Tackling Climate Change from Home: How to Turn Good Intentions into Positive Actions

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A research report by The Behavioural Architects
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Foreword

We have all started to witness the effects of climate change on our lives with ever increasing temperatures and severe weather events becoming increasingly common. Without a rapid shift away from the use of fossil fuels, these weather extremes will become worse and will mean significant changes to our daily lives here in Great Britain and across the world.

Britain has already taken significant steps to be less reliant on fossil fuels. Over recent years, we have seen a growth in renewables with wind and solar becoming a larger part of our electricity mix, powering more and more homes and businesses across the country.

We are modernising our energy system to enable it to capitalise on those renewables to an even greater extent. The rollout of smart meters is a critical part of that. Installing a smart meter in every home enables our electricity system to match our usage with when renewables are producing electricity, further reducing our reliance on fossil fuels.

We all have an important role to play in protecting our planet. As the Climate Change Committee point out, our significant gains in reducing carbon emissions have largely come from building large infrastructure – such as building offshore wind turbines. The next phase of decarbonisation will be one of millions of pieces of small infrastructure, such as smart meters, electric vehicle chargers and heat pumps, where the decisions of households up and down Britain will play a huge part in determining whether we are successful.

We are grateful to The Behavioural Architects for this detailed report which offers valuable insights into the attitudes of energy consumers towards the climate emergency and their role in helping to tackle it. It tells us a great deal about how we should all support consumers in developing more climate-friendly habits and how we can most optimally frame the individual steps that can be taken in the home.

There is widespread appreciation that, as individuals, we must all do our bit. However, as this report highlights, it is very clear that there is a gap between people's intention to support climate friendly behaviours and those who take action. An essential task for communicators and policy makers in coming years will be to remove the barriers that stop consumers turning their intentions in to action.

The Behavioural Architects have produced a useful evidence-based Communications Checklist, centred on behavioural science, which we are pleased to make freely available with this report. It has been designed with organisations that work in the sustainability sector in mind, but will be valuable to any business, charity, or organisation that seeks to communicate more effectively with consumers about the importance of their own individual actions in tackling climate change. It's our collective action that will make the difference here.

Dan Brooke
Chief Executive, Smart Energy GB

1. Executive summary

Climate change: to meet the scale of the challenge, we all need to do more - and we all can. But why are so many of us not?

Previous research shows that public concern for climate change is at an all time high. However, this has not translated into wholesale shifts in behaviour around the home to reduce our individual impact on the environment. The UK government has pledged to cut carbon emissions to net zero by 2050, and in order to achieve this the behaviours of individual citizens need to change.

Following a brief literature review, eight energy-efficiency behaviours were prioritised for study: washing clothes at 30 degrees or less, getting a smart meter installed, turning appliances / devices off standby, turning thermostat down by 1 degree, DIY draught-proofing, switching to a 'green' energy tariff, switching to a 'time of use' (TOU) tariff and installation of a smart thermostat. These behaviours were then explored in primary research with a mix of people who have adopted these and other energy-efficiency behaviours to a greater or lesser extent. A behavioural change framework has been applied to contextualise the findings and provide recommendations for messaging.

People have been aware of climate change for a number of years, but it is only in the past 2-3 years that a greater sense of personal responsibility has started to emerge. A phrase heard time and again in this study was 'we should all do our bit'. This is largely due to the impact of climate change being felt closer to home - extreme fluctuations in weather, flooding and heat waves. The desire to protect future generations is also playing a significant role; especially as children are now learning about the climate crisis at school, and educating parents and grandparents about what needs to be done to tackle the problem.

Despite greater awareness, understanding of the issue is still very limited - terminology such as 'carbon neutral' and 'net zero' are not widely understood.
Indeed, knowledge of the 2050 net zero target is currently low. Alongside this, media coverage of the climate crisis has long focused on the problems, highlighting the plight we are in, but very rarely provides actionable solutions that individuals can engage in to help. This has likely contributed to a feeling of helplessness, and therefore inertia amongst individuals.

The complexity of carbon emissions and climate change means that rational messaging and education is very unlikely to spur immediate action. Given that it is increasingly urgent to inspire widespread behaviour change amongst individuals, a better strategy would be to engage with people on an emotional level, and to tap into the latent motivation 'to do one's bit'.

This study reveals a number of motivations for adopting energy efficient behaviours. The desire to be 'green' is only a minor consideration, whereas unsurprisingly, cost saving is the greatest motivator. Other motivators include: protecting the planet for future generations, an inherent motivation to be less wasteful, and for a minority the desire to be tech savvy.

However, we know from behavioural science that motivation alone is not enough to change behaviour. Contextual triggers, a person's mental or physical ability to carry out the behaviour (i.e. do they have the knowledge, skills, financial means etc) and the reward they get from carrying out the behaviour are all important factors. This report provides detail on how well each of the prioritised behaviours measure up to these factors; whilst some are easier and more motivating to do e.g. washing clothes at lower temperatures, others require much more effort with less obvious rewards, e.g adopting time of use tariffs. It should be noted that none of the behaviours explored are certain to be adopted just by raising awareness.

There is work to be done to increase motivation, ability, and help provide in the moment triggers to create an impetus for action and to see long-term behaviour change.

This study sets out different implications for messaging aimed at encouraging energy-efficiency behaviours around the home. One of the key considerations is how the message is framed, the way information is conveyed can have a big impact on behaviour. Recommendations include:

● Using emotional framing that speaks to people's inherent motivations to carry out these behaviours, instead of rational messaging about carbon emissions
● Using positive reinforcement to celebrate positive changes already made and to encourage new energy-efficiency behaviours
● Avoiding messages that are didactic in tone, presenting the costs of not doing a behaviour is likely to be less motivating in this context than highlighting the benefits of carrying out the behaviour
● Ensuring that messaging is reflective of the more colloquial terminology used by the general population and avoiding less familiar terminology e.g. 'carbon neutral'

In addition to wider messaging, it will be critical to promote energy-efficiency behaviours wherever possible alongside climate change articles and stories in the media. This will help reinforce the idea that individuals have a role to play in tackling climate change and inform them of actionable steps that they can take.

Behaviour change plays a role in almost two thirds of the emissions reductions. Most of this comes through consumer adoption of low-carbon technologies such as electric cars.

