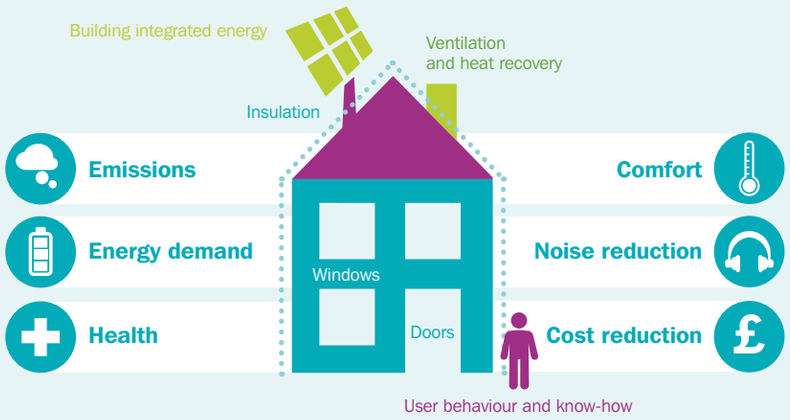
Low Energy Housing Innovations and the role of Intermediaries (LEHII)

Research Briefing 02

October 2015

Whole house approach to energy efficiency



The built environment is one of the largest contributors to energy and materials use worldwide, accounting for approximately 40% of total energy use in Europe. Poor energy performance of buildings means that the building and housing sector is a significant source of greenhouse gas emissions. However, the need to improve the energy efficiency of the existing housing stock has received little attention in the UK, which has one of the oldest building stocks in Europe.

Energy efficiency improvements are necessary in order to reduce energy demand of the existing building stock and increase building-integrated renewable energy generation. The building stock is usually renewed very slowly and homes built or renovated with poor energy efficiency standards today will use more energy in the future. Therefore, systemic innovation taking a whole house approach to improved energy efficiency and reduced energy use is crucial. This approach connects to various other important factors such as costs, health, comfort and noise that need to be considered as part of the innovation processes. In order for Europe to meet its climate and energy targets for 2050, all of today's existing buildings will need to be renovated by 2050. New buildings will not solve the whole problem. In reality, this requires a doubling of the current rate of renovation.

In this context, the Centre on Innovation and Energy Demand (CIED) is investigating innovation processes involved in advancing low energy building and housing. Our research pays particular attention to the drivers and barriers of low energy house innovations, exploring the impact that intermediary organisations, such as innovation hubs, housing associations and NGOs, can have in the overall transition to low energy housing in the UK.

Research aims:

1. To increase knowledge on the sociotechnical drivers and barriers on low energy housing innovations
2. To pay particular attention to the influence of intermediary actors and policy changes in these innovation processes, in order to
3. Provide policy-relevant knowledge on how to promote sustainable transition in the housing and building sector.

Research questions:

1. How have low energy housing niches developed in the UK? What is their current status (emergent, early stage diffusion, diffusion)? What key drivers and barriers exist and how is the development of these niches conditioned by the surrounding political, institutional and industrial regime(s) and landscape?
2. What is the impact of intermediaries in low energy housing transitions at niche and regime levels? What drivers, barriers and other conditioning factors do the intermediaries influence, when and how? What is the role of intermediation in the establishment and governance of low energy housing transitions?
3. What actions could be taken to establish stronger intermediary organisations/networks and to improve their performance?

