



# Climate Change Behaviour Evidence Review V2

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# ABSTRACT

A vital aspect of tackling climate change is a reduction in personal greenhouse gas emissions, but due to habit, social norms, and demands on individuals time and resources this presents a major challenge. This paper summarises the lessons identified from a review of the academic literature on changing climate related behaviour. 30 published papers were reviewed using a Behavioural Science lens, with eighteen behavioural effects (or Cognitive Biases) identified as creating barriers to change. A set of nine actions was then developed to identify how these barriers can be overcome and the behaviour of individuals changed so their carbon footprints are reduced. These actions are consistent with two papers published since the first published version: “The Implications of Behavioural Science for Effective Climate Policy”, CAST 2023; and “World scientists’ warning: The behavioural crisis driving ecological overshoot”, Merz et al. 2023.

## 1 Introduction

To help tackle the climate crises there is a need for individuals to reduce their personal greenhouse gas emissions, alongside the energy transition and the deployment of technological solutions such as EVs, use of hydrogen, and (arguably) Carbon Capture and Storage. As Antonio Guterres, secretary-general of the United Nations, put it, we need to do “everything everywhere, all at once”.

However, changing personal behaviour is always challenging because of the influence of habit, social norms and the competing demands on an individual’s time and resources.

In looking to understand what is required in an effective approach to behaviour change in relation to carbon emissions, the starting point was lessons learnt from successes achieved in changing behaviour within the transport sector<sup>1</sup>. One of the most important lessons from this review was the importance of taking into consideration the context of the changes required and bearing this in mind, a review of papers relating to climate change was undertaken and its findings summarised here. The papers included in the review are identified in Appendix A.

In addition, Appendix B summarises the Behavioural Effects (or Cognitive Biases) at work.

In examining different approaches to tackling climate change through behavioural techniques these references have provided a comprehensive picture of the barriers to change and how they can be overcome, with these two themes being the subject of the next two chapters of this paper. The final chapter then brings together the findings by summarising the actions that need to be taken to overcome the barriers to change.

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<sup>1</sup> Key lessons were applied in the practical guide available at [How to get people to walk and cycle more - BEYOND LOGIC CONSULTING](#)

## 2 Barriers to change

The barriers to change identified in the literature are summarised below. One point to note is that there is no data to identify the relevant impact of the different barriers, though the assumption made is that an effective behaviour change approach needs to address them all.

### ***Compulsive consumption***

Compulsive consumption is a reflection of our consumerist society in which we are encouraged to purchase things to make us feel better and make our lives easier. At the extreme this can become an addiction, but at even a lower level, over-consumption is common and evident in the amount of food waste produced, toys purchased but barely used, and perfectly wearable clothes thrown away. The idea of “Retail therapy” is commonly accepted, though this usually only provides a short-term benefit, potentially at the cost of increased credit card debt and longer-term pain.

As pointed out by Merz et al (2023) our over-consumption is a result of our survival impulses to seek pleasure and avoid pain; acquire, amass and defend resources from competitors; display dominance, status or sex appeal through size, beauty, physicality, aggression and/or ornamentation; and procrastinate rather than act whenever action does not have an immediate survival benefit particularly for ourselves, close relatives and our home territories.

Our consumption-orientated society is further fuelled by the need to “keep up with the Joneses” which reflects the tendency for people to think in a relative way. This has led to the development of Framing and Decoy techniques by marketers and retailers, such as including a very high-priced option simply to make the other options look better value.

One of the ways in which Compulsive Consumption manifests itself is in the ever-increasing demand for energy despite the advances in efficiency (Jan Geerts, R 2011). One of the influences behind this is the marketing and ‘nudges’ (intentional and unintended) which encourage people to spend more and do more.

The compulsive nature of this behaviour, reinforced by **Social Norms** and **Habits**, makes it surprisingly difficult to tackle, even though there’s no rational argument against doing so. Higham et al (2015) argue that tourist air travel is an example of compulsive consumption which is difficult to tackle, other than by regulation, because it is regarded as normal (even though in actuality it’s the purview of the wealthy<sup>2</sup>).

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<sup>2</sup> See for example National Travel Attitudes Study Wave 6, Department for Transport 2022

### ***Continual improvement and search for the good life***

Our society is based on the notion of continual improvement and growth, fuelled by the promise of achieving success and happiness. This **Social Norm** can act as a barrier to change if this change is seen to be constraining development. One of the challenges here is a disconnect between what actually makes us happy compared with what we think should makes us happy (the happiness paradox<sup>3</sup>). For example, although we like to believe that things that make life easier will also make us happier, we get more long-term satisfaction out of overcoming hardship and adversity.