Progress in reducing emissions: 2021 Report to Parliament, Climate Change Committee (June 2021), p. 45

2. Key recommendations

	COMMUNICATION OPPORTUNITIES
1	**Make sure that any communications reflect language already used by the public.** For example 'tackling climate change' and 'reducing carbon footprints' vs. less familiar terminology e.g. 'carbon neutral' and 'net zero'. This will help reduce cognitive strain and increase the likelihood that people will engage with the message.
2	**Avoid using the government's net zero target as a motivator.** This tactic is likely to encourage inertia. Firstly, because of people's scepticism about the government's ability to meet targets, and therefore any personal contribution that they make may not be deemed worth the effort. Secondly, because 'the government' anchors the responsibility to world leaders and big business, not the individual.
3	**Ensure that communications don't come across as didactic in tone.** Instead, use positive reinforcement to celebrate existing climate-friendly behaviours and encourage further positive change. Framing messages around the benefits of doing a behaviour (gain frame) vs. the costs of not doing it (loss frame) will likely be more motivating in this context.
4	**Use emotional rather than rational framing.** Speak to the inherent motivations identified above vs. rational arguments for carrying out a behaviour. Speak to the collective action 'let's all do our bit' - though executionally it will be important not to literally spell this sentiment out as this could come across as didactic. Stats that surprise or shock could be effective e.g. '40% of carbon comes from homes', but should be coupled with a message around how to start tackling the problem. Avoid attempting to explain tonnes of carbon emissions - this is too complex for people to truly get their heads around (even with trees as a contextual anchor), and leads people to switch off.
5	**Promote energy-efficiency advice alongside climate change articles in the media.** This will help empower people to act, instead of leaving them scared without knowing what to do.
6	**Wherever possible communicate multiple benefits to carrying out a behaviour.** Number 1 on this list should always be cost savings, if there is a motivating amount to communicate: A general rule of thumb would be >£10 a month or >£100 pounds a year - this can include aggregating cost savings across different behaviours. Contextual anchors could help for cost savings if the amount is not impressive as a stand alone figure e.g. saving the cost of a cinema ticket, a night away in an Airbnb to help people conceptualise the value of the saving.
7	**Build on positive sentiment towards smart meters by communicating specific examples of how they can help individuals save energy.** For example through user success stories.
8	**Work with energy suppliers to improve and standardise communications around household energy use.** Key to this is providing more personalised, timely feedback on personal usage and advice on how individuals can reduce their energy.
9	**Size the opportunity for different energy-efficiency behaviours via a quantitative study.** Assess the relative strength of each of: motivation, ability, trigger, reward to help feed into communications and messaging strategies.
10	**Use A/B testing to optimise messaging.** Assess the relative strength of different behavioural science concepts for different behaviours / messages e.g. test two different frames, or test two different types of social norms.

3. Background and objectives

The behaviours of individual citizens have a major role in the contribution towards the government's 2050 net zero target. While public concern for climate change is at an all time high, evidence suggests substantive changes in individual behaviours of citizens is not yet forthcoming.[1] In other words, there remains a substantial 'intention-action gap' in the day-to-day lives of many. This is the difference between portrayed interest and attitudes towards the climate crisis and the objective behaviours taken in order to address it.

Smart Energy GB has been tasked to help everyone in Britain understand the importance of smart meters and engage with them when they have been installed, to become more energy efficient in the home. As part of this exploration, Smart Energy GB commissioned The Behavioural Architects to conduct both secondary and primary research to update current understanding of the drivers of the intention-action gap for energy-efficiency behaviours, and opportunities to minimise it. The research investigated eight in-home energy-efficiency behaviours, covering: knowledge & understanding of these behaviours, ease of adoption and the perceived personal benefits beyond broader environmental benefits.

Objectives

- Provide insight into how well domestic energy consumers understand their contribution to the net-zero target, both now and in the future
- Further the organisation's knowledge of how to increase consumers' willingness to reduce their energy consumption around the home, to support the nation's move towards the net-zero target
- Make evidence-based communications recommendations for achieving reduction in energy consumption around the home, and increased uptake of climate-friendly products and behaviours

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1 Net zero public engagement and participation - a research note, BEIS 2021: https://www.gov.uk/government/publications/net-zero-public-engagement-and-participation

4. Context: energy consumers' attitudes toward climate change and net zero

4.1 Increased consciousness of climate change

The issue of climate change has been on most people's radars for many years, but it's previously been seen as an issue over which individuals have little influence. Climate change has typically been framed as a global challenge, and examples of the impact have been far removed from people in Britain e.g. melting ice caps, destruction of wildlife habitats in South America and Asia. As well as the vast scope of the problem, prevailing perceptions were that climate change is largely driven by major industries and high-population countries. This led to inertia. Individuals didn't believe that their own actions could make much of a difference, and were doubtful that they would experience any consequences.

However, in the past two or three years attitudes appear to have shifted. In 2020, concern about climate change reached an all time high in the UK[2] and a shift in attitudes was apparent from this qualitative sample. This appears to have been brought about by an increasing sensitivity to the impact of climate change, including:

- Personal experience of extreme weather - higher temperatures, floods, sudden fluctuations in weather
- News from abroad highlighting the impact on humans (not just wildlife) - homes and livelihoods destroyed by floods and forest fires
- Children informing parents and grandparents about energy-efficiency behaviours, having learnt about them at school
- An increasing cultural narrative around the urgency of the issue - popularised in documentaries such as Our Planet and Cowspiracy, as well as the influence of David Attenborough and Greta Thunberg

> **"I used to joke that Scotland could do with being a couple of degrees warmer! But now the weather we're having is a bit mad, it's so unpredictable, and there's problems like flooding. It's really brought it home that this is an issue that affects us all."**
> Jackie, 41-50, 'Intender'

Altogether, there is now a greater appreciation of the fact that action must be taken, and that individuals must each 'do their bit' to help tackle climate change.

2 Net zero public engagement and participation - a research note, BEIS 2021: https://www.gov.uk/government/publications/net-zero-public-engagement-and-participation

4.2 The complexity of climate change and what can be done

Although there is increased awareness of the problems caused by climate change, there is very little understanding of the science behind it. Even though 'carbon emissions' is a familiar term and understood to be undesirable, people are unclear where and how these are created. These are predominantly associated with factories and transport rather than energy use within the home. This translates into a wider lack of understanding about the amount of carbon produced by individuals and their impact on the environment.

Other terms such as 'carbon neutral' and 'net zero' are unfamiliar, and largely meaningless. When people interrogate these terms, confusion arises about how carbon neutrality or 'being net zero' is possible. People anchor to their knowledge that everything made in a manufacturing process creates carbon, but are unfamiliar with carbon offsetting.

> **"I always associate carbon emissions with my car, the exhaust fumes."**
> Anne, 70+, 'Intender'

In addition to this, press coverage of climate change focuses on the problems, but very rarely provides actionable solutions: steps that individuals can take to help make a difference. This serves to encourage a defeatist attitude, that it's too late or too difficult to do anything about climate change, both at an individual level and on a larger scale.

The complexity of the issue and lack of knowledge around what climate-friendly behaviours individuals can do at home are both important to consider for communications. This is both in terms of the messaging required and how to deliver it.

Firstly, it's important that coverage of climate change in the media not only outlines the challenge but also serves to educate people about what climate-friendly behaviours they can do at home.

