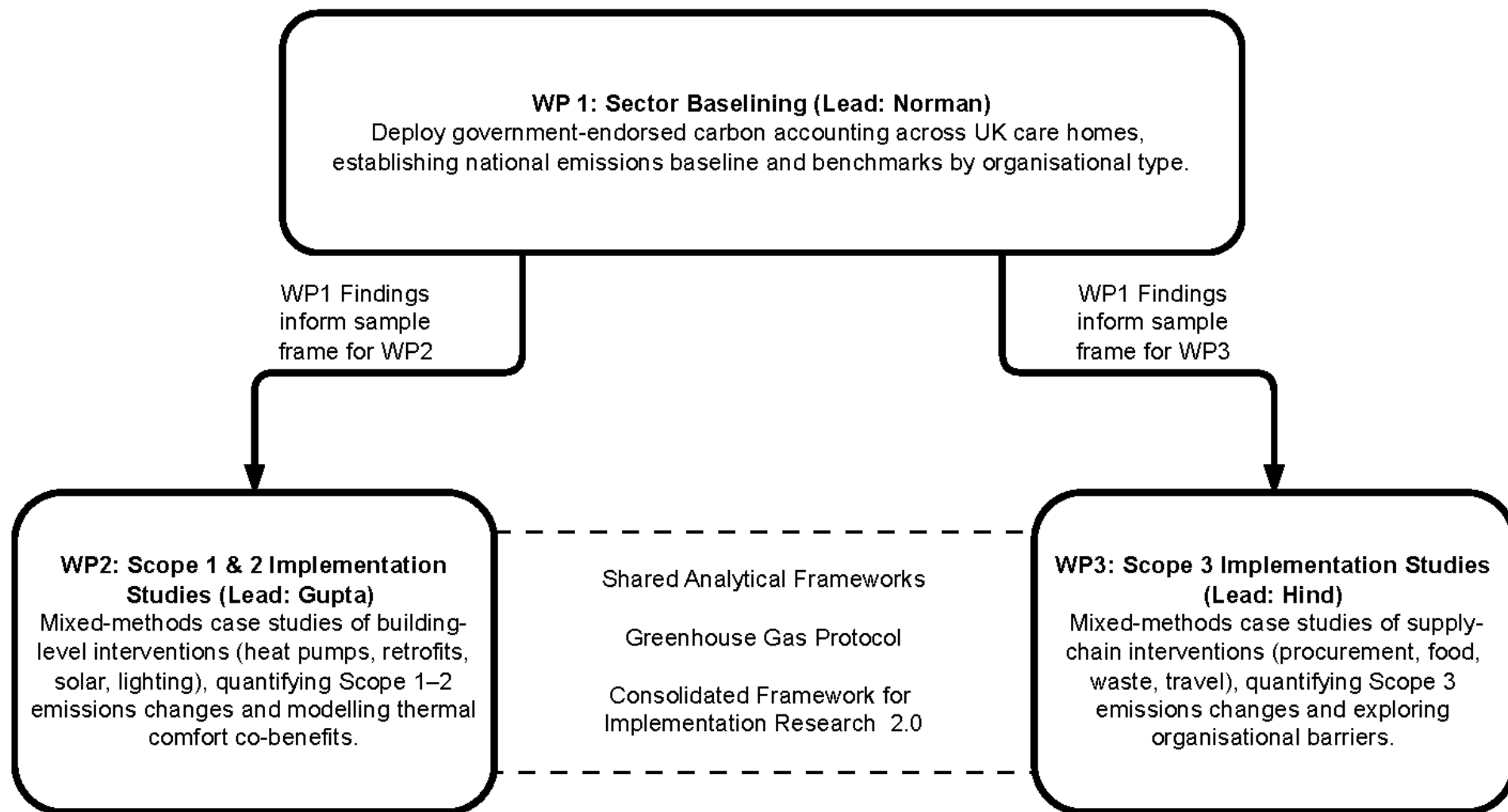
- - Ref 2025/389 — Cross-Programme, Year 2 of 5 (£25m total over 5 years)
- - Primary outcomes must focus on carbon emissions / GHG / CO₂e
- - Two-stage process: outline closed March 2026; full application decision November 2026

