

CONSTRUCTION ENGINEERING MASTERS DISSERTATION ABSTRACT

The Demand for Air Source Heat Pumps

Thirteen percent of Britain's greenhouse gas emissions are generated by the heating of homes (CCC, 2019). 85% of homes are heated using gas boilers (BEIS, 2020). Heat-pumps may offer an alternative that contributes towards meeting the Government's 2050 domestic emissions targets, but their uptake has been low despite schemes to incentivise them (Ofgem, 2019). The purpose of this thesis was to investigate demand-side reasons for a low uptake of heat-pumps.

An investigation into why air-source heat-pump (ASHP) uptake has been significantly lower than expectations took the form of a case study within the location of Breckland, Norfolk. A Mixed Methods approach was employed to gain fresh insight into the problem, firstly, from interviews with the local authority, a climate action group, and ASHP installers, and secondly, through the distribution of a questionnaire to the local community, for which 112 residents responded.

The results of this study revealed economic, technological, social, environmental, and political, inhibitors to ASHP adoption as well as top-down supply constraints. Primary data unearthed also revealed strong interconnectivities between the high costs of peripheral equipment and enhanced insulation (required mostly for older homes) and poor consumer reviews that may result from installations in homes that are ill-equipped to achieve optimal energy efficiencies.

This study concludes, firstly, that government grants are insufficient to cover the costs of enhanced peripheral equipment and insulation measures that are required to maximise the energy efficiency of many homes – a significant constraint for ASHP demand, and secondly, that there is a dual need to raise both the number of ASHP installers and accreditation standards.

Addressing the findings of this study may increase the uptake of ASHPs in Britain, and thereby contribute to lowering domestic emissions. However, this case study was limited by sample size. Therefore, its findings require substantiation in order to be applied to the wider population. The possible consequences of not attending to the problem addressed by this dissertation could be that the Government's 2050 domestic emissions targets are not met.

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