Secondly, messaging from brands, organisations, charities etc. need to be delivered in a way that strikes a chord emotionally, rather than relying on a purely rational explanation of the problem and solution. Such a complex topic causes cognitive strain, and therefore people are not willing to engage with the details. This means that rational messaging, for example about tonnes of carbon produced, has little impact. This is even when contextual anchors are provided, such as the number of trees required to balance out the emissions. People struggle to interpret this in a meaningful way.

Instead, connecting with people on an emotional level is more likely to be successful in encouraging them to act. This side-steps the issue of having to explain a complex subject, and instead can tap into this latent motivation to 'do their bit'.

4.3 Awareness and response to government targets

Awareness of the UK's 2050 net zero target is currently low (just 1 in 5 claimed to be aware of the target in a recent Ipsos MORI survey[3]). Once it is explained, there is scepticism about how achievable it is. This stems from a lack of trust in government (regardless of political leaning) to follow through on such a target. This study revealed four key issues:

- A belief that government rarely meets set target dates
- Scepticism around whether the government truly wants to combat climate change (or whether it is a 'box ticking exercise')
    - Stories of household recycling being sent abroad where it ends up in landfill, or electric car batteries not being recycled or disposed of properly fuel these feelings of distrust
- Irritation that the government has 'got things wrong' in the past, e.g. encouraging the purchase of diesel vehicles, which will now be banned from 2030
- Uncertainty as to how 'net zero' can be achieved when emissions will always be produced through manufacturing, given that there is no real understanding of balancing out emissions or what carbon capture is

A focus on government targets also shifts the frame of reference away from the individual. Government targets are seen as the responsibility of the government, probably working in conjunction with other countries and big businesses. People therefore revert to the previous mindset of a 'global problem that needs to be solved by those in power', they start to question again whether individuals do have a responsibility or a role to play.

National frames of reference run the risk of demotivating people; the scale is too big to be perceived as achievable and questions are raised about whose responsibility it is to fix the problem. Using personal or local frames of reference in messaging can help encourage people by making their actions feel more relevant and more achievable.

3 Reaching net zero - awareness and attitudes, Ipsos Mori 2021: https://www.ipsos.com/ipsos-mori/en-uk/reaching-net-zero-awareness-and-attitudes

5. Driving change: overall insights

For this research individuals were recruited based on their agreement with both of the statements 'climate change is an issue affecting our planet', and 'it's jointly the responsibility of individuals and businesses to reduce carbon emissions in the UK'. However, it's one thing to think that individuals have a responsibility, and another to act in a way that reflects this. In behavioural science this is known as the 'intention-action gap'. This research found that 'green' motivations alone are unlikely to drive substantial behaviour change. Instead a wider, more compelling set of motivations must be leveraged if organisations want to support individual consumers to become more energy efficient.

5.1 Motivations for energy-efficiency behaviours

In this study, the eight climate-friendly behaviours were focussed on energy-efficiency behaviours in the home. Analysing explicit and implicit motivations for adopting these behaviours, it's clear that the desire to be 'green' - i.e. reduce household carbon emissions - is a relatively minor consideration. By far the strongest motivator is cost saving. This is followed by a desire to protect the planet for future generations, and then by an inherent motivation to waste less. A minority are motivated to adopt new behaviours by the desire to feel tech savvy.

Motivations for adopting energy-saving behaviours

Feeling tech savvy

Being 'green'

Wasting less

Protecting the next generation

Cost saving
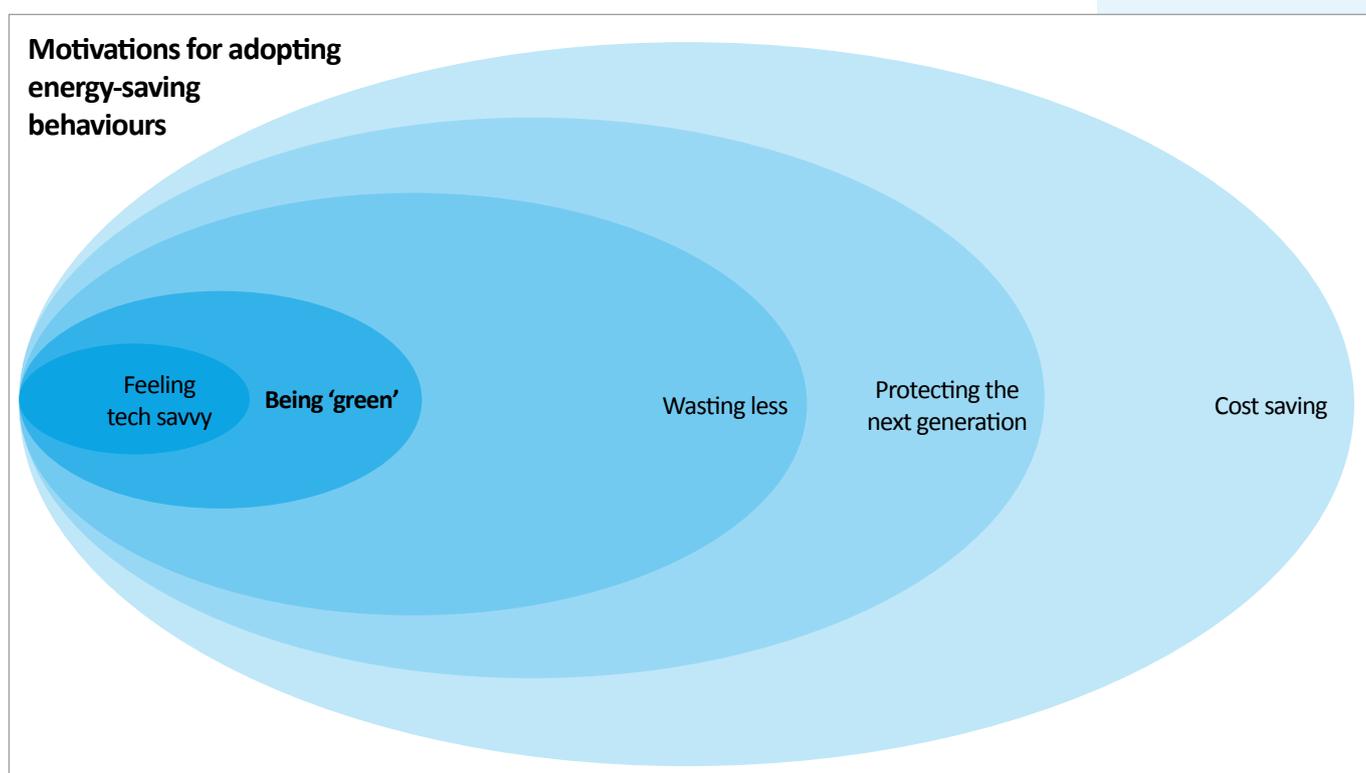
Importantly, for most, the 'feel good factor' of adopting a climate-friendly behaviour is felt as a reward rather than a motivation. It's something experienced only after an action is completed, and can encourage people to continue doing that behaviour.

