Advancing Net Zero

A write-up of the presentations by academics at the Universities Research Forum on Advancing Net Zero

On Thursday 18th July 2019 a group of academics and industry representatives met at the UKGBC offices to discuss research being conducted on decarbonising the built environment. This write-up provides a summary of that work and highlights some of the key opportunities identified by the group for further research and collaboration on this issue between academia and industry.

Key opportunities for further research:

- An exploration of the soft infrastructure that is needed for retrofit providers to operate, for example retrofit standards, quality assurance and insurance policies.
- An assessment of the effectiveness of the carbon offset schemes run by local authorities.
- A review of the carbon reductions offered by the energisprong retrofit model in relation to greenhouse gas abatement cost curves.
- An overview of the occupancy patterns of a building by asset class to understand the potential impact of occupant behaviour on energy use.
- An outline of the various levels at which you can understand “net zero”, including a systems approach which would model net zero at the city level.
- Analysis of the actual whole life carbon impact of delivered projects against the projected whole life impact of those projects. Is there a performance gap?
- Analysis of the potential costs of offsetting different aspects of a whole life carbon approach to built assets.

If you are developing in work in any of these areas, please email sophia.cox@ukgbc.org so that we can support your efforts and help communicate findings with our members.

Opportunities for further collaboration:

- Universities should share learnings to help each other to deliver net zero estates, and then use those learnings to support the net zero aspirations of their cities.
- UKGBC can play a role in collating examples of net zero projects. More information here.
- UKGBC can play a role in providing insights from academia to the industry. More information on the UKGBC Insights Unit to follow.
- UKGBC could play a role in collating what developers want academics to research on this topic.
- UKGBC can play a role in identifying what net zero looks like in planning policy. See UKGBC Policy Playbook for more information.
Recent research conducted on net zero:

**Energy Performance of a gas free SIPs home in the North West of England**

Stephen Finnegan, University of Liverpool

For the past 18 months, Stephen has been actively monitoring a Structurally Insulated Panel (SIPs) house in the North West of England. The building materials meet Passivhaus standards however the 100% electric home uses more energy than expected. Temperatures are stable throughout the year and energy use is also relatively consistent. Based on the research findings, the home owners and SIPs manufacturer are investing in a Solar PV system linked with battery storage. The battery is provided by Social Energy who use innovative Artificial intelligence (AI) software with the national grid to buy and sell electricity dependent upon a number of optimised variables.

**Retrofit to the Rescue: Environmental upgrading of multi-storey estates**

Eleanor Benton, LSE

From 2015 to 2019 LSE Housing and Communities carried out three sets of interviews aiming to measure the social impact of a deep retrofit project of Wilmcote House in Portsmouth. The £12.9 million regeneration project was funded by Portsmouth County Council and aimed to carry out a deep retrofit to EnerPhit standard. Their work aims to capture what impact this work had on the lives of the tenants living in Wilmcote House. There was lots of positive feedback from the residents generally, but one of the main issues to emerge from the interviews was the unreliability of the contractors.

**Business model innovation for whole-house retrofits: the case of the Energiesprong initiative**

Dr Donal Brown, University of Leeds

Donal outlined how whole-house energy ‘retrofits’ are likely to require business model innovation to gain widespread adoption. He explored these ideas through a case study of the ‘Energiesprong’ retrofit business model and its contrast this with the existing ‘atomised’ market model. He further highlighted the central role of an innovation intermediary - the Energiesprong ‘market development team’- in this business model innovation and further how Dutch policymakers sought to promote it through the creation of this intermediary.

**Piloting approaches: A Campus as a Smart Local Energy System**

David Elmes, University of Warwick

David talked through Warwick’s new campus masterplan which places the role of buildings into the wide context of a path to net zero.

For more information on each of the presentations, the full deck of slides from the session can be [accessed here](#).