Centre on Innovation and Energy Demand

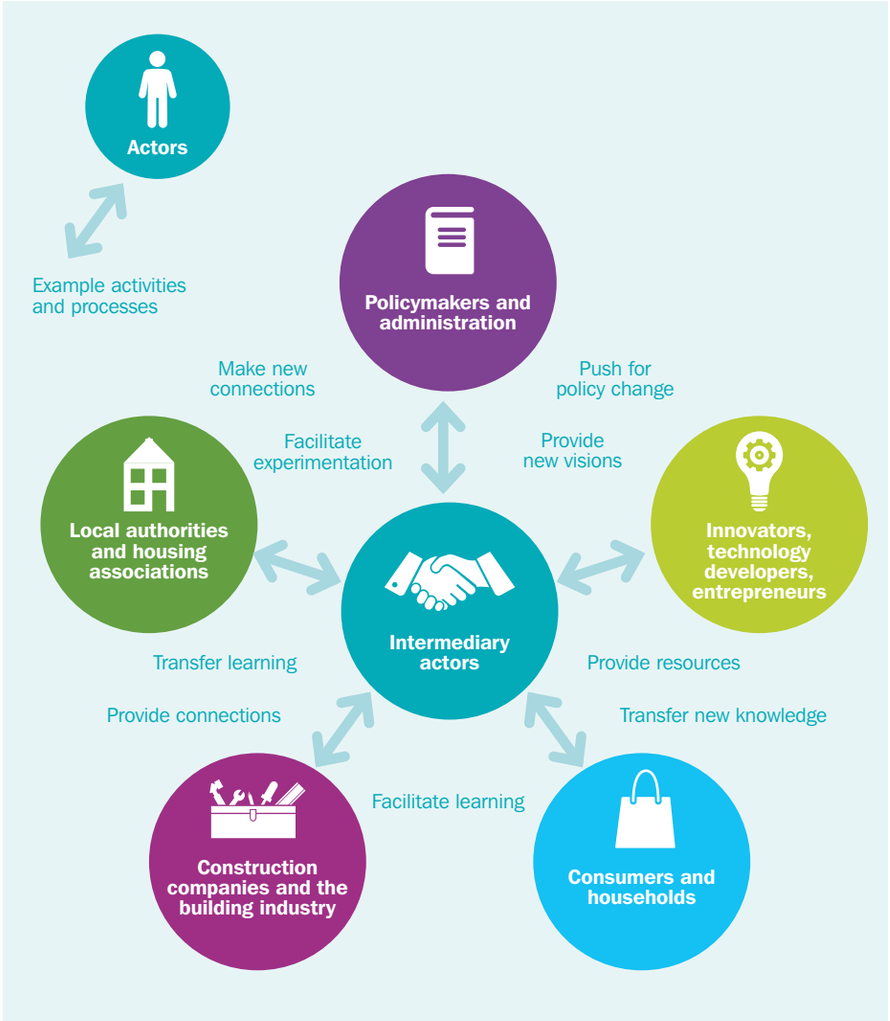
University of Sussex
SPRU – Science Policy Research Unit

What/who are intermediary actors?

Radical innovation within low energy housing requires new types of networks and opportunities, whose occurrence can be greatly sped up by intermediary organisations.

Intermediary organisations are facilitators of innovation processes that are neither the inventors nor the customers. They can perform a variety of roles and functions including: developing and disseminating knowledge, evaluating new technologies/ practices, supporting piloting and uptake of new innovations, facilitating new networks and bringing different actors together, pooling financial resources, creating new markets and influencing policy.

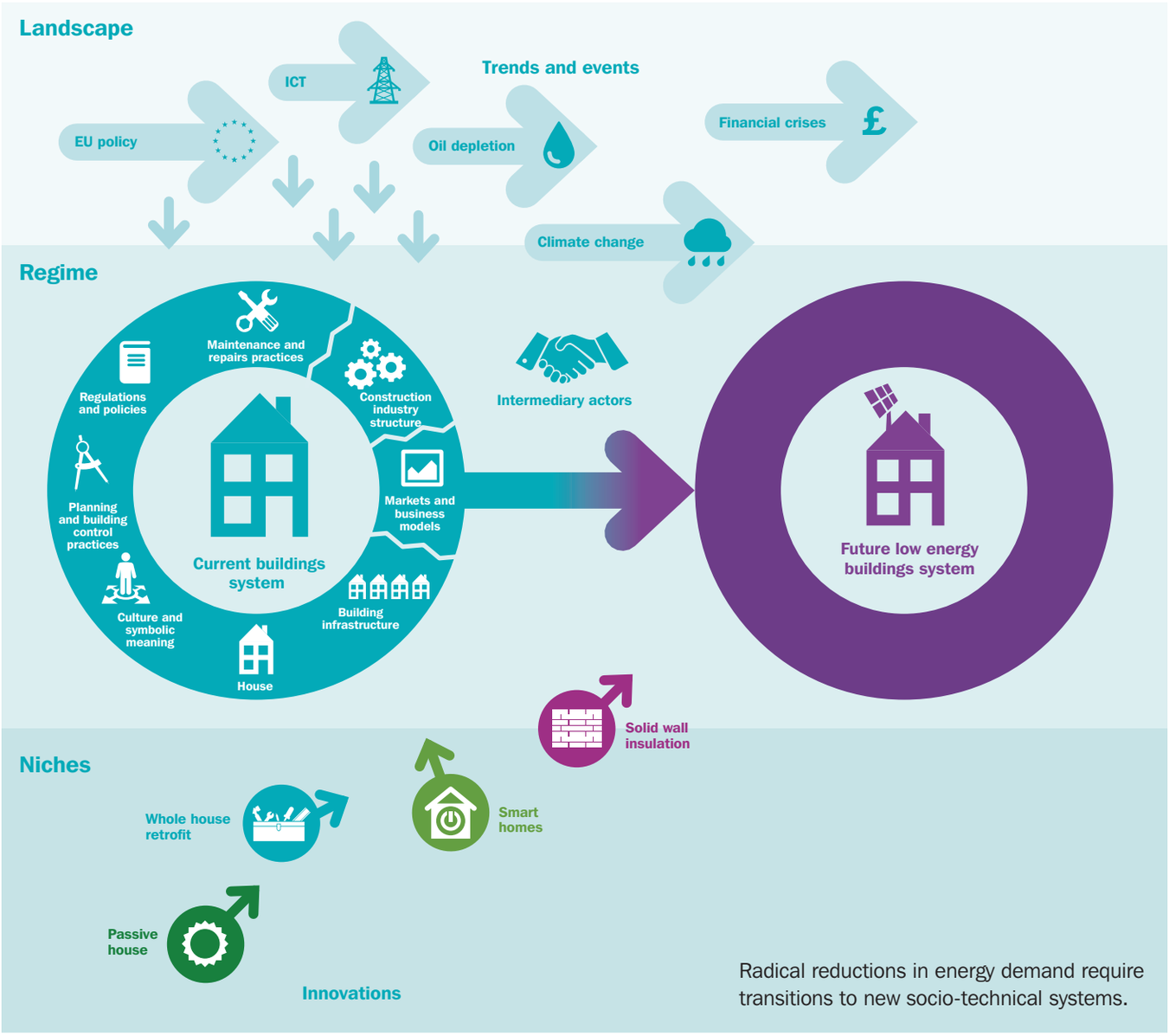
Examples of potential intermediaries in the UK low energy housing sector include Building Research Establishment, UK Green Building Council and Zero Carbon Hub. In a more local or project level, actors such as community energy initiatives, housing associations or local authorities can perform intermediary roles.