5.2 The importance of Ability, Triggers and Rewards for driving change

Behavioural science teaches us that motivation alone is unlikely to drive behaviour change. Other factors are also necessary: a person's physical or mental ability to carry out a behaviour, contextual triggers for the behaviour and a reward for carrying out the behaviour.

For this particular challenge (driving in-home energy-efficiency behaviours), The Behavioural Architects' bespoke model of behaviour change applies. This model combines key elements of the 'B=MAP' model of behaviour change[4] and elements from Habit theory.[5]

Bespoke model of behaviour change devloped by
The Behavioural Architects combining two key models
of behaviour change.

- Motivations for climate-friendly behaviours have been discussed above.
- 'Ability' refers to how easy or difficult it is to complete an action - which can be influenced by things like affordability, how complex the task is (cognitive strain), and even how much physical effort is required. Some of the energy-efficiency behaviours discussed here are much easier to do than others (discussed in the next section).
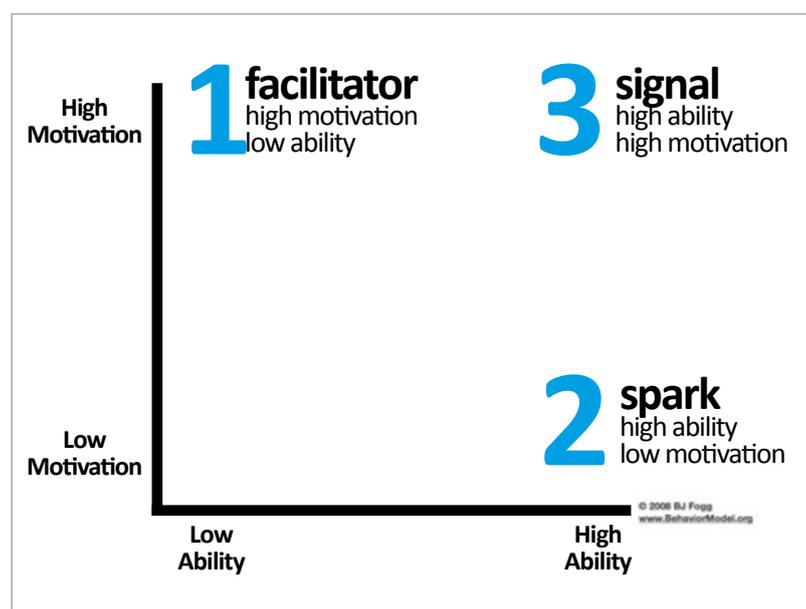
● A 'Trigger' is anything that prompts the individual to do the action now. According to the B=MAP model of behaviour change there are three main types of trigger (or 'prompt'), which relate to the individual's level of motivation and ability.[6]

Three types of triggers, which apply in different contexts (dependent on the individual's motivation and ability levels).

● A reward is needed so that we are motivated to repeat the behaviour, and embed a new habit. These can be intrinsic or extrinsic, e.g 'a feel-good' factor, a sense of achievement or financial gain.

The energy-efficiency behaviours that offer the strongest opportunity for 'conversion' (i.e. moving from intention to action), will have higher levels of motivation, ability and reward amongst the population, and more readily available triggers. Analysis of each of these elements for each behaviour is summarised in the next section.

6 Details of these prompts can be found at: https://behaviormodel.org/prompts/

6. Driving eight in-home energy-efficiency behaviours

For each energy-efficiency behaviour, current levels of motivation, ability, triggers and reward are indicated via colour-coding: green for high, orange for medium, and red for low. An overview of the context of these behaviours is provided, along with recommendations for communications.

The detailed behavioural analysis (using the bespoke model outlined above) is available in a supplementary document.

6.1 Washing clothes at 30 degrees or less

Motivation	Ability	Trigger	Reward

Clothes washing habits are deeply ingrained; either learned from parents, and/or established when people have children of their own. To reduce cognitive effort, clothes washing has become a routine for most households, with set defaults for different categories of clothes e.g. a 'normal' wash at 40 degrees; whites, towels and linens at 60 or 90 degrees.

Given how long-established these habits are, they also come with a strong sense of being 'right'. That's the case whether the default temperatures are high or low. Those who wash at a high temperature believe it's the right thing to do to clean clothes effectively (i.e. guaranteeing dirt removal), and those who are already washing at 30 believe it's the right thing to do to clean clothes efficiently (i.e. clean and saving energy / reducing time spent).

That said, when people become aware of the benefits of washing their clothes at a lower temperature and are reassured that their clothes are just as clean, it is found to be a relatively easy switch to make.

> "It just wouldn't feel right to wash my whites at 30. I couldn't be sure they'd be clean."
> Janine, 51-60, 'Intender'

> "I wash all my dark clothes at 30 degrees, but I would not wash my whites at 30. I wouldn't wash them in a cold wash. I wouldn't wash bed sheets or towels at 30 - I want those on more of a 'boil wash' at 60 degrees"
> Susan, 41-50, 'Intender'

COMMUNICATION OPPORTUNITIES	
SPARK	Promote new defaults e.g. standard wash at 20, white wash at 40
SPARK	Washing at 30 gets your clothes just as clean, while saving you money and reducing your carbon footprint

6.2 Installing a smart meter

Motivation	Ability	Trigger	Reward

The main benefit of a smart meter is well known: closer monitoring of energy usage, in turn leading to a reduction in energy usage and cost savings. The benefit of not having to remember to send in a meter reading is less widely known, and the idea of 'taking something off your mental to do list' is appealing. Smart meters are also seen to be the 'future'; people are aware that at some point everyone will be expected to have one.

Those who have had one installed and engaged with their in-home display (IHD) have experienced the benefits, changing their behaviours to use less energy and lowering their energy bills e.g. realising the extent to which leaving devices on standby contributes to energy usage and costs, causing people to switch off everything at the plug when not in use; running appliances at different times instead of all together; replacing a boiler for a more energy efficient one.

Others, who are less engaged with using their smart meter had either not received information at the time of installation at all, or had not found it to be very useful.

Inertia is a real issue. Many people, whilst not opposed to a smart meter, are not motivated enough to spare the time organising and waiting in for an installation. The triggers from energy suppliers (emails and texts) can be too frequent, which irritates customers, prompting them to ignore invitations for an installation.

In addition, there are groups of people who are sceptical about smart meters, namely: those who already feel in control of their energy usage; those who are less concerned about the benefit of saving money; those who feel that a constant reminder of energy use and money spent would create anxiety; those who have privacy concerns about how their data will be used and shared.