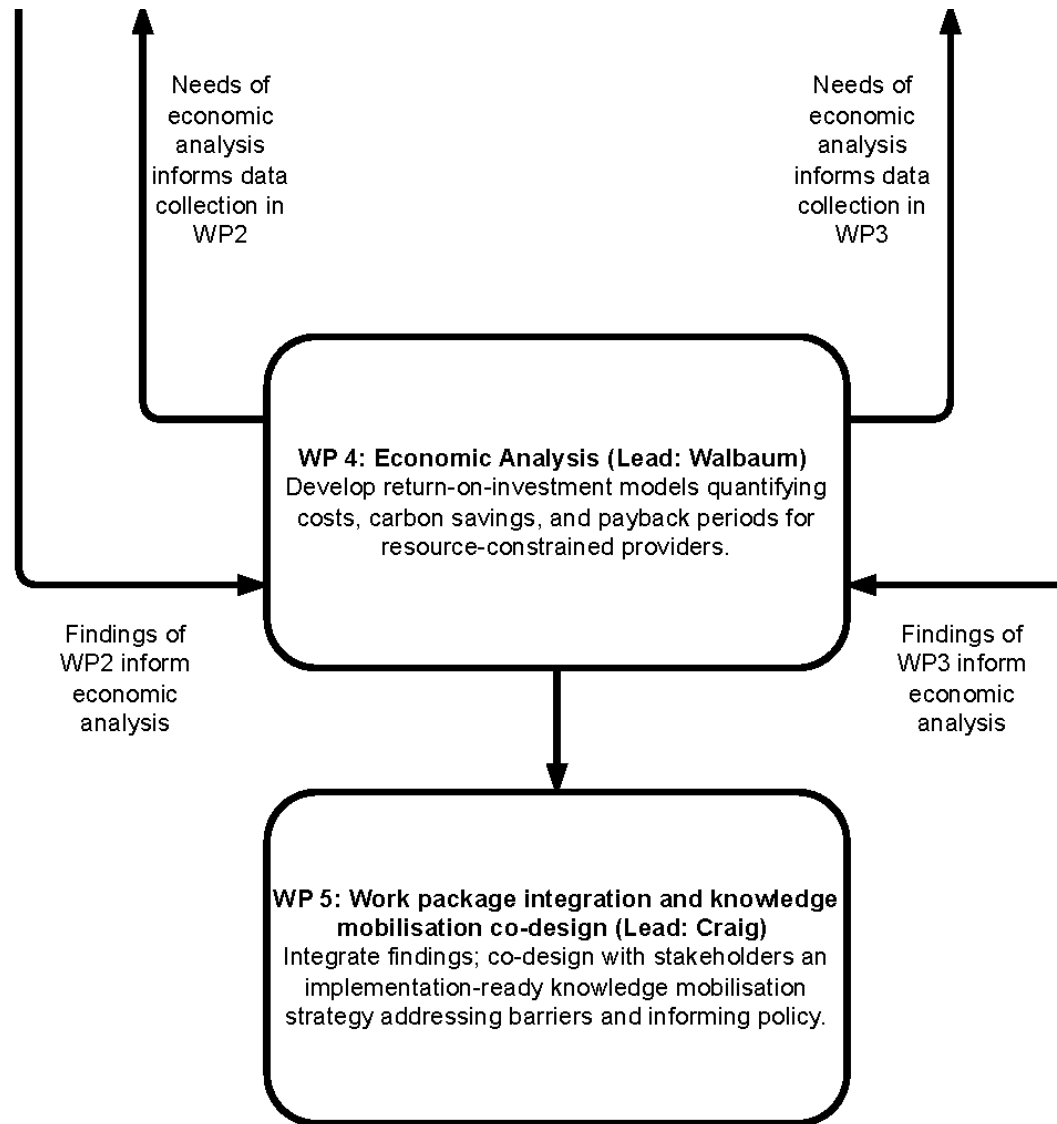
‘GREEN CARE’

