

Living in the Energy Transition: How Six Households Experienced Britain's Low-Carbon Shift

Xiaomin Li | MSc Sustainability, energy and development



A solar-panelled house in Durham, photographed by the author.

— something a survey asking only 'installed or not' can't see. That summer, I went looking for it, starting through a local community energy group and following the connections that grew from there, to find out what that **'something else'** actually was.

This project began during the year I spent living in Durham, noticing solar panels on newer estates but rarely on the older terraces in town, and occasionally catching the hum of an electric car on the street.

Best et al. (2026) found that of UK households seriously considering solar panels in 2012–13, 90% still hadn't installed them by 2021–22. Income differences alone can't explain that gap: **why do so many people say they want solar panels, heat pumps, or an EV, yet never get around to it?** Something else must be at work

Why Durham, Six Households

County Durham has a higher-than-average fuel poverty rate and older housing that's harder to retrofit. It's also a former coalfield: a banner once hung at the Durham Miners' Gala reading 'Coal is our heritage, green energy is our future.' (Harrison, 2026) I wanted to know what a second, very different energy transition means for a place still shaped by the first.

I interviewed six households there — five homeowners and one renter — asking each to walk me through an ordinary day rather than answering a checklist of technologies. It's a method borrowed from energy anthropology, which treats household energy as a lived, textured practice rather than a technology choice to be optimised.

To make sense of what I heard, I drew on practice theory, particularly Shove, Pantzar and Watson's (2012) account of practice as a combination of materials, competence, and meaning. This helped me look beyond whether a household had installed a particular technology. I started asking what had to be in place for that technology to become part of everyday life. This included **materials**, such as the house, its wiring, and the household budget. It also involved **competence**, including the skills and confidence needed to use something new. Finally, there was **meaning**: what people considered normal, comfortable, or appropriate for their home. Looking across the six households, four patterns stood out.

Four Ways of Engaging

Moving Towards Change

Engagement is gradual. Before installing a new low-carbon technology, households may already have switched tariffs, added insulation, or gained confidence in using a smart meter — a small gain in competence, even before any material change to the house. These steps rarely appear in installation statistics, but they still form part of how households move towards lower-carbon energy use.



Changing With Life

Change often followed changes in everyday life — a new car, a move, or a new-build home that already came with panels installed. These life events reshaped a household's material circumstances, and decisions about low-carbon technology often followed from there.



Living With the House

Low-carbon technology has to enter an actual house, and **its age and tenure shape what's possible**. My one renter interviewee had almost no say over the home's energy improvements. This created a constraint that the homeowners in my sample did not face in the same way.



Staying With the Familiar

Even with money and suitable conditions in place, 'adoption' can stall. **A technology also has to become part of someone's everyday life.** It has to fit with what a household already sees as a normal and comfortable home. This is what I found most interesting.



What This Means

Putting six households side by side reveals differences that are easy to miss when looking at one alone. Some had moved further than others, while some were changing in quite different ways. A single line from 'non-adopter' to 'adopter' is too tidy a shape for what these six kitchen-table conversations showed me.

This also changed how I think about the 'intention–action gap.' Perhaps the issue is how we measure action: a completed installation counts as the clearest sign of change, while considering, discussing, adjusting habits, or being limited by the home itself go unrecorded. Understanding energy transition means understanding the materials, competence, and meaning people actually live with — not just running awareness campaigns or offering incentives.

A Starting Point

As an international student researching a topic deeply rooted in British life, I spent a lot of time asking questions my interviewees took for granted — what an EPC rating meant, how a subsidy scheme worked. Interviewing in a second language meant some threads I only understood later, rereading the transcripts. These limits shaped what I could capture, and reminded me that a researcher is never a fully transparent observer.

References

- Best, R., Jayasinghe, M., Mallick, S. and Mukhopadhyaya, P. (2026) 'Do intentions matter in household solar panel adoption? New evidence', *Energy Economics*, 158, 109335.
- Harrison, R. (2026) 'Reimagining the role of coal mining heritage in the context of the fortieth anniversary of the 1984–85 UK Miners' strike, green energy transitions and the Carbocene', *International Journal of Heritage Studies*.
- Shove, E., Pantzar, M. and Watson, M. (2012) *The Dynamics of Social Practice: Everyday Life and How it Changes*. London: Sage.

Six households can't tell us how the whole of the UK is experiencing the low-carbon transition. They did, however, let me see what the gap between 'wanting to' and 'doing' can look like inside a household. Energy transition is a household slowly rearranging its own life — it can mean installing a solar panel, changing one daily habit, or simply thinking about a technology without yet being able to act on it. I think that's already a start.