> **"I get texts all the time about getting a smart meter. I just delete them, they are so annoying, it feels like it's every other day sometimes."**
> Jackie, 41-50, 'Intender'

> **"Sometimes when I go into the utility room and you see the dial going up I think 'oh have we got too many lights on or what?" "It makes me think if there's anything on that doesn't need to be on."**
> Molly, 21, 'Actor'

COMMUNICATION OPPORTUNITIES	
SPARK	Communicate the multiple benefits of smart meters - a tool to help you lower your energy usage and energy bills, no more having to remember to do your meter reading, and it's good for the environment
SPARK	Highlight success stories e.g. reducing unnecessary energy use by switching devices off standby
SPARK	Communicate that a smart meter can help you budget, setting your budgets for the day / week to help keep you in control
FACILITATOR	Communicate that smart meters are easier and quicker to install than you might think

6.3 Installing a smart thermostat

Motivation	Ability	Trigger	Reward

The level of control a smart thermostat provides is an exciting benefit, especially for those on more dated heating systems, and those who see themselves as tech savvy. Owners of smart thermostats are real advocates of the technology, happy to share their experiences with others. These users claim to have noticed substantial savings in their energy bills but, just as importantly, the smart thermostat has given them a greater sensitivity to household energy consumption. Users report realising they'd previously set their thermostat far too high, and finding other opportunities to make their home more efficient.

For those less tech savvy, later adopters, there's initial hesitation about how easy they are to use - some of this group automatically exclude themselves from the target audience because of this. Smart thermostats are also seen as irrelevant to renters and those with small homes (1 or 2 bedrooms, and especially flats).

> "I've no idea how much they cost but I've heard Hive is used in a lot of homes, I think they cost about £300/£400 - kind of like an expensive luxury."
> Steve, 41-50, 'Actor'

> "I love being in control of my heating, I think it keeps my costs down too. I say to people "I've got a Hive and it's just brilliant"
> Leanne, 70+, 'Actor'

COMMUNICATION OPPORTUNITIES	
SPARK	Promote smart thermostats when winter is approaching, as a way to save money
FACILITATOR	Promote the money saving benefit of a smart thermostat, and show how quickly it can 'pay for itself' to reduce the barrier of the initial cost e.g. 'The savings on your bill will mean it pays for itself within a year'
SIGNAL	Keep smart thermostats top of mind, reminding people of the benefits so that they choose one when they need to replace their existing thermostat

6.4 Turning the thermostat temperature down

Motivation	Ability	Trigger	Reward

The majority of people are aware that heating uses high amounts of energy, mostly due to the change in their heating bills during winter vs summer. So it does seem logical to them that turning their thermostat down will save energy and some cost.

However, being comfortable in your own home is, of course, important, and for this reason many haven't considered changing the temperature of their thermostat (it's set to the level they're comfortable at).

One of the biggest barriers to reducing the thermostat temperature is the difference in preferences within a household. Disagreements are commonplace within families or house shares about what temperature to set the thermostat.

For those in smaller homes (1-2 bedrooms), there are some reservations about how much of a saving can be made, as they already require less energy to heat their homes.

Those who are already used to keeping their thermostat temperature low say they experience no discomfort (or are happy to wear an extra layer). This group typically have lower disposable income, and are motivated by the cost-saving benefit.

Those who haven't yet tried it assume that 1 or 2 degrees won't make much difference and are willing to try it (unless they're very concerned about resistance from family members!).

Interestingly, the energy and cost saving of keeping heating on all day at a lower temperature vs. switching it on in the morning and the evening appears to be a little known fact (note this wasn't one of the specific behaviours explored within the research). This should be considered as an additional message.

> **"If you're turning it down by one degree you won't notice it at all, it reduces my bills quite a lot, so it's quite high on the benefit."**
> Jade, 21-30, 'Actor'

> **"I work so hard I want to be able to have a small luxury like a warm house when I want it... It would only save a few pennies anyway."**
> Dawn, 51-60, 'Intender'

COMMUNICATION OPPORTUNITIES	
SPARK	Highlight the difference that one degree can make, as this is perceived to be a manageable change, that won't affect comfort levels. *Reducing your thermostat temperature by just 1 degree saves energy and saves you money*
SPARK	Try keeping your thermostat at 18 degrees - it uses less energy to stay at a stable temperature than fluctuating temperatures
SPARK	Communicate cost saving as well as benefit to environment
FACILITATOR	Communicate what the default thermostat temperature 'should be' to be comfortable

6.5 DIY Draught-proofing

Motivation	Ability	Trigger	Reward

Draught-proofing is only perceived to be relevant for people in older properties (Victorian or older). These typically have single glazing, poorer insulation and can have ill-fitting doors. Those in more modern properties are largely under the impression that draught proofing is not necessary.

There are varying levels of awareness about DIY draught-proofing options. Those who have been prompted (by the cold) to draught-proof their homes are very pleased with the results. The DIY options are deemed to be easy and readily available e.g tape to stick round windows from Amazon or a local DIY shop. These small changes have made a big difference in terms of comfort, and have provided savings to energy bills.

Those who are unaware of the DIY options are more sceptical. There is a concern that they wouldn't know which materials to get, that it may be tricky to install things correctly, and that the results may not be as good as getting a professional to do it instead - though cost is a barrier here. There are also concerns about the aesthetics, with people assuming that draught proof materials will be highly visible around windows, doors etc.

> **"We bought some foam strips for the patio doors from Amazon, it's very easy to do and we did feel the extra warmth, I'd assume this means they are saving energy and our bills have gone down"**
> Hina, 31-40, 'Intender'

> **"I think I could buy one of those draught excluder things to go in front of the door, but beyond that I couldn't do much myself. It's going to save you money and make you feel more comfortable when you get the temperature you want"**
> Sophie, 21-30, 'Intender'

COMMUNICATION OPPORTUNITIES	
SPARK	**Promote the multiple benefits of draught proofing - as noise and dust are also bugbears for many** *Draught-proofing helps keep your home warm, minimises noise and keeps dust out - all while reducing your home's carbon footprint*
SPARK	**Show what draught-proofing looks like in-situ to allay fears of ugly tape etc., in their homes**
FACILITATOR	**Empower people to do it themselves - this is not building work** *No DIY skills required! As easy as using sticky tape*
FACILITATOR	**Show specific DIY draught-proofing items e.g, draught excluding tape and chimney draught excluders to reduce the cognitive strain of having to work out what to get**

6.6 Switching off standby

Motivation	Ability	Trigger	Reward

For those who do this, there are two key benefits: cost saving, and the knowledge that they are not being wasteful.

For those who are not currently turning their appliances off standby, whilst it is a simple behaviour when taken at face value, there are key barriers to doing this around the home.

