

Title: Understanding the economy-wide implications of different policy actions to address barriers to the adoption of energy efficiency improvement measures

Aims & objectives

The aim of this project is to analyse the effectiveness of the current policy actions promoting residential energy efficiency improvement and identify the economy-wide implications of different actions to address barriers to the adoption of efficiency improvement measures. As part of the project we will evaluate the effectiveness of existing energy efficiency improvement policies, identifying to what extent the available resources have been utilised and their impact on the efficiency of residential properties. We will explore what barriers have, or may have, been in place, preventing better outcomes, while considering how these barriers could be removed. In analysing the latter, we will identify the costs and challenges involved and explore how they interact with the retrofitting process. This will allow us to develop a better understanding of the relationship between the costs of different approaches to address the aforementioned barriers and the benefits that may be unlocked at different timeframes.

Effectively we will aim to answer the following research questions/objectives:

- **RQ1.** What policy options have been used in the UK, nationally and at devolved level, to support residential energy efficiency improvements? What has been the effectiveness of these policies?
- **RQ2.** What have been the potential barriers that prevented better outcomes from the current energy efficiency policies? What are the options to address these barriers, what are the costs involved and which are the parties liable to cover these costs?
- **RQ3.** What is the potential effect of removing each barrier on the introduction of energy efficiency improvement measures? How do the changes in the adoption rate of energy efficiency improvements may affect the potential economy-wide impacts of increased residential energy efficiency?

Methodology

This PhD project will rely on reviews of the existing literature, stakeholder engagement and economy-wide modelling to deliver the aforementioned objectives. Specifically, the methods that will be utilised include:

- A comprehensive review of the broader 'energy efficiency gap' literature to identify the key parameters that have been found to influence the effectiveness of energy efficiency policies. The review will cover the entire literature on the subject but particular emphasis will be placed on the UK case studies as they are more likely to capture the particular characteristics of the UK society.
- Comparative policy analysis to identify and evaluate qualitative and quantitative differences in energy efficiency policies within the UK, at a national and devolved levels. Where necessary the analysis will extend beyond the UK, via a view to understand the UK relevance of barriers identified in other countries. The focus of the comparative analysis will be on differences in outcomes, including, but not limited to, the use of the available resources.
- A computable general equilibrium (CGE) modelling approach will be used to evaluate the economy-wide impacts of energy efficiency improvement policies. This will be used to analyse a range of scenarios associated with different options to address the barriers to adopt energy efficiency improvements, and to develop a benchmark against which all scenarios will be compared.

Besides the aforementioned methodological approaches, the student will also engage extensively with stakeholders throughout the project. The aim is to:

- Identify barriers potentially encountered by non-academic stakeholders working on the energy efficiency improvement field, but not captured by the existing literature. Also reflect on the current relevance of barriers that have been identified in the literature.
- Gather evaluations of energy efficiency policies from stakeholders and compare against the evaluations conducted as part of the project.
- Discuss emerging findings and insights, co-developing good practice and policy recommendations, and developing routes to impact.

Thus, stakeholder engagement is envisaged as both a methodological approach for data collection and a route to impact.

Impact activities

Stakeholder engagement may take many forms but the expectation is that the student will participating in and/or organise:

- Workshops and dedicated meetings, mainly in the first two years, with appropriate stakeholders to present the findings of the literature review, the insights of emerging analyses and gather the stakeholders' view on the work to date.
- Seminars for academic and non-academic collaborators and stakeholders with a view to present the key findings of the project, uncover important messages that may have been overlooked and identify potential future work opportunities. These activities will likely take place in year 3.

Supervisory team

Supervisor: Dr. Antonios Katris, Research Fellow, Centre for Energy Policy, School of Government and Public Policy, University of Strathclyde

Co-supervisor: Prof. Karen Turner, Director Centre for Energy Policy, School of Government and Public Policy, University of Strathclyde. However, we will look to collaborate with the Scottish Oral History Centre with a view to potentially replacing the second supervisor, but with Prof Turner retaining a mentoring/advisory role).