

Developing the next phase of energy demand research

By Mari Martiskainen and Sara Walker

The UK is in the midst of an energy crisis on several fronts. People's bills are going through the roof due to a combination of inefficient homes and hikes in wholesale energy prices, driven further by the war in the Ukraine. The latter has made energy security a key concern, with added pressures from the urgent need to address fossil fuel reliance due to climate change. Against this backdrop, UKRI appointed new [energy demand research champions](#) in October 2022 to develop plans for an interdisciplinary research centre that builds on existing research on this domain, particularly that undertaken by the Centre for Research into Energy Demand Solutions ([CREDS](#)).

As part of developing the new centre, the champions have undertaken a three step consultation process of: interviews with 23 members of CREDS, survey of 191 stakeholders, and three deliberative workshops with 80 people from academia, policy making, NGOs, and industry. Key objective of this consultation process was to co-develop research themes that build on the research already undertaken in CREDS, while identifying priorities for research on energy demand for the next five years.

The following key themes emerged during this process as overarching, cross-cutting and interdisciplinary across engineering and social sciences: equity, flexibility, governance and place. Equity refers to fairness and justice, and the recognition that not everyone in society has the same starting opportunities in life due to various reasons. Equity therefore means careful consideration especially for those who may be unreasonably impacted within energy demand solutions, be it individuals, households or certain communities. Flexibility refers to the ability to adjust energy demand, and involves a mixture of engineering and socio-technical drivers and solutions, including for example networks, the technologies which enable flexibility, as well as individual and organisational flexibility. Governance refers to ways in which decisions are made, and enacted, and by whom. This includes how energy and transport systems, for example, are governed through various policies and mix of policies, governance structures (whether national, regional or local) and different actors, and scenarios to understand the impact of different policy decisions. Place refers to not just a physical or geographical location, but also to notions of identity and community, availability of infrastructure, supply chains and regional/local industrial requirements.

These themes build on three similar research themes that are currently existing in CREDS, i.e. the themes of Flexibility, Policy and Governance, and Fuel and Transport Poverty. UKRI has provided draft objectives for the new centre, with a focus on interdisciplinarity across different sectors. Our plans for the centre therefore consider the more traditional sectoral approaches (such as industry, buildings, and transport) as embedded within the four cross cutting research themes. To do this, we plan to undertake specific research activity around these more sectoral topics through the use of case studies (referred to as use cases) that are connected to each theme.

Each research theme therefore comprises engineering and physical sciences as well as social science approaches, concepts, tools and methods. For example, colleagues interested in active travel might approach that use case from the point of view of equitable access to active travel solutions as an energy demand reduction approach. Other researchers in active travel may be more interested in the ways in which place based infrastructure enables or creates barriers to active travel and therefore would fit more closely to the place theme.

In the next steps of the centre's development, we will select co-investigators to join our leadership team, in order to develop an interdisciplinary and inclusive centre. Together, we will write the full centre proposal and finalise the first round of use cases. Our aim is that with this cross-cutting

approach, we can unpack further solutions to energy demand across different sectors and industry, as well as the wider society.

To follow next steps in the centre's development, please go to <https://www.ncl.ac.uk/energy/partnerships-funding/edrc/>.