- The sheer number of sockets and appliances. Those who don't already switch their appliances off imagine having to go round their home every night and switching everything off in one go - which would be boring and time consuming (vs. thinking about it in terms of switching things off when they have finished using them)
- Inaccessible plugs e.g. chargers plugged in behind bedside tables, cookers and dishwasher plugs hidden away in cupboards
- The inconvenience of devices and appliances that require resetting or warming up every time they are switched back on e.g. smart tv boxes, clocks on microwaves and cookers

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- The belief that newer appliances are already energy efficient, with power saving modes, and don't need to be switched off at the plug
- Not realising that chargers are still using energy if they are plugged in at the wall, but not plugged in to a phone / laptop etc.
- In a family home or shared accommodation, it is believed there is little benefit of just one person switching things off, everyone would need to commit to it

> **"It depends how accessible the plug is... the microwave stays on because it messes the clock up and the phone charger (...) behind my bed doesn't get turned off because it's hard to access it."**
> Jade, 21-30, 'Actor'

> **"I mean I don't turn things off very often but maybe more in my room. I'm in a shared house and I don't do it in the communal areas (...) It's tricky living with other people."**
> Catherine, 31-40, 'Intender'

COMMUNICATION OPPORTUNITIES	
SPARK	**Highlight the financial saving as this comes as a surprise to many:** *You can save around £30 a year just by switching your TV off standby*
FACILITATOR	**Chunking up different behaviours to makes it feel more manageable** *Switch off your home office* *Switch off laptop chargers even when not in use (NB surprise factor here too)* **Use rhyme as reason to help create a memorable rule of thumb:** *One is better than none!*

6.7 Switching to a green energy tariff

Motivation	Ability	Trigger	Reward

Awareness of green energy tariffs is limited (only around half of the sample were aware). However, on the whole these tariffs have substantial appeal. They offer an opportunity to reduce a home's carbon footprint via a one-off, relatively effortless action (as previous experiences of switching energy suppliers have indicated). More than any other behaviour, changing to a green energy tariff is seen to provide a 'feel good factor.'

However, there is some scepticism about whether/how these tariffs deliver renewable energy to homes. The 'green' label is typically interpreted much like 'organic' produce: better for the environment, but probably a little more expensive. (For a minority the label triggers alarm bells for this reason - they see it as unfair to have to pay more for such products/services).

One potential risk factor of adopting green tariffs is the potential for them to facilitate the licensing effect: i.e people may become less energy-efficient because the energy is greener.

> **"I think [getting a green tariff] would be a benefit to me mentally… I'm hoping to feel that I've done my bit or I'm helping in a small way."**
> Leanne, 77, 'Actor'

> **"If you had a green tariff and a smart meter that would be good. Even if you had your stuff plugged in all the time it would make you feel a bit better."**
> Molly, 21, 'Actor'

COMMUNICATION OPPORTUNITIES	
SPARK	**Communicate that green tariffs will usually cost the same or less as other tariffs**
FACILITATOR	*Look out for the 'green energy' filter when you're comparing suppliers*

6.8 Switching to a time of use (TOU) energy tariff

Motivation	Ability	Trigger	Reward

There is very low awareness of TOU tariffs and how they work. Once explained, they are often anchored against Economy 7, which has negative connotations of being outdated and only relevant for those on a lower income. These existing anchors mean that TOU tariffs are intuitively seen as less desirable, rather than savvy, environmentally friendly or aspirational.

Beyond this, a key barrier is that people are not willing to change the time of day that they use their energy. For some this is because they believe it's not possible - e.g. they need to use their laptop charger during the day, they need to cook dinner for their children in the afternoon and themselves in the evening, they can't pick and choose when to use energy. For others, it's because they don't want to be constrained by their energy tariff, and believe they should be able to do their washing, for example, whenever they want. Whilst in theory people understand that they could save money from having a TOU tariff, the amount of effort and perceived disruption to their lifestyles is not deemed to be worth it.

Lastly, from an environmentally friendly perspective, it's not clear exactly how this type of tariff is beneficial. As most people have little to no knowledge of how energy generation and supply works, it's not clear how using energy when demand is low can help integrate more renewable energy into the system. The perception is that they are still using energy, just at a different time of day, and so it will have the same impact on the environment.

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> "That is just madness to me, the price should just be the price. I can use my washing machine at night but it's cheaper? Why is that?!"
> Sophie, 21-30, 'Intender'

> "I can't afford to run my house like that, not financially, but more just that there's not enough hours in the day."
> Colin, 31-40, 'Actor'

COMMUNICATION OPPORTUNITIES	
SPARK	Re-frame TOU to align with energy consumers' aspirations around energy-efficiency and saving money
FACILITATOR	Provide a simple explanation of when energy is cheaper, with specific times to make planning as easy as possible

7. Characteristics that influence uptake

7.1 Disposable income
An individual's level of disposable income does appear to directly influence their uptake of energy-efficiency behaviours. Those on a lower income are often already doing some of these eight behaviours in order to save money - particularly washing clothes at 30 degrees or under and lowering the thermostat temperature.

> **"I try to keep the thermostat down and put a jumper on instead, wrap up [...] it's definitely a financial thing. Living alone it's better for me to chuck on some jumpers. As much as it's a 'better for the environment thing' it's definitely a money thing too!"**
> Emma, 21-30, 'Actor', lower income

> **"I have to say I've never really looked at it in that much detail. It's more around 'let's make the house comfortable' first and foremost [...] I'd want to know how much I'd actually get back in my pocket."**
> Damian, 51-60 'Actor', higher income

For any energy-efficiency actions that require a substantial upfront cost, those on a lower income will need more reassurance about the size and scale of savings made.

> **"I'd like to think that if I had one of those (smart thermostats) then it would save me money, I think they're pretty expensive though so I'd need to know it will save me the money eventually."**
> Caroline, 31-40, 'Internder'

However, cost-saving is not a universally-motivating benefit for those on a lower income. Lifestyle priorities will trump cost-savings in some cases - and of course these priorities differ by individuals. For example, one lower income participant in this research owned a hot tub which she admitted was an 'extravagance' for their household but gave the family a great deal of pleasure. She had taken steps to ensure the hot tub was as efficient as possible, but small cost savings were relatively meaningless when compared with the hot tub running costs.

Additionally, there can be a sense that you work hard to earn enough money not to worry about minor efforts like switching things off standby or being warm enough at home.

> **"I work hard now, I earn good money and if I want to be comfortable in my own home then I will be. I'm not the type of person to put an extra jumper on."**
> Sophie, 21-30, 'Intender'

For those on a higher income, cost-saving is much less likely to be the main motivator for these energy-efficiency behaviours. For this group, other motivators like feeling tech-savvy or ahead of the curve may be more motivating. In this study, higher income participants were more likely to already own a smart thermostat (motivated by the extra control it offered rather than the energy-efficiency benefit) and to be considering an electric vehicle (two participants in this study, who saw it as 'the future').

