# Policy synergies and trade-offs for low energy innovation

Centre on Innovation and Energy Demand

Research Councils UK Energy For a Low Carbon Future

## Cross Cutting Projects

Synthesising and integrating diverse lessons about the emergence diffusion and impact of low energy innovations emerging from individual projects, identifying specific lessons for UK energy and climate policy


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**There has been an increasing interest in policy mixes in innovation studies. While it has long been acknowledged that the stimulation of innovation involves different types of policy instruments, how such instruments interact and form policy mixes has only recently become of interest.**

We argue that an area in which policy mixes are particularly important is the field of sustainability transitions. Transitions imply not only the development of disruptive innovations but also of policies aiming for systemic change. Ideally policy mixes for transitions might include elements of 'creative destruction', aiding sustainability niches to gain ground while destabilising existing unsustainable regimes.

## Research aim and questions

To identify policy goals and instruments, which potentially foster or obstruct the emergence and diffusion of low-energy innovations in the area of mobility, heat and electricity use. The research analyses existing policy mixes by identifying gaps, complementarities, synergies and trade-offs. Research questions include:

1 To what extent do energy policy goals and instruments add up to a coherent policy mix suitable for fostering transitions towards low energy systems?
2 How can the emergence and change of policy mixes over time be explained?
3 What impact do current policy mixes have?
4 Are there ways in which synergies can be improved and trade-offs be avoided within policy mixes?

## Methodology

The methodology includes a policy mapping exercise, using two countries as case studies, Finland and the UK. In the first stage, lists of relevant policies influencing low energy transitions were identified from data sources (IEA and EU databases, governmental websites). Furthermore, objectives, justifications and the main content of policies were analysed over time. Draft lists of policy instruments were sent to experts for validation, while final policy instruments were coded based on analytical framing. In the second stage, policies focusing on buildings will be analysed further, with expert interviews providing data on policy processes over time.

## Outputs

A two-day seminar was hosted by the Finnish Environment Institute in Helsinki, Finland, in April 2014. Research article *'Motors of creative destruction'? Policy mixes for sustainability transitions* has been submitted to Research Policy in May 2014. A further research article focusing on policy mixes in the area of buildings is under development.

## Early findings

Our initial findings show that policy mixes for sustainability transitions – going beyond innovation – should involve instruments and policies that aim to 'create' new and 'destroy' (or withdraw support for) old technologies, practices, etc. Both generic innovation policies and targeted sectorial policies are important to create suitable policy mixes from the perspective of transitions. Our framework is intended both for further theory development and for policymakers.

| Creation functions (niche creation) | |
|---|---|
| Knowledge creation, development and diffusion (C1) | R&D funding schemes, innovation platforms, demonstration subsidies, etc. |
| Establishing market niches/ market formation (C2) | Regulation, tax exemptions, public procurement, deployment subsidies |
| Price performance improvements (C3) | Deployment and demonstration subsidies enabling learning-by-doing |
| Entrepreneurial experimentation (C4) | Advice systems for SMEs, incubators, low-interest company loans, venture capital, etc. |
| Resource mobilisation (C5) | R&D and deployment subsidies, venture capital, educational policies, etc. |
| Support from powerful groups / legitimisation (C6) | Innovation platforms, foresight exercises, labelling etc. |
| Influence on the direction of search (C7) | Targeted R&D funding, regulations, tax incentives, voluntary agreements, etc. |
| **Destruction functions (regime destabilisation)** | |
| Control policies (D1) | Emission regulations, carbon taxes, technology bans, etc. |
| Significant changes in regime rules (D2) | E.g. structural reforms in legislation, significant new overarching laws. |
| Changes in support for dominant regime technologies (D3) | Removal of support and R&D funding, technology bans, etc. |
| Changes in social networks, replacement of key actors (D4) | E.g. creation of new powerful committees with involvement of niche actors |

Figure 1: Creation and destruction functions of policies

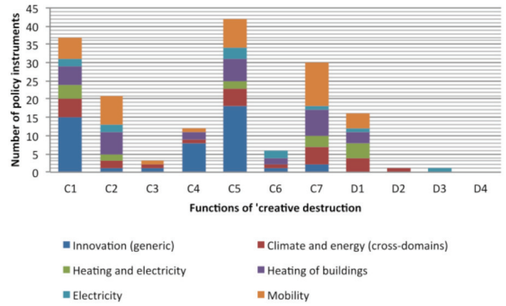


Figure 2: Policy mix for low energy innovation in the UK

## Engagement and impact

The project aims to engage with stakeholders in the following way:

1 Engagement with policy teams and organisations both in Finland and the UK via meetings and interviews.
2 Exploring opportunities for researcher placements within UK institutions, especially the Department of Energy and Climate Change and local government.
3 Organising roundtable workshops with key stakeholders by providing a space where stakeholders can gather and discuss issues affecting policy.


CIED is a collaboration between researchers from the Sussex Energy Group (SEG) at SPRU, University of Sussex; the Transport Studies Unit (TSU) at the University of Oxford; and the Sustainable Consumption Institute (SCI) at the University of Manchester and is one of six Research Centres on End Use Energy Demand funded by the RCUK Energy Programme.


Emergence. Diffusion. Impacts.