



Electricity in the Home:

Implications for Scale and Scope of Changes to the UK's Electricity System

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Context

- Decarbonisation target (80% reduction in 1990 CO₂ level by 2050)



- Energy security (and affordability)



- Households responsible for 1/3rd UK's electricity consumption



- Need to focus on technical AND social aspects of energy systems

PhD Project in Context

- Electrical engineering consortium: Future changes to UK electricity system
- My project is investigating social aspects of **how people use electricity in the home**, and how future changes in electricity networks may impact this.

Methods

- The relationships people have with electricity within their homes.
- The reasons for consumption and meanings this consumption has.
- Lifestyles + routines

Phase 1: Focus Groups

December 2012 – July 2013

Phase 2: Development of Scenarios + Top & Tail Expert Interviews

May 2013 – September 2013

- Vignettes/stories
- Statistics/technical descriptions
- Possible impacts of electricity system change (lifestyle, cost etc.)

- Follow-up interviews with focus group participants.
- Clarify + further investigate themes from Phase 1.
- Present Phase 2 resources to gauge perceptions + attitudes towards scenarios.

Phase 3: Follow-up Interviews

September 2013 – January 2014



Findings – Focus Groups

- Electricity not visible in everyday life.
- Perception of using appliances – as opposed to electricity
- Less material presence than other utilities (e.g. gas/water)

*“The thing about electricity is, **you don’t realise that you miss it until it’s gone**, and whilst it’s all good and fine when you’ve got it, all of a sudden all the lights go out and everybody goes **‘oh bugger what do we do now?’**” (James, 63)*

“When we first had it we’d go round switching things on to see what would trigger it. But our use of electricity is such that we turn everything off. I mean the microwave doesn’t stay on with its little light, nothing glints at us.” (Christina, 64)



- Energy monitors = ↑ awareness
- Short term interest in consumption, declines with time
- Perceived baseline consumption
- Feedback most effective in cost terms
- Policy and design implications



Findings Continued...

- Growing importance of electricity in people's lives = Ever-increasing electricity demand.
- Perceived 'lock in' of consumption around routines. Limited flexibility
- Comfort requirements (e.g. heating, lighting) need to be maintained

'Syncing with the Sun'



Pro-environmental behaviour change:

- Product changes (energy-saving light bulbs, timers etc.)

*"Because we've got solar panels now, **the minute the sun comes out, we throw on the washing machine, the dishwasher and any other appliance** [group laughs]. Well no, I mean, I know you laugh and joke, but I mean **it is a means of saving energy and saving money at the same time.**" (James, 63)*



Findings Continued... Engineer Interviews

- Wide range in expectations and visions of future change
- Recurring visions included:
 - Electrification of some fossil fuel sectors (e.g. heating + transport) = ↑ overall demand
 - Increased role for renewable generation = more fluctuating supply
 - A 'smarter' grid involving smart meters in the home
 - Expectation that consumers will respond to price signals

“Normally the customer will be confused what the best deal is for their condition [...] and I just pay whatever it costs without looking to be honest, I even don't bother to read the bills.”

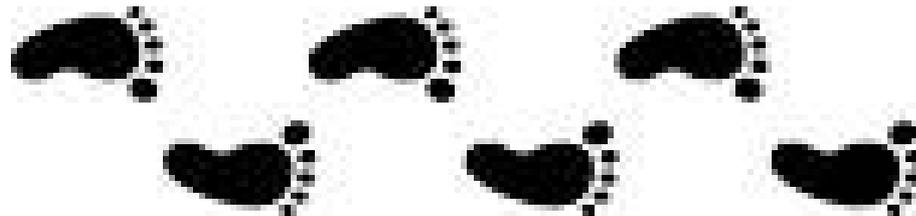
Possible barriers to change in the domestic sector?

- Advocation of 'techno-fixes' and marginalisation of social/behavioural change
- Belief that education of consumers will change behaviour (Deficit Model?)
- Consideration of whether domestic sector is most appropriate sector to target (potentially more scope tackling industry/businesses)



Summary + Steps

- Success of technological and policy interventions depends on their impact on people's lives
 - Does lack of consensus influence the speed and scale of possible future change?
 - In a 'smarter' grid people will play a more active role in the UK electricity system, therefore more consideration of social aspects required
 - Could more radical social change help to change demand profiles and reduce peak loads?
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- **Solar PV case study – evidence that large scale change can occur**





Thanks For Listening!