

Deborah Adkins - greener homes

Empowering individual homeowners to help meet greenhouse gas targets



Heating and powering our homes accounts for around 30% of energy consumption in the UK. While new-build homes must meet strict energy efficiency building regulations, older homes will need to be retrofitted if the UK is to meet its 2050 target for lowering greenhouse gas emissions by 80 percent.

“One-quarter of UK homes are more than 100 years old and the majority will still be in use in 2050,” says Dr Deborah Adkins. “Improving our homes is one of the most effective ways to tackle climate change. But if we are to meet the 2050 target we will need to retrofit around 26 million homes in the UK.

“But it’s complicated. Each home is different – different location, different materials, different people living there – so there’s no one-size-fits-all solution.”

Dr Adkins studied mechanical engineering and building physics, then worked as a lecturer in Nottingham and Ningbo, China, before joining Imperial's Dyson School of Design Engineering. She is passionate about the environment and energy conservation in the built environment, and moved to Imperial because she wanted to use a design approach to help people engage and interact with energy conservation.

She explains: "Energy bills are going through the roof. People want to make good decisions but they need some help.

"It can be simple things like not overfilling the kettle, switching lights off, using heavy curtains and reducing drafts. This is not rocket science, but we need to engage the public to create behaviour change.

"Older homes can benefit from better insulation or new technology such as solar panels. But these things are a hassle for people and it's not easy for them to get started."

Dr Adkins used evidence from behavioural science to come up with a new piece of technology – an interactive tool that helps people to get to grips with their own energy use and consumption. She called it HOUSE (HOMe User and Stakeholder Environment). Users can input information on their home – its age, building materials, number of rooms, number of people and so on – and it will show what changes could have the biggest impact on reducing energy consumption.



“HOUSE creates an interactive physical model of a home that can be used to test out different solutions and determine the best way to reduce energy costs and consumption. It looks at the problem holistically – taking into account everything from the best kind of insulation to use, to the effect of filling your kettle a little less”

Dr Adkins saw the Techcelerate programme as an opportunity to explore the HOUSE concept, to look at and question her assumptions, and spend time on developing her business case.

She spoke to a wide variety of stakeholders, including the ‘big six’ energy companies, building solution providers, energy charities, housing associations and homeowners.

“Techcelerate helped me focus on developing entrepreneurial skills, and improved my knowledge of entrepreneurship and the start-up environment. It gave me time to explore my ideas in more depth as well as insight into new avenues to investigate, and I discovered that I had a strong business case.”

Following her time on the programme, Dr Adkins is submitting academic papers on her research so far, and applying for funding to continue her work. At the same time she is developing her prototype for HOUSE, running trials and exploring different routes to market.

She adds: “I’m passionate about climate change and education, and I’m a strong believer in giving people the information they need to make informed decisions. I believe this will allow them to reduce their own energy consumption, and as a result reduce energy consumption and emissions overall.

“Climate change is happening now, so we have to make decisions around adaptation as well as mitigation. My ultimate aim is to change minds to lower emissions. That will be my measure of success.”