Living Well in Low Carbon Homes

ACTIVE BUILDING CENTRE RESEARCH PROGRAMME

Introduction

- Net Zero requires symbiotic decarbonization of the energy and building sectors.
- This implies increased electrification and integration of homes as new sites of renewable energy production and storage into the energy system, creating 'flexibility'.
- Occupant behavioural change is an implicit requirement of these homes to meet multiple performance outputs.
- Understanding the experience of residents will be crucial for informing successful wider rollout of low carbon homes.

Methods

- Qualitative Longitudinal Methodology
- Multimodal - Activities and Interviews
- Household - occupants and key stakeholders
- 5 Case sites - different technologies, different energy governance, different developer motivations, different materialities

The graph to the right shows the cable topology of 'LV network 1'

Activity pack 1 | pre-move

Interview 1 | pre-move
- Experiences of current home and community
- Expectations of, and aspirations for, future low carbon home and community
- Wider environmental discourses

Interview 2 | ~3 months post-occupation
- Early experiences of living in a low carbon home
- Changes to routines and relationships to energy
- Life in a new community

Activity pack 2

Interview 3 | ~12 months post-occupation
- The first year of living in a low carbon home (benefits and challenges)
- Longer-term plans and aspirations

Insights from stage 1 interviews at Parc Eirin and Berllan Aur

- Participants felt excited and privileged about moving to an innovative and environmentally conscious development
- Participants expected they would have lower energy bills
- Participants felt communal green spaces would aid community cohesion
- Participants expected new build properties to be low maintenance and improve quality of life
- Participants thought improved quality housing would lead to improvements in physical and mental health
- Participants were reassured that the novelty of homes for everyone meant they were 'in it together'
- Participants said that social networks and place are important

Parc Eirin

Berllan Aur

Biophilic Living

Clos y Wawr

Parc Hadau

Recommendations for developers

- Provide information to residents
- Ensure personal communication
- Explain the differences between old and new technologies
- Utilise visual indicators
- Recognise the importance of responsiveness

Forthcoming outputs:

- Chapter in Active Building Energy Systems: Operation and Control
- Chapter in Smart Cities, Energy, and Climate
- Paper at ASSIST UK Conference 'Infrastructures, Institutions and Cultures: New Relations and New Challenges'

Dr. Kate O'Sullivan, Dr. Fiona Shirani, Dr. Rachel Hale PIs: Professor Nick Pidgeon, Professor Karen Henwood • Cardiff University

CARDIFF UNIVERSITY

UKRI UK Research and Innovation

INDUSTRIAL STRATEGY