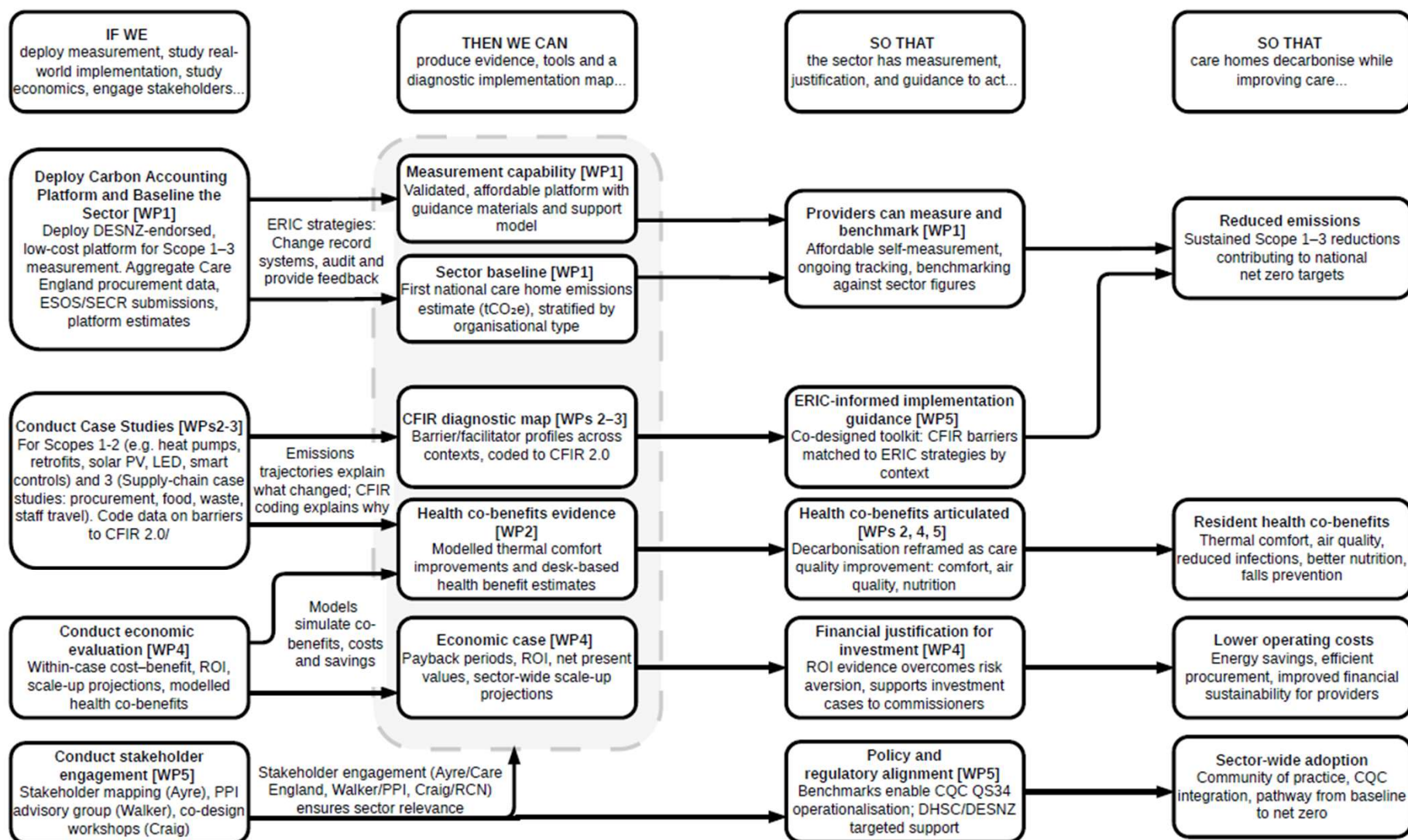
- Generating Emission Evidence for Net-zero: Care sector Action, Roadmaps & Evaluation
- Aims:
 - Establish comprehensive carbon measurement for UK care homes
 - Identify barriers and implementation strategies
 - Economic drivers
 - Knowledge mobilisation strategies
- 36 months, £1.72m requested

The DESNZ Carbon Accounting Platform

- £3M, UKRI/DESNZ-funded
- Built by Production and Consumption Transformations (PACT) Centre, University of Leeds (Barrett & Norman)
- Organisations access carbon accounting metrics/ scenario data
- Converts expenditure/activity data → Scope 1–3 emissions estimates
- £50 per use vs ~£8K commercial alternatives
- Designed for longevity beyond the PACT Centre







Summary

- Review: fragmented, Scope 2–dominated evidence base.
- Consultation: reframe decarbonisation as care quality
 - Not just carbon
 - Four interdependent domains for action
- GREEN CARE will directly address these gaps:
 - First national baseline
 - Real-world case studies across all scopes
 - ROI modelling
 - Co-designed implementation guidance

NIHR Climate Change and Health: Adapting Health and Social Care Systems - Development Awards Funded Projects

Published: 19 January 2026 | Version: 1.0 - January 2026 | 2 min read

SHIELD: Social care Heat action Implementation to protect Everyone in Long-term care & Domiciliary services

- Dr Daniel Hind, University of Leeds

This project will co-design strategies for getting evidence-based heat safety policy better implemented in older adult social care (care homes and home care). Contributors include people with lived experience or care workers and managers from domiciliary care, extra care and the care home sector, as well as local government and the NHS.



UK Health
Security
Agency



With thanks

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The views expressed are not necessarily those of the NIHR or the Department of Health and Social Care.

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