Research methods

The research combines systemic review of previous academic and policy literature, interviews of key stakeholders, and in-depth analysis of case studies of low energy house innovations – focusing on zero carbon new build and whole house retrofits. The research is carried out during June 2015 – May 2017. It builds on the literatures on sustainability transitions and innovation intermediaries. The project also collaborates closely with an Academy of Finland funded project "Intermediaries in the energy transition: The invisible work of creating markets for sustainable energy solutions (TRIPOD)" lead by Associate Professor Sampsa Hyysalo, University of Helsinki.

Transition towards low energy housing



Radical reductions in energy demand require transitions to new socio-technical systems.

Buildings are complex systems which connect a wide range of materials and technologies, regulation, actors with their specific practices and cultures. This research approaches low energy housing innovations as radical innovations, which develop in niches, protected spaces which are outside the mainstream housing systems – or regimes. The current housing regime in the UK consists of established institutions, regulations, house building traditions and user preferences, and it may be difficult for new innovations such as low energy houses to enter the established regime. The research is focused on two low energy housing niches in the UK: whole house retrofits and zero carbon new homes. Especially the role of intermediaries in providing support for the emerging low energy housing innovations is of interest. The project will also identify what contributions intermediary organisations can have in influencing the diffusion of low energy housing innovations amongst the key regime actors.

Engagement

The project builds on CIED's links with local authorities, national policy makers and expert organisations. Active engagement during the project is used to test initial research results and disseminate research findings. It is envisaged that results from this project will be used to identify the types of barriers that exist in the UK to whole house retrofitting and zero carbon new build, and how those barriers could be addressed. The project will also highlight the existence of different types of intermediary actors, their roles and their potential influence in low energy housing innovations. Through workshops and events, the project will highlight these issues to researchers and those working in the low energy housing sector, e.g. architects, house builders, housing associations, local authorities, think tanks, NGOs and policy makers.

Further reading

Bird, C., Barnes, J. 2014. Scaling up community activism: the role of intermediaries in collective approaches to community energy. People, Place and Policy, 8, 208-221.

Fischer, J., Guy, S. 2009. Re-interpreting Regulations: Architects as Intermediaries for Low-carbon Buildings. Urban Studies, 46, 2577-2594.

Gibbs D, O'Neill K. 2015. Building a green economy? Sustainability transitions in the UK building sector. Geoforum, 59, 133-141.

Kivimaa, Paula 2014. Government-affiliated intermediary organisations as actors in system-level transitions. Research Policy, 43, 1370–1380.

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Get Involved

This research has an engaged approach and we are keen to hear from people interested in the research topic. If you would like to be included in the project's contact list and to find out more about future events and research findings, please contact:

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For latest updates, please visit: **http://cied.ac.uk/research/emergence/lowenergyhousinginnovations**