CENTRE FOR RESEARCH INTO
ENERGY DEMAND SOLUTIONS

Building on our Strengths: A market transformation approach to energy retrofit in UK homes

Gavin Killip, Environmental Change Institute

Oxford Energy Network seminar series

2 NOVEMBER 2021

Overview of presentation

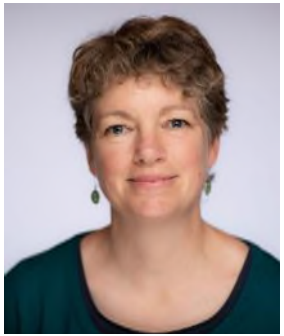
- Report background - Why this? Why now?
- The team
- Methodology
- Findings
- Policy recommendations
- Epilogue – overview and critique of the new Heat & Buildings Strategy

Why retrofit? Why this report now?

- Housing retrofit has multiple benefits:
  - Reduce energy demand and CO_2 emissions
  - Improve health and well-being of residents
  - Support decent 'green' jobs
  - Make the future energy system more resilient
- Construction Leadership Council (CLC) invited to propose plans for economic recovery (post pandemic)
- FMB wishes to build on high-profile work through CLC to raise the profile of the construction industry's role in retrofit
- CREDS wishes to create more impact from research

Who we are – the CREDS team

Aimee Eeles
(CREDS Core team)



Tina Fawcett
(Oxford)

Chris Jofeh
(Welsh Govt. IIGRD/Arup)

Gavin Killip
(Oxford)

Alice Owen
(Leeds)

Marina Topouzi
(Oxford)

Faye Wade
(Edinburgh)

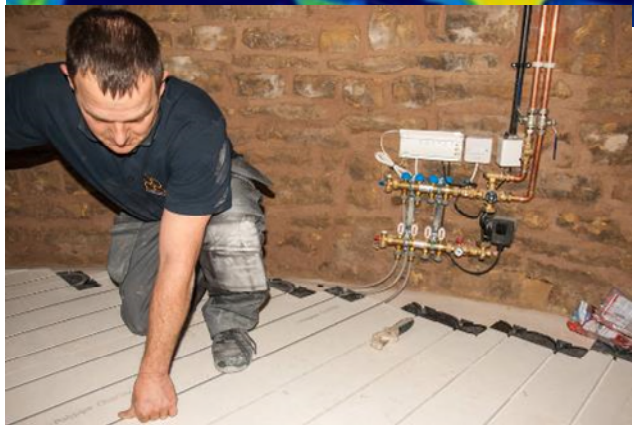
Working with researchers, businesses & policy makers, we support the transition to a net-zero society.

CREDS consortium institutions

What is retrofit?

Retrofit (or energy retrofit) is:

A process of making changes to buildings and technical systems in buildings so that energy consumption and associated carbon dioxide emissions are reduced, in line with energy and climate policy goals.



Housing retrofit & UK climate policy

- UK has 29 million homes
- UK homes account for:
  - ~30% of energy demand
  - ~17% of UK emissions
- Energy efficiency potential is very large
- Need to replace all fossil heating (gas, oil, LPG)
- High-quality, integrated retrofit can increase service and reduce emissions by >50%
- Significant implications for peak demand
- Multiple benefits beyond energy/climate

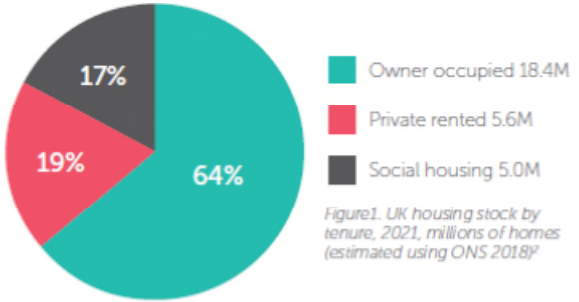


Figure1. UK housing stock by tenure, 2021, millions of homes (estimated using ONS 2018)

Make homes more comfortable and attractive to live in

Improve the health and well-being of residents

Cut heating bills significantly

Support large numbers of jobs across all regions of the UK

Past policy failures

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Science & Environment

Green Homes Grant scheme to insulate houses axed

By Roger Harrabin
BBC environment analyst

27 March

Climate change

Green deal and energy companies obligation (ECO)

This article is more than **6 years old**

Government kills off flagship green deal for home insulation

Flagship scheme to insulate homes to end as government blames low take-up and stops funding of company set up to issue home improvement loans