IMPLICATIONS
Cost savings over £100 will grab attention and motivate even those on a higher income - could cost-savings across actions be aggregated to reach this figure?
Monthly cost savings feel more relevant to lower income households who tend to budget this way - and anything over £10 per month is motivating
Anchor to comparable leisure costs (e.g. a family meal, a cinema ticket) to give greater meaning to smaller cost savings
Generic cost saving messaging may be preferable when the £ figure is small - these can still motivate as long as they are paired with a powerful environmental benefit

7.2 Age

Parents and grandparents come across as more concerned about the future, with the experiences of their children and grandchildren in mind. And those who spend time with younger children (under 12) are especially likely to worry about the future; younger children, more in need of protection, perhaps act as a more salient reminder of the need to protect the planet.

This study found that older people (>60) are just as, if not more, receptive to change than others. They have more of a 'waste avoidance' mindset, drilled into them from parents who lived through the second world war and rationing. Experiences of grandchildren teaching them about climate change have affected them emotionally, giving them a drive to make change. However they do seem to be slightly more sceptical about government regulations and advice having lived through mistakes made by previous governments (e.g. diesel cars).

Younger people without kids (aged 21-35) do not show a greater understanding of climate change issues, net zero, or their individual impact (although a quantitative study would be needed to verify this). They have only been exposed to climate change issues via news media and documentaries. Their formal education on climate change was minimal and they don't have children to educate them. This group are also more likely to be renting or in shared accommodation, which means they have less autonomy over some of the behaviours under study (see 6.4).

IMPLICATIONS
For parents/grandparents, referencing children or future generations in comms will help to motivate behaviour change
For parents/grandparents 'bottom-up' communication about these behaviours (e.g. via schools) will be more powerful than messaging that appears to come from a government body
For younger people, messaging may need to lean more on non-environmental benefits of energy-efficiency behaviours

7.3 Property type

Renting does act as an obstacle to uptake of energy-efficiency behaviours. Anything that requires installation (smart thermostat, smart meter) is much harder to encourage because of the perceived or actual barrier of getting landlord permission. One-off actions like draught-proofing are typically perceived as not worth the effort given that renters won't enjoy the benefit long-term. Switching to a green tariff could be considered, but there's still likely to be more inertia amongst renters than owners.

> "I guess I'd call Scottish Power [to switch to a green energy tariff]. I presume it'd be pretty easy if they had one. It's definitely something for me to think about for my next place."
> Molly, 21-30, 'Actor', renting

For those living in a shared household, actions that affect the whole household are met with some hesitancy. This applied to five of the eight behaviours under study: installing a smart thermostat, reducing the thermostat temperature, switching off standby, switching to a green energy tariff and switching to a time of use tariff. The need to establish a consensus among the household is a substantial additional barrier to uptake.

> "I like the sound of the green tariff. I should look into that but like I say I'd need to check what [housemate and owner of the property] would think of it... I'm not sure when the contract is up."
> Catherine, 31-40, 'Intender', renting in a shared house

Smaller properties offer less 'headroom' for energy gains: they're easy to heat and will typically have fewer appliances/devices running. As a result, a minority living in smaller properties may feel a sense of reduced responsibility.

> "My dad's energy bills are like 3x the size of mine, so for him turning his thermostat down might make a difference... but I live in a small house so what difference would it make on my bills or for the environment?"
> Scott, 31-40, 'Intender'

For those in larger properties, there is a tension between having more to gain (e.g. multiple TVs using lots of energy in standby) but less motivation to change because the household typically has more disposable income.

IMPLICATIONS
It may be better to focus mass communication on behaviours which don't require structural change - e.g. washing clothes at 30, switching off standby, turning thermostat down
To empower those in shared accommodation, communicate behaviours as social norms, not personal preferences
Don't reference household size in comms (it may alienate rather than help people identify)

7.4 Vulnerable audiences

This study included 5 pairs who have a potential vulnerability: living on a very low income (2x pairs), living with a disability or health condition that affects their day-to-day life (2x pairs), or being older (75+) and less tech savvy (1 pair).

Living on a very low income (socioeconomic group E or total household income <£14k)
- Being on a very low income increased interest in these behaviours, as the cost-saving benefit offered greater appeal
- Those actions that required a large out-cost (such as installing a smart thermostat) were inevitably met with more resistance amongst this audience than others

Living with a disability or health condition that affects daily life
- For two of the four people in this sample who fall into this category (one suffering from anxiety and the other from fibromyalgia and arthritis), their condition doesn't manifest as a barrier to their ability or motivation to carry out any of these energy-efficiency behaviours
- However for the other two, their condition is cited as having a mild impact:
  - One person suffering from depression and anxiety would need lots of reassurance about the benefit outweighing any potential cost. They are concerned about the cognitive effort required in switching supplier or tariff and want, for example, the energy supplier to clearly communicate the differently priced time periods for their TOU tariffs
  - One person suffering from severe dyspraxia said they would struggle to draught-proof (especially using draught-excluding tape) because of their difficulties with coordination

Older (75+) and less tech savvy
- Although it might be hypothesised that this group would be more resistant to changing heating-related behaviours, this did not bear out in the research
- In this sample just one older person believed her lack of confidence with technology could be a barrier to getting a smart thermostat

Overall, it did not appear as though these vulnerabilities will have a great deal of influence on uptake of energy-efficiency behaviours. However, providing reassurances on ease and benefit are bound to help this audience - and a wider audience too.

IMPLICATIONS
Provide reassurances on ease (limited cognitive effort / time required) to motivate both those who are more vulnerable and the wider population
Provide reassurances on *guaranteed* financial benefit for energy-efficiency behaviours that require a substantial upfront cost

8. Conclusions and key recommendations

8.1 Conclusions

There is a discernible shift in attitudes towards acknowledging climate change. It has long been something that people have been aware of, but not something that people have always felt compelled to act on to tackle the issue. An increased cultural narrative, children sharing their knowledge with parents, and personal experience of extreme weather have all contributed to an increased feeling of personal responsibility to 'do one's bit'.

People are more aware of the issue and the need to act, but understanding of the science behind climate change and exactly what can be done to help is still extremely limited e.g. certain terminology is still mostly unknown or not fully understood, such as 'carbon emissions', 'net zero', 'carbon neutral'. Understanding of government targets is also vague, and often met with scepticism.

In terms of adopting energy-efficiency behaviours, this study identified five key motivators (starting with the biggest motivator): cost saving, protecting the next generation, being less wasteful, being 'green' and feeling tech savvy. The 'feel good factor' of being green is typically felt as a reward more often than a motivator, and therefore additional motivators are required to create the impetus for action.

Importantly, we know from behavioural science that motivation alone is unlikely to create lasting behaviour change. It is also crucial to take into account:
● A person's ability to carry out the behaviour (i.e. how easy it is to do based on factors such as affordability, complexity, time and effort required),
● Whether there are any triggers in place to prompt the behaviour
● Whether there is a sufficient reward to encourage habit building

These findings feed into our recommendations above for communicating with the public about climate change and how to encourage them to take energy efficient action in the home.

