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CALL FOR PAPERS: special issue

Retrofitting at scale: accelerating capabilities for domestic building stocks

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Deadline for abstract submission: 13 July 2020

What are the capabilities and capacities for delivering retrofit at scale? This special issue explores the accelerated delivery of domestic energy retrofitting at different scales – national, municipal, neighbourhood and individual sites. It will interrogate governance, economic / business, organisational, social and technical aspects and their interactions: existing planning capabilities; available building stock data and what more is needed; rural and urban retrofit strategies; the roles, capabilities and capacities of existing and new actors / enterprises in delivering retrofit (e.g. local authorities, urban planners, construction professionals, contractors and subcontractors); how can renovation elements be produced in an industrialised way to increase capacity and reduce costs; the economic, social, political, legislative, regulatory aspects of delivery models; what owners or inhabitants require; forms of user engagement; what future proofing is appropriate; what requirements and guarantees will ensure performance in use. There will be insights across different scales and geographical contexts as well as top-down vs bottom-up models. Distinctions & complementarities will be drawn for policies and delivery strategies for different scales, stakeholders, inhabitants and disciplines.

Background

Limiting global temperature increases to 1.5°C above pre-industrial levels means rapid reductions in greenhouse gas emissions. This entails significant decarbonization of the energy supply and reduction in energy demand within a period of 30 years or less. Globally, the buildings sector accounted for approximately 28% of total energy-related CO₂ emissions. A 65% expansion in building floor area has increased emissions by more than 25% since 2000 (IEA, 2019a).

A major contribution to achieving emissions reductions must come from retrofitting the existing domestic (e.g. residential and mixed-use partly residential) building stock to radically reduce the use of non-renewable energy for heat and power (CCC, 2019). Retrofitting is “the introduction of new materials, products and equipment into an existing building with the aim of reducing the use of energy” (Baeli, 2013: 17). This can include improvements to the building fabric and deployment of more efficient and low carbon energy sources. The rate of retrofitting the existing stock needs to double to achieve at least a 30-50% energy intensity improvement to 2050 (IEA, 2019b).

Successful retrofitting will only be achieved through aligning governance, economic, social and technical systems. Governance provides the conditions for mass retrofit. What national policies are needed to ensure appropriate conditions and capabilities? What must regions and cities do to define what the specific local energy infrastructures will be? These will determine locally appropriate renovation concepts. Financial measures are also important: costs, taxes, incentives for energy sources, renovation services, etc. Existing instruments (e.g. energy performance certificates / labels, how they are used and their actual outcomes) require assessment for their impact and efficacy. What basket of measures is needed to accelerate retrofit and reduce energy demand?

Two thirds of countries currently lack building energy codes. Nations are beginning to respond to the IEA’s recommendation to adopt mandatory performance requirements which include the existing building stock. How can developing countries’ policies, incentives, standards and retrofit strategies address their local context and existing building stock?

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A 'house as a system' approach (Janda & Killip, 2010) recognises the building envelope as a single thermal unit (Clarke et al., 2017). To date, efforts have focused on social housing, where standardization and public sector / housing association ownership makes activity at scale more achievable. In private homes and mixed-use buildings, policy makers have relied on an *ad hoc* approach requiring interaction among different occupational groups, and taking place over a long timescale (Fawcett & Topouzi, 2019). This is often delivered by micro enterprises, who have a significant influence on the retrofitting process (Owen, et al., 2014; Maby & Owen, 2015; Wade et al., 2017). Retrofit schemes customised to local circumstances can also be more successful than nation-wide strategies (Gillich, et al., 2018), and it has been suggested that national schemes need to provide room for facilitating municipal or neighbourhood action (Gram-Hanssen et al., 2018). There is ample evidence that local actors play a crucial role in the delivery of wide-scale retrofitting activities (Castán Broto, 2012; Bartiaux et al., 2014; Dowling et al., 2014; Hoicka et al., 2014; Caputo and Pasetti, 2017). However, different localities may be inconsistent in their application of retrofitting strategies, and serious consideration is needed on how retrofits will be delivered in different contexts. To ensure successful outcomes, retrofitting must also embrace social, cultural and material values and practices. This involves interdependent activities (planning, operation, maintenance, occupant engagement, etc.) to prevent unintended consequences e.g. loss of cultural value, performance gaps, increased material flows, etc. (Kohler & Hassler, 2012; Shrubsole et al., 2014).

Papers in this special issue will address key questions and offer solutions in these areas:

- Translating national and city level goals into clear targets for retrofit of the domestic building stock
- The governance and regulation of retrofit: enabling legislation, changes to existing legislation / regulation, enforcement, incentives, aspects of ownership and tenure
- Planning and coordination perspectives: what new roles for planners, building control and assessment professions in identifying and cataloguing stock, facilitating and monitoring progress?
- Policy analysis of municipal actions / programmes on building retrofits and their intended outcomes.
- Top-down vs bottom-up approaches; incentives for participating in mass retrofit programmes
- The inclusion of embodied energy / carbon in the total calculation
- Training, skills and certification of schemes for construction professionals and individual projects
- What capabilities and capacities do firms (SMEs and micro-enterprises) require to undertake retrofit?
- Supply chains for retrofit: coordination and management of domestic retrofit at scale
- Logistics and construction management: the potential for reducing unit cost of retrofit and increasing quality
- The business case (e.g. financial model) for retrofit and new business models for both private and public sectors
- Contractual: performance-related outcomes, consumer protection, service-related pricing, performance guarantees
- Mass vs individual retrofit for housing: technologies for retrofit at scale (e.g. Energiesprong, off-site, incremental, etc)
- Public engagement/ persuasion: allocation of responsibility; appropriate forms of engagement and empowerment; provision of reliable, independent information for tenants and homeowners
- Energy behaviours: how retrofit affects demand; load shifting; new definitions of thermal adequacy, space shrinkage
- Coordinating demand reduction with changing energy supply: reducing peak demand, increasing flexibility, and 'fair usage'
- The development of appropriate standards and retrofit processes for the particular contexts of developing countries

Briefing Note for Contributors

You are invited to submit an abstract for this special issue. Please send a **500 word (maximum) abstract** defining the scope, methods and results to editor **Richard Lorch** richard@rlorch.net by **13 July 2020**. Your submission must include:

- the author's and all co-author's names, affiliations and contact details
- the question(s) in this Call for Papers that the abstract and intended paper address
- the abstract (300 - 500 words maximum)

Abstracts will be reviewed by the editors to ensure a varied, yet integrated selection of papers around the topic. Authors of accepted abstracts will be invited to submit a full paper (6000-7500 words), which undergoes a double-blind review process.

Timeline

Deadline for abstract submission:	13 July 2020
Full papers due:	11 January 2021
Referees' comments	22 March 2021
Final version due	10 May 2021
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Questions?

If you have a question, please contact:

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