### ***Perceived threat to freedom***

People like to see themselves as free agents with freedom being seen as a fundamental right within a democracy. This means we react very negatively towards any perceived threat to freedom (**Reactance**). This in turn creates a barrier to tackling climate change because proposed measures are often associated with doing something less or not at all, such as eating less meat or flying less with these then interpreted as an attack on personal freedom and choice.

A related issue is people's innate sense of **Fairness**, which can act as a barrier to change if it is seen as targeting a particular group within the population and therefore unfair.

### ***Fear of losing lifestyle***

People have got used to their lifestyle and, fuelled by the **Loss Aversion** behavioural bias, fear changes to it. A related behavioural influence is the power of social norms: if other people are living a particular lifestyle there is pressure to conform, or to aspire to this.

Some common aspects of modern lifestyles which are detrimental to climate change include car ownership and use, overseas holidays, and meat-based diets. A more general aspect of our lifestyles which has detrimental effects for the environment is the focus on convenience. This results in unnecessary short car trips, food waste and more deliveries with a consequent increase in "white van" trips.

### ***Belief in technology***

Given the scale of the climate challenge and the difficulty of changing behaviour, people are looking for a relatively easy solution, and technology provides this. Technologies such as Carbon Capture and Storage (CCS) and hydrogen power are immensely attractive as solutions because they mean we can carry on pretty much as normal.

This brake on changing behaviour is unfortunate since many believe the faith in these technologies is misplaced. At best, they are expensive and some years away

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<sup>3</sup> Also known as the Easterlin Paradox

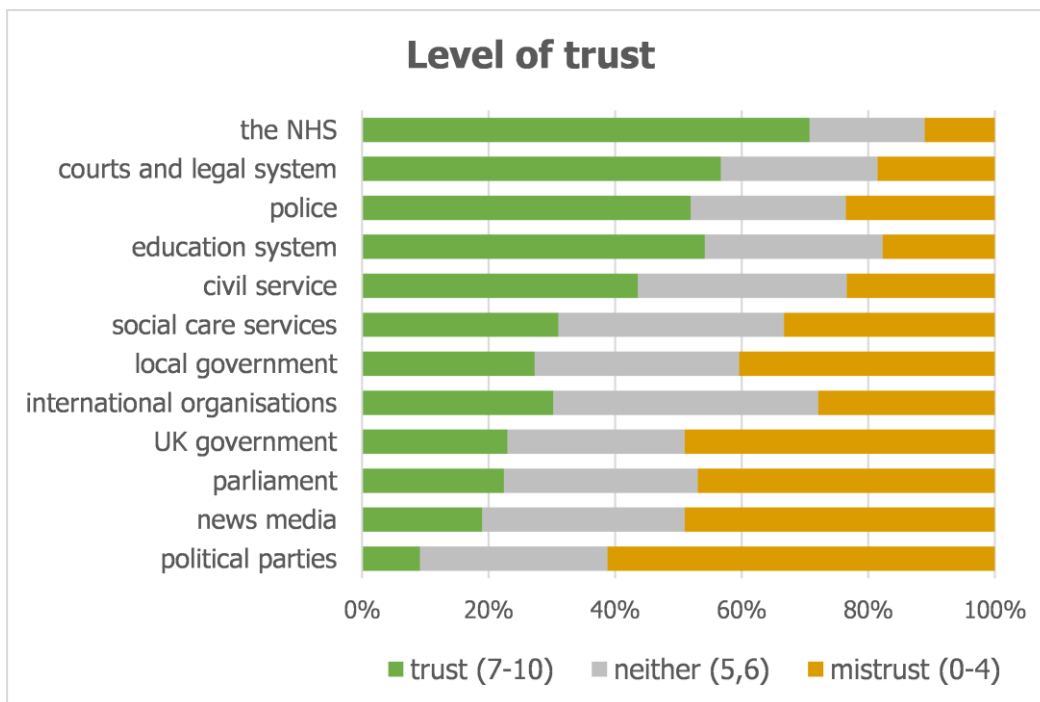
from being effective. There is even a view that CCS has been developed as a concept by fossil fuel companies purely to justify them continuing to exploit new oil and gas resources<sup>4</sup>. As a result, this reliance on technology can be regarded as “**Techno-salvation**” bias.

**Lack of trust**

A lack of trust in the **Messenger** can greatly weaken the impact of any advice, requests or demands made by them. Given the lack of trust in the UK government and the scepticism surrounding big companies<sup>5</sup> and brands this presents something of a challenge for behaviour change (see Figure 1): Just 23% of adults can be said to trust the UK government, and 27% “local government” which means that advice from them is unlikely to have much impact.

The impact of the **Messenger** was illustrated by Howell (2011) who examined the impact of Al Gore’s film, the Inconvenient Truth, with its impact very much depending on whether someone was a Democrat or Republican.