9. Glossary of terms

Carbon emissions	Release of carbon dioxide into the atmosphere, from human activity.
Carbon footprint	The amount of carbon dioxide released into the atmosphere as a result of the activities of an individual, organisation or community.
Net zero	A state in which the amount of greenhouse gases produced by human activity entering the atmosphere are balanced out by their removal from the atmosphere. This can be achieved by reducing emissions and / or implementing methods of absorbing carbon dioxide from the atmosphere. In this report, this is often used in reference to the government's target for the UK to achieve this state by 2050.
Carbon neutral	Companies, processes and products become carbon neutral when they calculate their carbon emissions and compensate for what they have produced via carbon offsetting projects.
Carbon offsetting	The action or process of compensating for carbon dioxide emissions arising from industrial or other human activity, by participating in schemes designed to make equivalent reductions of carbon dioxide in the atmosphere e.g. planting of trees.
Carbon capture	The process of capturing and storing carbon dioxide before it is released into the atmosphere.
Energy-efficiency behaviours	For the purposes of this report 'energy-efficiency behaviours' refers to any behaviour that will help reduce energy use or energy waste.
Tech savvy	A person who is well informed about or proficient in the use of the latest technology.

10. Appendix

10.1 Methodology

Secondary research
Ahead of the primary research, a brief literature review was conducted. The purpose of this review was to identify energy-efficiency behaviours that appear to contribute most to reducing carbon emissions, and also identify potential messaging to use as stimulus during the primary research.

-        Literature review: a search and sift was conducted to identify the most recent and relevant literature to review. In total, 50 google scholar results were sifted, with seven articles prioritised for full review.
-        Brief review of energy savings websites contributed to broader knowledge of the current energy landscape, and these included: Energy Savings Trust, Smart Energy GB and Green Match.

The secondary research culminated in a working session with Smart Energy GB to develop behavioural hypotheses and identify the priority behaviours for study. A total of eight behaviours were chosen that were centred on in-home energy-efficiency behaviour that are considered accessible to most people, and with a future-facing outlook.
-        Switching devices and appliances off standby
-        Washing clothes at 30 degrees or less
-        Draught-proofing the home (including DIY draught-proofing)
-        Turning the thermostat down (by 1 or 2 degrees on average over the year)
-        Using a smart thermostat
-        Switching to a green energy tariff
-        Switching to a time-of-use tariff
-        Installing and using a smart meter

Primary research
Drawing on the learnings from the secondary phase, this primary research phase deeply explored drivers and barriers for the eight in-home energy-efficiency behaviours. The interviews used a 'conflict' method: bringing together individuals with different attitudes or behaviours to reflect on each others' experiences and reveal opportunities to overcome potential barriers.

A total of 30 participants were interviewed as part of this research. Interviews were conducted as two-hour 'paired' sessions consisting of an 'Actor' who has already adopted at least four energy-efficiency behaviours and an 'Intender' who has adopted a minimum of one and a maximum of two behaviours. The behaviours that were recruited against were the eight energy-efficiency behaviours focused on in this study as well as reduction in meat consumption, and reduction in car and aeroplane travel (pre-pandemic).

Note that we originally classified Intenders as having adopted either none, one or two behaviours. However, after the initial interviews we discovered that those who had not adopted any behaviours were too early on in their energy-efficiency journey to contribute as much as hoped to the discussion. We therefore changed the Intender criteria to the above definition. Given the low number of behaviours required for Intenders, we also added in an extra screening question to ensure that they had adopted at least one behaviour for environmental reasons to mitigate against recruiting people who were unintentionally environmentally friendly.

To ensure a fair discussion, each pair was recruited to have a similar lifestyle context: similar lifestage, socioeconomic status, housing type and household size. The first 75 minutes of the interviews were simultaneous, separate interviews, and the final 45 minutes ran as a paired interview.

The sample broadly reflected the British population, and included 5 pairs with 'vulnerabilities' (such as suffering from a disability or health condition that affects day to day life, being on a very low income or being of pensionable age and less tech savvy). Full sample details are provided in the appendix.

The interviews covered the following:
- Understanding of climate change and the role that individuals have to play
- Understanding of concepts such as: net zero, carbon footprint, carbon emissions, carbon neutral
- Current actions taken to reduce household carbon emissions (and if/how the pandemic has influenced these)
- Mapping 8x energy efficiency behaviours on two spectrums: perceived ease of adoption, perceived benefits
- Reactions to potential consumer messaging: a range of behavioural science inspired articulations of the potential consumer benefits
- Joint discussion where Actors and Intenders discuss each others' attitudes and behaviours and reflect on potential changes they might make going forward

In both stages of the research The Behavioural Architects applied relevant principles and learnings from behavioural science literature to understand and explore the potential triggers and barriers to adoption of these in-home behaviours.

10.2 Primary research sample

Our primary research sample was recruited to the following criteria, using a screening questionnaire.

Pair # Each pair to consist of an 'Actor' and an 'Intender'*	
Pairs 1-5	18-35 years, no kids
Pairs 6-10	25-55 years, with kids
Pairs 11-15	36+, no kids or empty nesters

*Definitions:
- Actor: adopted 'energy efficient' behaviours: qualifies as an Actor for doing at least 5+ of the 10 behaviours (each of the 10 key behaviours need to be represented across the sample). NB. monitor during recruitment and reduce to 4 if this is a challenge
- Intender: yet to adopt 'energy efficient' behaviours: qualifies as an Intender for doing 2 or less behaviours

Overall criteria
- None to have participated in any market research within the past 6 months
- None working in certain professions (e.g, advertising, market research, etc.)

Demographics
- Spread of **age**, 18-75+
- Spread of locations across Scotland, England and Wales, and a spread of urban, suburban and rural **locations**
- Spread of **housing types** across pairs: flat, terrace, detached (each pair shares a consistent type of house)
- Mix of **renters and homeowners**
- All must speak and write English fluently
- Spread of **SEG**
- **Spread of levels of tech savviness** - range of people who feel very confident with new technology to people who are nervous of using technology - ensuring we don't have more than 50% of sample that are very comfortable with tech

Across the sample - 5 x vulnerable audience pairs:
  - 1 x pair older audience: 75 years +
  - 2 x pairs living in socio economic deprivation: D, E SEG and/or HHI < £14k per annum
  - 2 x pairs with a physical, mental or learning impairment that impacts their day-to-day life

Climate Change / Energy Behaviours
- All to **agree that climate change is an issue** that needs to be addressed: Individuals all have a role to play in helping reduce the UK's carbon emissions
- **12-15 smart meter owners** across the sample (falling out naturally across Actors and Intenders) and no outright rejectors
- All responsible or jointly **responsible for energy bills and playing an active role in choosing their energy supplier**, with a spread of energy suppliers

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