Adam Vaughan
@adamvaughan_uk
Thu 23 Jul 2015 16.04 BST

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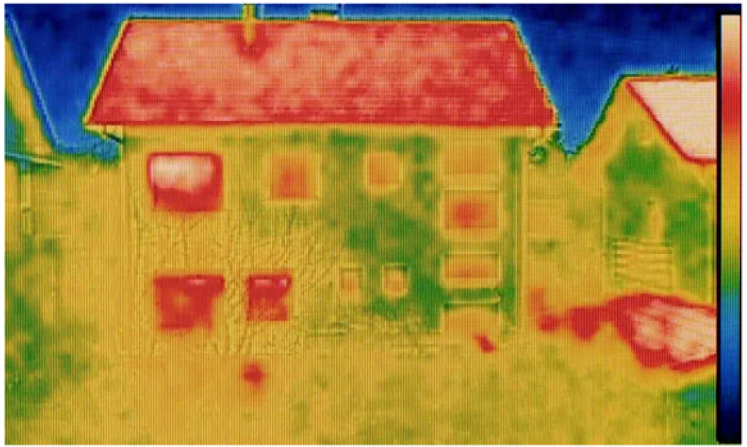


A thermal image of a home. Green deal loans helped people to insulate homes to make them more energy efficient. Photograph: Alamy

Report methodology

Analysis based on selected existing literature

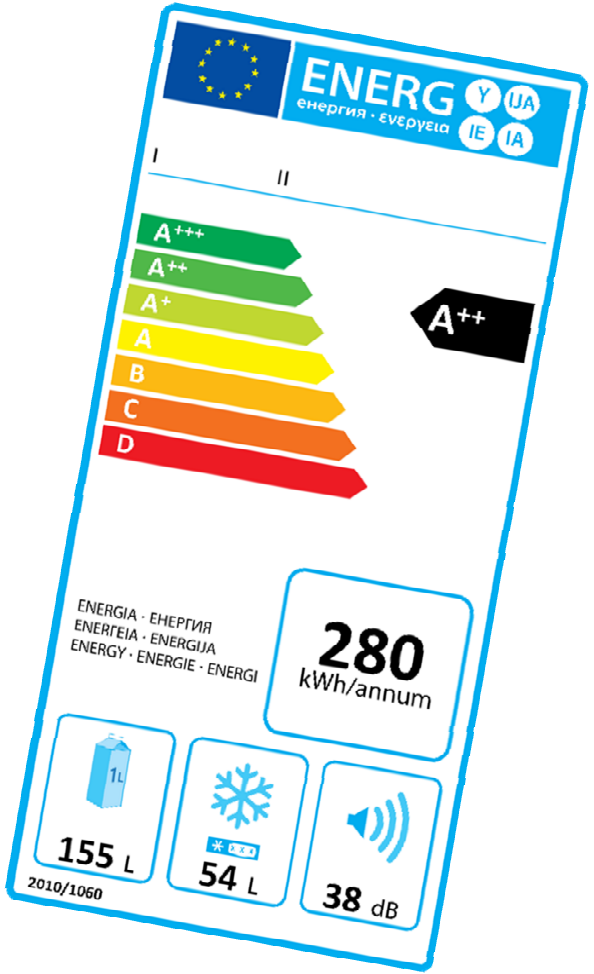
Facilitated workshop with 21 FMB members (online)

Our key question:

How can the market for repair, maintenance and improvement (RMI) be transformed so that opportunities for energy retrofit are integrated into everyday practice and market activity?

Market transformation

- A policy toolkit with a history of success in appliance markets – 3 pillars:
  - Minimum standards
  - Information
  - Financial incentives
- Introduced over time
- Based on technical and market analysis
- Achieved through long-term engagement with industry



Why focus on the Repair Maintenance & Improvement (RMI) market?

- Housing RMI is worth £29bn per year
- £11bn (~40% of total) is estimated to represent 'trigger points' for retrofit
- Potential to marginalise cost and disruption
- 45,000 building firms, of which:
  - 95% are SMEs
  - 80% have only 1-3 employees
- Builders and installers are very influential over design, specification and customer choice

Minimum standards (including accreditation and compliance)

Reforms needed

- Energy standards AND occupational standards
- Building Regulations to be tightened regularly over time
- Compliance checks to be systematic with good coverage
- Building Control needs resources for compliance checks; advisory role should be maintained and strengthened
- Introduce a 'licence to trade' for firms to set minimum standards for skills and knowledge
- Introduce penalties for firms offering cash-in-hand deals outside the regulated system

Information on energy performance

Reforms needed

- Improve accuracy of Energy Performance Certificates (EPCs), based on quality building surveys
- EPC ratings should form the basis of new regulations banning the sale or rental of property that is non-compliant (without easy loopholes or exemptions)
- Building logbooks (or 'passports') record the history of works carried out in a property, including energy performance and updated EPC rating/certificate
- Smart metering could help automate data collection for building logbooks/passports?