**Figure 1: Level of trust in government**



Source: Trust in Government Survey, United Kingdom, 11 to 27 March 2022, Office for National Statistics (ONS)

<sup>4</sup> [When a climate solution is used to produce more oil – DW – 06/09/2021](#)

<sup>5</sup> MRS Professional Webinar “What brands are still getting wrong about sustainability”, 15th June 2023

### ***Intention-behaviour and value-action gaps***

It is now well understood that there is a major difference between what people say they're going to do and their actual behaviour. This can be a barrier if policy makers and companies don't take this into account and assume that it's sufficient to change attitudes and intentions.

Overcoming the intention-behaviour gap is one of the prime reasons for the interest in Behavioural Science and the popularity of "nudge": without any kind of intervention intentions tend to remain just that, and the bigger the gap the more substantive the intervention needs to be (add link to mountain article).

### ***Complexity of lives***

We lead complicated lives with lots of moving parts and inter-relationships, and this is a key reason for the intention-behaviour gap. We may have good intentions, but there's usually something that gets in the way of acting on them because of all the other things happening in our lives, and the other people we need to consider.

To cope with this complexity, people look for convenience and to simplify things. This simplification extends to decision making and results in the use of simple "rules of thumb" or heuristics such as doing the same thing I did last time in a similar situation (**Habit**).

Life-complexity does vary with life-stage with people starting out on their careers, starting families or with school-age children having particularly busy lives where there is less time for thinking about climate change.

A general point arising from complexity is the need to acknowledge that individual circumstances vary and to change behaviour some understanding of the individual's constraints and priorities is needed.

### ***Habit and status quo bias***

Partly because of the busy lives we lead we are heavily influenced by **Habit**, which is a great way of simplifying life: you simply do the same thing you did last time rather than spending time and mental energy on thinking about what to do. **Status Quo bias** is the concomitant Behavioural Effect which means we are biased in favour of options where there is the least amount of change.

### ***Lack of immediacy & salience***

Reflecting our survival instincts, we pay more attention to things that are salient; that is, closer to us in terms of space and time and therefore more likely to be immediately life-threatening. This behavioural bias (**Present Bias**) acts as a barrier to acting on climate change because its effects are seen as something for the future and which affects other people (Policy Institute, Kings College London 2022). On the other hand, for example, the price of food presents an immediate and personal concern (with the link between climate change and food prices either not recognised at all or regarded as distant).

### ***Climate fatigue and "finite pool of worry"***

There is a concern that climate change is now referred to so often it has lost its impact and just become part of everyday language. There have been so many extreme weather events that they have lost their newsworthiness and are just part of normal life.

Related to climate fatigue and the complexity of people's lives is the suggestion that people only have a "finite pool of worry" (Capstick et al. 2015) so with all the other concerns (currently including the "cost of living crises", inflation, war in Ukraine, energy insecurity) there is a risk that climate change is being pushed out of this pool.

### ***Advertising promoting undesirable behaviours***

Any communication about climate change must overcome the very large advertising budgets of companies promoting climate unfriendly behaviours. The food, automotive, holiday and airline sectors are perhaps particularly culpable. Some companies are making this even worse by spending on greenwashing campaigns, though the Advertising Standards Authority is now starting to pick up on this ([\*\*The Drum | No More Greenwashing By Omission: UK Ad Regulator Reveals Stricter Code\*\*](#)).

Nevertheless, **Confirmation Bias** means that the greenwashing messages being put out reflect what many people want to hear so can be a subconscious excuse to carry on flying and undertaking other undesirable behaviours.

### ***Perceived cost / affordability of climate solutions***

A barrier to climate action is that many of the actions one can take are seen as expensive. This includes EVs, heat pumps, solar panels, buying local food. In some cases (solar panels, for example) the problem is worsened by **Present Bias** because of the upfront cost which is given more prominence than the future savings.

