

CONSTRUCTION ENGINEERING MASTERS DISSERTATION ABSTRACT

Study of factors impacting households in fuel poverty in net-zero transition

Fuel poverty is an important issue to balance social equity. It is a problem with significant health and environmental impacts affecting 736 million households globally. In 2019, the UK Government amended the Climate Change Act and committed the UK to achieve net-zero by 2050. The importance of dealing with fuel poverty with its impact on households falls under the overarching theme of climate change commitments and economic growth. This will require a transformation of current household heating and transportation systems and the way they use energy. To achieve this aim and help alleviate fuel poverty, technologies and energy policies on household heating must be aligned. This is challenging and important because of the cost of renewable heating compared with other sources, such as gas.

To address this challenge, this study will explore factors likely to affect the experience of households during the net-zero transition in heating. Three factors that may help alleviate fuel poverty during the net-zero transition (or the acceleration of the net-zero transition in fuel poor households) are climate change awareness and concern, technology, and behaviour change (energy usage pattern change). These are the main focus of this study. Customer behaviour studies are providing valuable lessons for progressive policy design.

The study aims to contribute the knowledge to inform technology investments and reducing or eliminating the negative consequences of measures associated with of fuel poor households or households at risk of fuel poverty that are negatively affected by the net-zero transition. Although there are studies about the characteristics of the fuel poor, it is critical to improve the understanding of the attitudes and behaviour of fuel-poor households to design future net-zero policies. Using the survey and interview research methodology, this paper reveals policy, technology and behavioural challenges that need to be overcome to address the fuel poverty issue during the net-zero transition. Several different factors were identified through the survey and subsequently analysed through qualitative interviews.

This paper concludes with a policy recommendation to ensure that households in fuel poverty are not disadvantaged during UK's net-zero transition. It has also studied the latest technology of the Internet of things and how they will impact households in fuel poverty with renewable output-driven tariffs. This is linked with the survey and interview result that households in fuel poverty is more willing to change their energy usage pattern to reduce cost and carbon.

Both a survey and semi structured interview method have been used in this paper with 51 participants from the sample group. The methods were designed to collect data regarding a household's attitude towards climate change, heating priorities, the behaviour of energy usage pattern shifting and attitudes surrounding heating cost and carbon reduction.

The conclusion of the paper shows strong climate change awareness and concern from households in fuel poverty. The results from the fuel-poor participants show a similar level

of awareness and concern compared with average households. The fuel-poor households have also shown that cost is the major concern when they prioritise heating. Fuel-poor households are happy to adapt their lifestyles to different energy patterns when it comes to energy usage behaviour. i.e. reduce energy usage during peak times.

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