Finance & fiscal measures

Reforms needed

- Up-front capital needs to be available that is:
  - Fair and affordable
  - Administratively straight-forward and efficient
  - Sufficient to pay for good quality retrofit
- Some combination of loans, grants and tax incentives?
- Public investment to prime the market for finance
- Banks need 2 systems to de-risk their investment:
  - building certification
  - installer accreditation
- A VAT cut would help squeeze out unlicensed work

Industry & market analysis

- Retrofit includes energy audit, planning of works, funding options, works/installation, quality testing, RMI works in parallel
- Retrofit is seen as 'normal' by clients and integrated wherever possible into RMI works
- Local Authorities offer one-stop shops for retrofit advice and guidance
- Firms offering cash-in-hand deals outside the regulated system risk harsh penalties
- Policy needs to stimulate market demand and industry capacity to deliver at the same time – how best to do this?

Skills

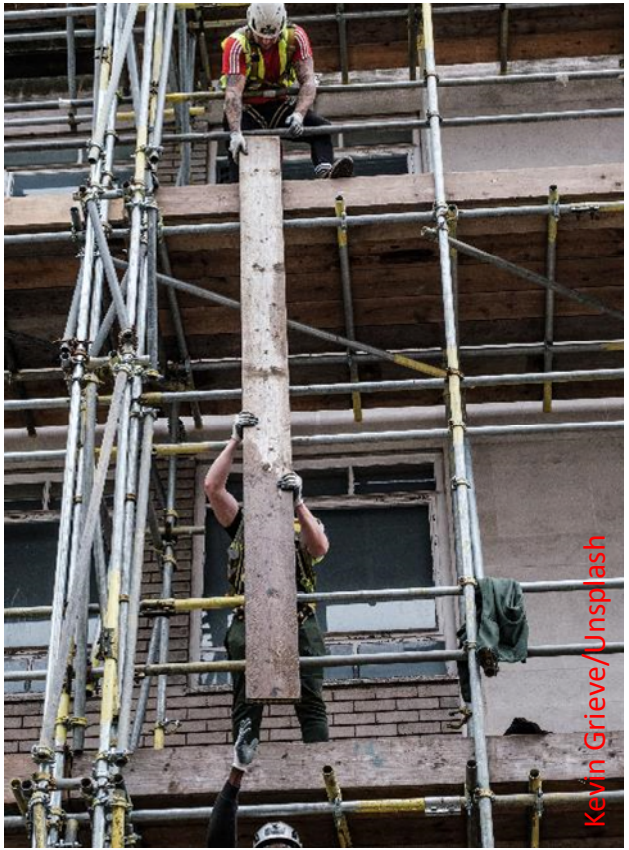
Reforms needed

- Training needs to cover technical aspects of retrofit, business management and communication skills/customer care
- More intermediate/ advanced qualifications (NVQ levels 3-5)
- New courses (eg PAS 2035/2030) integrated into FE system
- Labour market regulation to drive demand for skills:
  - All company directors have to have minimum qualifications
  - Unqualified workers can only work as an employee of a competent firm
- Systemic support for apprenticeships & placements – not left to the individual

Local partnerships

Reforms needed

- New business models provide:
  - administrative, technical & marketing support to firms
  - customer care and guarantees to clients
  - closer working between firms and local authorities
- Resources needed to support local authorities as convenors of district-scale energy systems
- New governance arrangements to integrate local supply/demand (eg heat networks)



Policy recommendations

Building standards

- ❑ Regular tightening of building regulations
- ❑ Invest in Local Authority Building Control for compliance (and advice)
- ❑ Reform Energy Performance Certificates