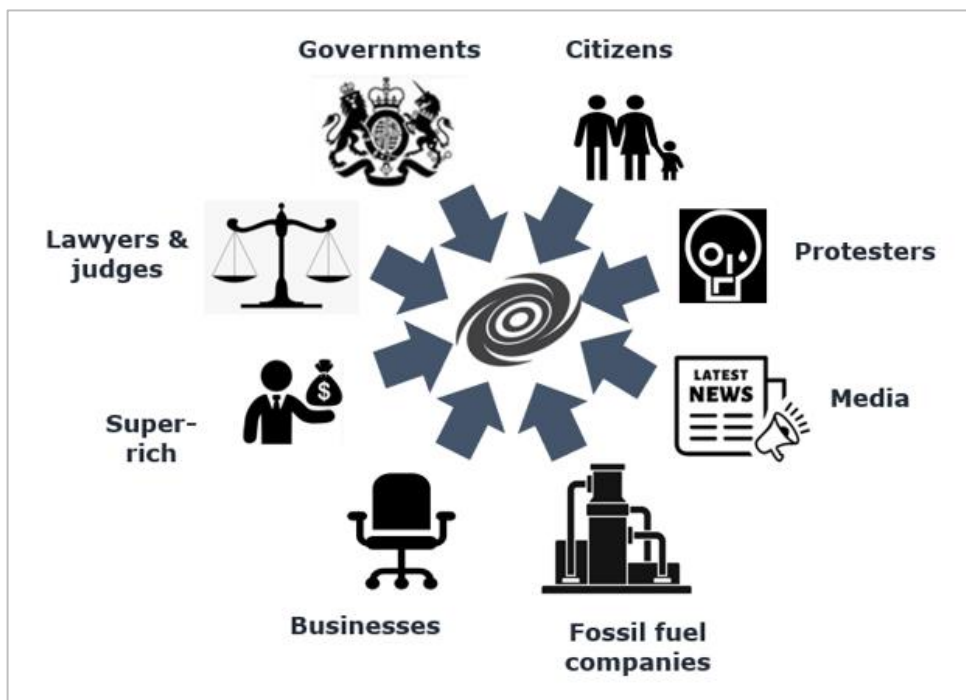
### ***Too many parties involved***

Tackling climate change is being held back partly because there so many parties involved (Figure 2), all moving in different directions with many waiting for others to act first. For individuals this is a barrier because it's hard to know where to turn for reliable information and advice, and it contributes to people feeling powerless (**Self-efficacy**).

Arguably, real change will only happen when all parties work together to tackle climate change:



**Figure 2: Parties involved in tackling climate change**



### 3 Techniques to overcome the barriers

Having identified the barriers to change, this chapter explores how these can be overcome and the techniques that can help achieve behaviour change and a reduction in emissions.

#### *Specific advice*

One thing shown to make communications more effective is to provide specific advice which is easy to understand and relevant to the individual, and which is therefore salient and actionable. For example, Hinea et al (2016) found that while it is important to tailor the message to the audience, more specific advice improved effectiveness in all cases. It has also been identified by Howell (2014) amongst others that providing specific mitigation advice is essential if concerns have been heightened, in order to avoid a counter-productive reaction.

The latest research (CAST 2023) also reveals that interventions are more effective when they are (a) targeted to the specific needs and abilities of different groups; and to points in time when people are most open to change; and (b) they include downstream and upstream approaches, and address the multiple behavioural drivers and barriers.

An important consequence of the need to provide relevant advice is that this requires some understanding of the individual and their circumstances.

### ***Self-efficacy messages***

Providing self-efficacy messaging which helps people to feel **Empowered** and able to do something worthwhile can be effective, and has certainly be shown to be a lower risk strategy than messaging which induces fear (Jacquet et al. 2014).

### ***Deliberative conversations***

With such a complex subject, it has been suggested that a deliberative discussion is needed (Jan Geerts 2011) to arrive at an agreed approach to tackling climate change. This is the approach promoted by [involve.org.uk](http://involve.org.uk) which suggest the use of Citizens Assemblies and Citizens Juries to make decision making more open, more participatory, and more deliberative. A key benefit of a deliberative approach is that it can help to overcome some of the intuitive negative feelings which result in the **Reactance** effect.

### ***Publicising what other people (and organisations) are doing***

Providing information on what other people are doing to tackle climate change can help to utilise the **Bandwagon effect** and create a feeling of collective action.

### ***Community discussion groups***

One way of both sharing information about what other people are doing and facilitating deliberative conversations is through creating communities with safe spaces to share experiences and ideas. This can help overcome the **Messenger** effect and **Mistrust** of government and the media since it involves peer to peer communication and avoids one party telling another what to do.

### ***Target the big things***

While it is tempting to focus on “quick wins” and easy things that people can do this can be unhelpful because people can all too easily think they’ve done enough just by doing a few simple things. Worse, because of the **Rebound effect**, it can actually make things worse if people make some small sacrifices and then feel this gives them license to do something they know they shouldn’t, like taking a flight to an exotic holiday destination.

One of the underlying behavioural biases here is **Poor mental accounting**, which means that, typically, people bear in mind the number of actions they’ve taken and not their relative scale.

To avoid this it’s better to focus people’s minds on some actions which will have a significant impact, and ideally provide an easy way for them to add up the cumulative effect of their actions.

## ***Compelling storytelling***

As a broad generalisation, stories are more powerful than statistics, particularly when the audience can relate to the characters and the situation. The key is that they can tap into our emotions which in turn, at a sub-conscious level, direct our behaviour.

A compelling story can therefore be used to help overcome some of the barriers to engaging people on climate change. However, the research on some climate related films (Day After Tomorrow, An Inconvenient Truth, The Age of Stupid) indicates that the effects are short-lived so to be effective the narrative needs to be immediately backed up by a call to action, or conversely, the call to action needs to be accompanied by a compelling narrative (Howell, Rachel A. 2014).

As highlighted under *Specific advice*, a story which promotes fear can be more impactful but also riskier and can easily back-fire unless a practical way to overcome the fears is also provided. This suggests that the preferable approach is a story which promotes **Self-efficacy** and **Empowerment**.

## ***Positive signals***

Positive feedback is important for helping people to feel as though they're making a difference and their efforts are worthwhile. Information about the actions of others can be helpful in demonstrating that they're not alone, and this is particularly helpful if people and organisations they respect are shown to be acting.

It can also help motivate people via their competitive streak, providing positive confirmation if they're doing better than others (**Relativity**), or providing motivation to try harder if they're doing less well (provided they're still getting some positive messages).

## ***Focus on personal values***

Kaesehage et al (2014), along with others (e.g. Ockwell et al 2009), have argued that communications need to go beyond financial impacts and scientific evidence, and target personal values and individual "deep desires". This is consistent with the idea that it is important to engage both the rational and emotional dimensions of people's brains.

## ***Incentives and rewards***

Sometimes the difficulties people face with making changes, particularly if they are substantive changes, require an incentive or reward. These can be financial, but can also tap into personal values and the **Need for Recognition**. This topic was explored in the book "Honors versus Money"<sup>6</sup> which showed that, if done well and appropriately, non-monetary rewards can be more effective.

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<sup>6</sup> Honors versus Money – The Economics of Awards, Bruno S. Frey and Jana Gallus, Oxford University Press, 2017

### ***Leverage the concern for fairness***

Concern for **Fairness** is a core value for most people and any policy which is seen to be unfair can expect a negative reaction. In communicating climate action this effect can be turned into a positive if benefits to people who are already disadvantaged can be highlighted. One of the factors here is that the evidence shows that it is indeed the poorest who suffer most from climate change while it is the richest who contribute most to the problem.

### ***Calculation of carbon footprints***

As a general rule, information on its own has relatively little impact on behaviour and this is confirmed in the case of carbon footprint calculators (Atholl Wallace, A 2009). Nevertheless, they form an important part of the solution since they encourage people to be more open to advice on making reductions in emissions, and they help people to understand where they need to make reductions. One of the benefits of having information on total emissions is that it can help address the **Rebound effect** and overcome **poor mental accounting** (Corner et al. 2011).

Having a better understanding of one's emissions can help to focus people's minds on larger, one-off changes (new energy efficient boiler, home insulation, purchasing an EV) rather than ongoing small changes which have a relatively inconsequential impact on the overall carbon footprint.

### ***Use the right language (avoid "climate change")***

Using the right language has a major impact on the effectiveness of a message and climate change messaging is no exception, and in fact the term "climate change" itself is quite divisive (Hinea et al 2016), turning many people off. "Global warming" is also a misleading term and given the interaction between the climate and other environmental threats such as biodiversity loss and air pollution, referring to the "environment" is more appropriate and more inclusive.