Workforce development

- ✓ Introduce a licence to trade
- ✓ Broad foundation course in all training

Finance and fiscal measures

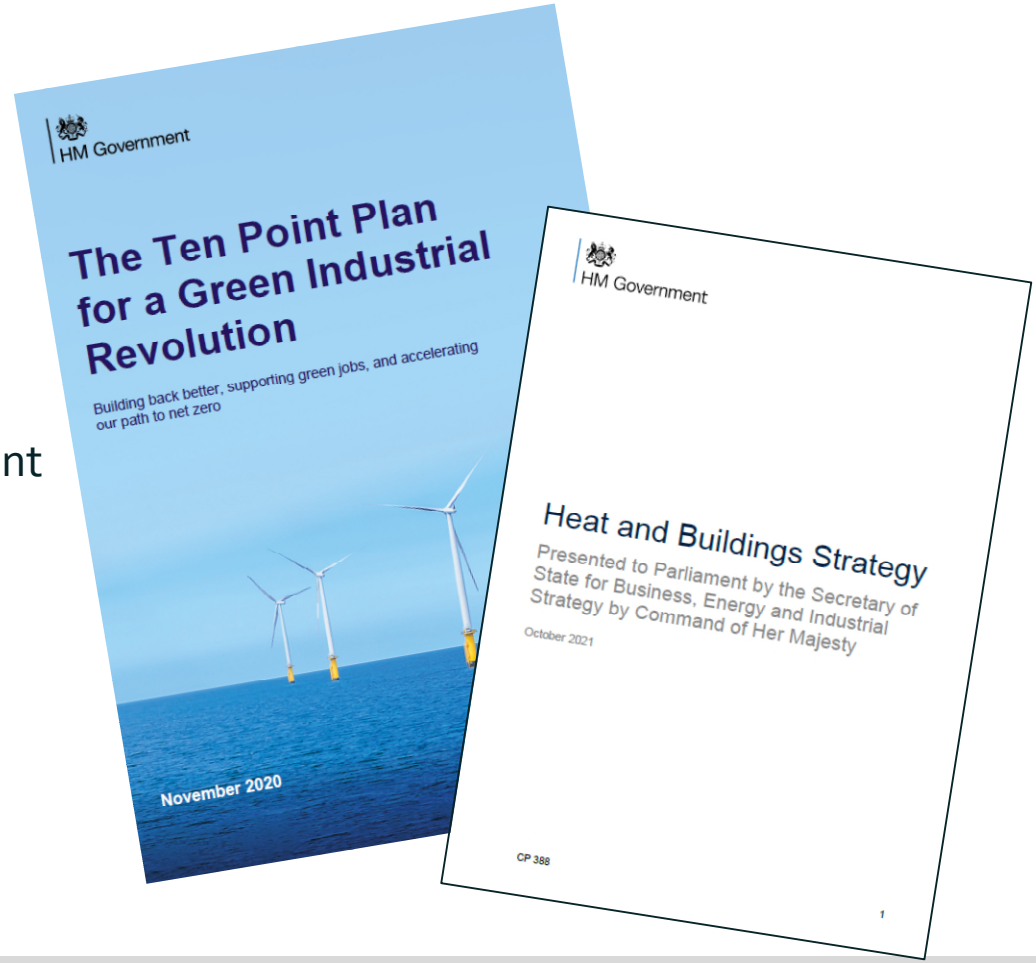
- ❖ Cut VAT on RMI to zero or 5%
- ❖ Public investment to pump-prime the market
- ❖ Fair, affordable access to capital (loans, grants)

Support new approaches

- ➢ Coordinated field trials
- ➢ New information management systems (eg renovation 'passports')

Epilogue
Heat & Buildings Strategy

- Published 19 October 2021
- Long awaited, repeatedly delayed
- Adds necessary detail to the Ten Point Plan (November 2020)



UK's Heat & Buildings Strategy – key points for buildings

- Strong focus on hydronic heat pumps
  - Proposed obligation on manufacturers to increase %age of HP installations compared with boilers
- Some support for hydrogen as an energy carrier
- Some support for heat networks
- New Future Homes Standard from 2025 (no details yet)
- Retrofit of existing homes:
  - No support for owner-occupied homeowners (64% of UK homes)
  - Minimum standard for private rented sector (20%)
  - Minimum standard for social housing (16%)

Funding for buildings in the HBS

- £450m Heat pump grants (£5,000 x 90,000)
- £450m Strategic Innovation Fund for electricity companies to tackle:
  - system integration
  - data and digitalisation
  - heat
  - transport
- £1.425bn Public Sector Decarbonisation Scheme (non-residential)
- £338m Heat Network Transformation Programme (no details yet)
- £1bn Net Zero Innovation Programme, including:
  - Industry fund to support reductions in heat pump size and cost

Heat & Buildings Strategy – what's missing?

- No funding for heat pump installations beyond the first 90,000
- Nothing convincing on skills for retrofit
- Inadequate systems for quality assurance and compliance checks
- No regulatory framework and governance for heat networks
- Unclear signal to industry on boilers - banned or not? Hydrogen/hybrid boilers?
- Low ambition on retrofit means more reliance on new renewable electricity generation – How will that work? How much will it cost?
- Several key issues remain uncertain – to be consulted on
- The government investment overall seems too small

Thank you

Questions and comments welcome.

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