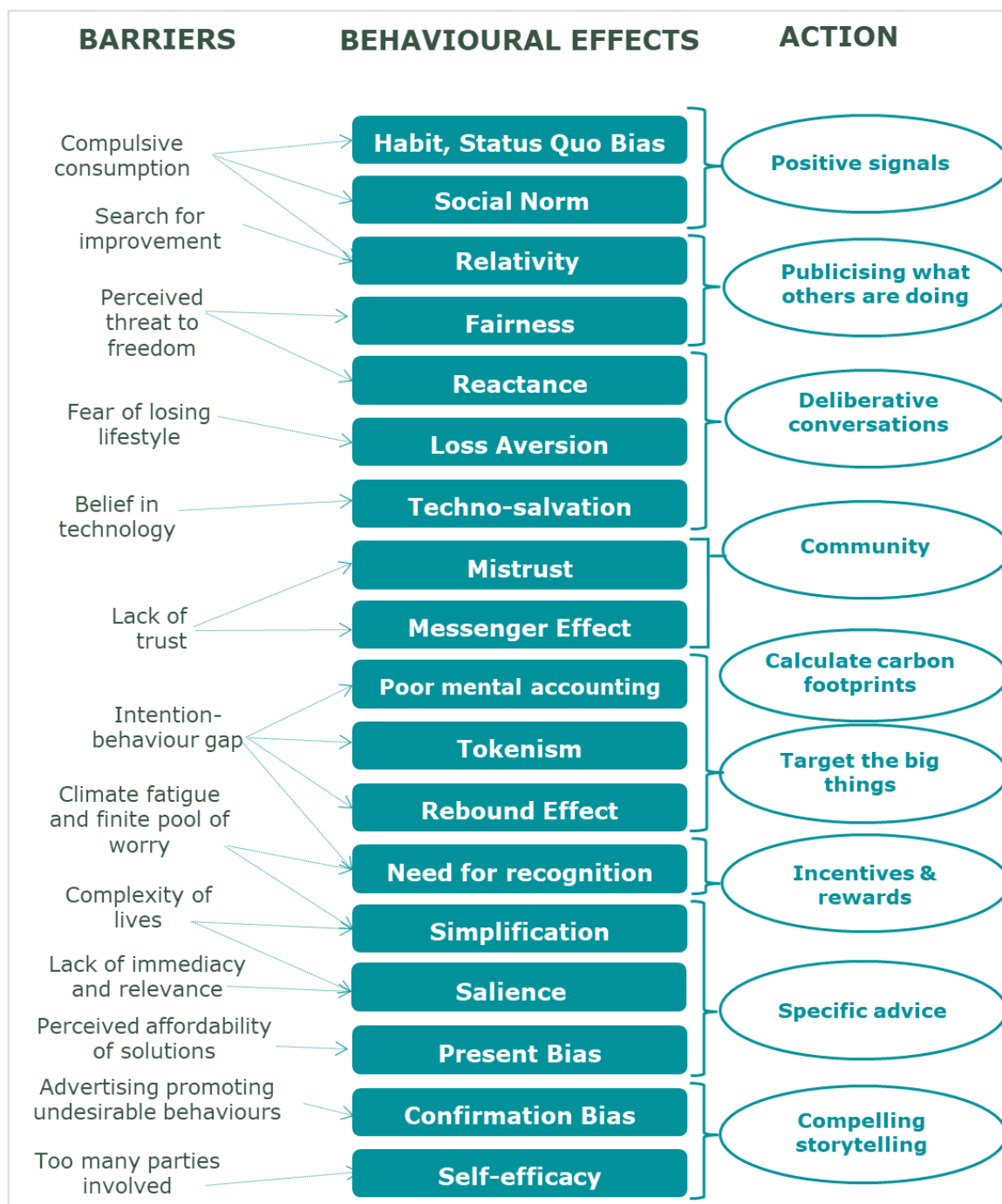
Using language appropriate to the audience is a key aspect of creating a compelling story, which also then needs to be delivered by a trusted Messenger.

## **4 Summary**

There are clearly many challenges in trying to change individuals' behaviour in relation to the environment and climate change so there is no simple solution, seductive as this would be. However, putting all the research evidence together and examining it through a Behavioural Science lens, has enabled the identification of a set of actions that can overcome the various barriers to change.

The research evidence is summarised in Figure 3, which illustrates 13 barriers, 18 Behavioural Effects (or Cognitive Biases) and 9 actions which aim to overcome the barriers identified. The identified actions are summarised below, noting that the ideal solution will incorporate all of the actions in some way.

**Figure 3: Summary of barriers, behavioural effects and required actions**



**Positive signals**

Providing positive feedback on actions being taken, particularly where the impact is not immediately evident.

**Publicising what other people (and organisations) are doing**

Providing information on what others are doing shows that you are not alone.

**Deliberative conversations**

Deliberative conversations provide an opportunity to challenge misperceptions, social norms and unconscious biases.

### ***Community discussion groups***

Community based discussion groups provide a safe place for sharing experiences and knowledge and as such can be a way of by-passing the Messenger effect.

### ***Calculation of carbon footprints***

Calculating and monitoring someone's carbon footprint is vital for helping to understand what needs to change to make a genuine difference, and then to track the effect of changes.

### ***Target the big things***

To make a substantive reduction to emissions will require making some changes which are harder but more impactful. Data from the carbon footprint calculator will highlight what these changes might be and what impact they can have.

### ***Incentives and rewards***

A reward which provides recognition for sacrifices made can help to turn intention into action and help people to maintain their positive changes.

### ***Specific advice***

To be effective the suggestions and advice given needs to resonate with the individual, be easy to understand and be relevant to the individual's situation.

### ***Compelling storytelling***

The messaging needs to have two equally important components: the specific information and advice on what needs to be done, and the reason for acting on this advice, the story. This should encompass elements around personal values, self-efficacy, and the concern for fairness, and needs to use the right language for the individual.

## APPENDIX A: Sources

Author	Date	Title	Cite
Atholl Wallace, A	2009	Reducing Carbon Emissions by Households: The Effects of Footprinting and Personal Allowances	Institute of Energy and Sustainable Development, De Montfort University, Leicester May 2009.
Avineri et al	2011	Applying goal framing to enhance the effect of information on transport-related CO2 emissions - An extended version of a paper presented at the 9th Biennial Conference on Environmental Psychology, September 2011, Eindhoven, The Netherlands.	
Capstick et al	2014	Prospects for radical emissions reduction	Stuart Capstick, Irene Lorenzoni, Adam Corner & Lorraine Whitmarsh (2014) Prospects for radical emissions reduction through behavior and lifestyle change, Carbon Management, 5:4, 429-445
Capstick et al	2013	Public Understanding of Climate Change as a Social Dilemma	Sustainability 2013, 5, 3484-3501
Capstick et al	2015	Prospects for radical emissions reduction through behavior and lifestyle change	Stuart Capstick, Irene Lorenzoni, Adam Corner & Lorraine Whitmarsh (2015): Prospects for radical emissions reduction through behavior and lifestyle change, Carbon Management, DOI: 10.1080/17583004.2015.1020011
Capstick et al	2015	International trends in public perceptions of climate change over the past quarter century	WIREs Clim Change 2015, 6:35–61. doi: 10.1002/wcc.321
Cass et al	2015	Commuting practices: New insights into modal shift from theories of social practice	Transport Policy 45 (2016) 1–14

CAST	2023	The Implications of Behavioural Science for Effective Climate Policy	The Implications of Behavioural Science for Effective Climate Policy, a report by the Centre for Climate Change and Social Transformations (CAST), commissioned by the Climate Change Committee (CCC) September 2023
Corner et al	2011	Selling climate change? The limitations of social marketing as a strategy for climate change public engagement	Global Environmental Change 21 (2011) 1005–1014
Creutzig et al	2021	Demand-side solutions to climate change mitigation consistent with high levels of well-being	Creutzig et al, Demand-side solutions to climate change mitigation consistent with high levels of well-being, Nature Climate Change 2022
Downing et al	2007	Tipping point or turning point? Social marketing & Climate Change	Ipsos MORI
Dr Rogerson et al	2009	Changing behaviour and attitudes to sustainability: a Report for the Department of Enterprise, Trade and Investment	
Gifford et al	2011	Behavioral dimensions of climate change: drivers, responses barriers, and interventions	WIREs Clim Change 2011. doi: 10.1002/wcc.143
Higham et al	2015	Climate change, tourist air travel and radical emissions reduction	Higham, J., Cohen, S.A., Cavaliere, C., Reis, A. & Finkler, W. (2015). Climate change, tourist air travel and radical emissions reduction. Journal of Cleaner Production
Hinea at al	2016	Preaching to different choirs: How to motivate dismissive, uncommitted, and alarmed audiences to adapt to climate change?	Global Environmental Change 36 (2016) 1–11
Howell, R. A.	2014	Investigating the long-term impacts of climate change communications on individuals' attitudes and behavior	Howell, R.A., 2014. Investigating the long-term impacts of climate change communications on individuals' attitudes and behaviour.



			Environment and Behavior, 46(1): 70-101.
Howell, Rachel A.	2014	Using the transtheoretical model of behavioural change to understand the processes through which climate change films might encourage mitigation action	Howell, R.A., 2014. Using the transtheoretical model of behavioural change to understand the processes through which climate change films might encourage mitigation action. International Journal of Sustainable Development 17(2): 137-159.
Jacquet et al	2014	Ideological divide and climate change opinion	Jennifer Jacquet, Monica Dietrich and John T. Jost (2014), The ideological divide and climate change opinion: “top-down” and “bottom-up” approaches, frontiers in Psychology
Jan Geerts, R	2011	Life in the greenhouse gas emitting society and climate change mitigation solutions	PSTS Master Thesis RJ Geerts
Kaesehage et al	2014	Communicating climate change	Kaesehage, Katharina, Michael Leyshon & Chris Caseldine (2014). Communicating climate change – Learning from business: challenging values, changing economic thinking, innovating the low carbon economy. Fennia 192: 2, pp. 81–99. ISSN 1798-5617.
Kantenbacher et al	2018	Public attitudes about climate policy options for aviation	Kantenbacher, J. Hanna, P., Cohen, S., Miller, G. & Scarles, C. (2018). Public attitudes about climate policy options for aviation. Environmental Science & Policy, 81, 46-53.
Merz et al	2023	World scientists’ warning: The behavioural crisis driving ecological overshoot	Science Progress 2023, Vol. 106(3) 1–22
Mont et al	2014	Nudging: A tool for sustainable behaviour?	Swedish Environmental Protection Agency REPORT 6643

Ockwell et al	2009	Reorienting Climate Change Communication for Effective Mitigation Forcing People to be Green or Fostering Grass-Roots Engagement?	Science Communication Volume 30 Number 3 March 2009 305-327 © 2009 SAGE Publications 10.1177/1075547008328969
Pahl et al	2014	Perceptions of time in relation to climate change	WIREs Clim Change 2014. doi: 10.1002/wcc.272
Parag et al	2011	Policy Attribute Framing: A Comparison Between Three Policy Instruments for Personal Emissions Reduction	Journal of Policy Analysis and Management DOI: 10.1002/pam
Policy Institute, Kings College London	2022	Public perceptions on climate change	EU-funded PERITIA
Pollitt et al	2011	The Role of Behavioural Economics in Energy and Climate Policy	ESRC Electricity Policy Research Group University of Cambridge December 2011
Rickards et al	2014	Barriers to effective climate change mitigation: the case of senior government and business decision makers	WIREs Clim Change 2014.
Stoknes, Per Espen	2014	Rethinking climate communications and the "psychological climate paradox"	Energy Research & Social Science 1 (2014) 161–170
Upham et al	2009	Public Attitudes to Environmental Change: a selective review of theory and practice: A Research Synthesis for the Living with Environmental Change Research Programme.	

## APPENDIX B: Behavioural effects

Behavioural effect	Impact on climate change behaviour
<b>Bandwagon effect (or herd behaviour)</b>	As social beings people have a tendency to follow what other people are doing, even while at the same time wishing to be individual. This can result in the bandwagon effect and, for example, social media posts going viral and clothing styles rapidly going in and out of fashion. A positive dimension to this effect in relation to climate change (and other worthy causes) is the feeling people can get of being in a positive movement for change and not being alone.
<b>Empowerment (or self-efficacy)</b>	People need to feel they can make a difference in order to be motivated to try so they won't act if they perceive there's nothing they can do about climate change.
<b>Fairness (or inequity aversion)</b>	People don't like inequity and unfairness and perceived inequity often serves as a basis for inaction: 'Why should I change if ___ is not changing?'
<b>Loss aversion</b>	People are more affected by losses than gains which presents a challenge where climate friendly behaviours require giving something up.
<b>Messenger</b>	The impact of a message can be as much about the messenger as the message itself. This does mean that it is important for the message to be delivered by a trusted messenger.
<b>Mistrust</b>	If trust does not exist between ordinary people and scientists or politicians, resistance tends to follow. Behaviour change requires trust that the other party does not take advantage and that the change proposed is effective and equitable.
<b>Need for recognition</b>	People need to have external recognition and because of this, reputational incentives can be more powerful than financial ones.
<b>Optimism bias</b>	The tendency to overestimate the probability of positive events and underestimate the probability of negative events which can become an excuse for inaction over climate change with a belief that its risks are being exaggerated and that climate experts will find a solution. It one of the influences behind the Techno-salvation effect.
<b>Poor mental accounting</b>	People tend to be quite poor at mental accounting, often using shortcuts to simplify the process. This can include keeping track of the number of things but not their relative scale.

<b>Present bias (also hyperbolic discounting)</b>	Things occurring imminently are given far more importance than those occurring in the future. This is a real challenge for climate change which is often presented as a problem for the future, this feeling being exacerbated by targets which are relatively distant.
<b>Reactance</b>	Some people react strongly against advice or policy that seems to threaten their freedom. This is compounded where there is a lack of trust in those who give the advice or set the policy.
<b>Rebound effect</b>	The rebound effect occurs when a mitigating action is undertaken but the gains it creates are offset or even reversed by subsequent actions. For example, someone who buys a fuel-efficient vehicle may then drive further than when they owned a less-efficient vehicle.
<b>Relativity</b>	People think in relative rather than absolute terms. This means that in judging whether they are taking sufficient action people will base this on what they see others doing. This can work in either a positive or negative direction depending on what information they have on what people like themselves and people they trust are doing.
<b>Salience</b>	We are drawn to what seems relevant to us, so news about events happening in a distant part of the world have relatively little impact.
<b>Simplification</b>	Since people are often overloaded with information and demands on their mental resources, they have an innate desire to simplify things. This can lead to a variety of biases and is reflected in the use of heuristics. It is one reason why simple messages work best - if a message is complex it's hard to know exactly how the reader is going to simplify it.
<b>Social Norm</b>	Unwritten societal (or group) rules which influence an individual's behaviour.
<b>Status Quo bias (also habit, default and inertia)</b>	People generally prefer things to stay the same, or simply find this the easiest option. This often leads to habitual behaviour and sticking with the default option. In terms of climate change mitigation, it means that the bigger the change the more resistance there will be.
<b>Techno-salvation</b>	Overconfident beliefs in the ability of technology to solve the climate crises can serve as a barrier to individuals' behaviour change.
<b>Tokenism</b>	Some climate-related behaviours are easy to adopt but have little impact on emissions and this can lead to tokenism where people make some relatively easy changes and then feel like they've done enough, while in practice their actions have made little difference.

## 5 Contact

Tony Duckenfield

**[Tony@beyondlogicconsulting.com](mailto:Tony@beyondlogicconsulting.com)**

07961 053608