House of Lords Environment and Climate Change Committee Inquiry on: Mobilising action on climate change and environment: behaviour change

Written evidence submitted by the UCL Centre for Behaviour Change

1. Summary

1.1. This evidence is submitted by the UCL Centre for Behaviour Change. We address the following questions:
- (E) What can be learnt from successful and unsuccessful behaviour change interventions by the UK Government and other government actors (including in other policy or geographical contexts)?
- (F) What are the pros/cons and limitations of different frameworks and methods for promoting behaviour change?
- (G) What are the main evidence gaps relating to these frameworks and methods, and how might they be addressed?
- (N) What should be the respective roles of different actors in delivering behaviour change, including Government, local authorities, businesses, civil society including community groups, and individuals and households?
- (U) What are the main strengths and weaknesses of current Government policies on behaviour change, and what are the key improvements that could be made?
- (W) For behaviour change efforts, how effective is the coordination between government departments and the split of Ministerial and departmental responsibilities, and are sufficient resources in place (staff and budgets)?

1.2. Our main points are:
- Past government interventions have limitations for learning what works, including insufficient use and reporting of behavioural theory and frameworks and systems approaches.
- Practices associated with successful interventions include: engagement and representation of the people whose behaviour the intervention seeks to change; use of theory and frameworks to understand current behaviour and design interventions; and considering implementation at the outset.
- Of many existing behaviour change frameworks used in policy contexts, few meet criteria of being comprehensive, coherent, linked to a model of behaviour, and useable without specialist training. The Behaviour Change Wheel (BCW) framework meets all of these criteria.
- Government policies need to target a much wider range of behaviours to reduce carbon emissions and protect the environment, be joined-up, and consistently reflect best practice in designing interventions. This is limited by insufficient levels of coordination and resource for behaviour change across Government.
- Key policy improvements can be made through greater use of co-design and systems thinking approaches and better specification of target behaviours, theoretical and methodological frameworks, and plans for implementation and evaluation.

2. About the UCL Centre for Behaviour Change

2.1. The Centre for Behaviour Change (CBC), based at University College London, brings together cutting-edge, cross-disciplinary academic expertise in behaviour change and translates it through research, consultancy, training and events to address key challenges facing society, including threats to human health and well-being, environmental sustainability and social cohesion. The CBC authored Achieving behaviour change: A guide for national government, commissioned and published by Public Health England in 2020.

3. (E) What can be learnt from successful and unsuccessful behaviour change interventions by the UK Government and other government actors (including in other policy or geographical contexts)?

3.1. From previous behaviour change interventions, we can seek to learn about (a) what works and what doesn't, and (b) practices associated with designing successful interventions.

What works and what doesn't?

3.2. Learning about what works and what doesn't in relation environmental behaviour change from past government interventions is challenging for two reasons. Firstly, past successful interventions by government actors mainly reflect incremental change in personal behaviours. Examples include reducing sugar consumption through the introduction of the sugar levy,[1] reducing plastic bag use through the 5p charge,[2] increasing organ donation through the use of defaults, and getting people to pay taxes on time through communicating social norms. To address the climate and environmental crises we will need a greater scale of change in behaviours which involve complex systems of actors, for example planting 30,000 hectares of trees per year and ending sales of non-electric vehicles.[3] Achieving behaviour change at this scale and complexity will require greater use of systems approaches[4,5] and guidelines for designing complex interventions[6] than previous government interventions.

3.3. The second reason is that not all past interventions are reported, and of those that are reported, not all clearly specify whether and how they were guided by behavioural theory. This limits what we can infer about why past interventions succeeded or failed, and lessons that can be applied to other contexts and behaviours. We discuss evidence gaps and ways to address these in section 7.

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[1] Scarborough et al. (2020). Impact of the announcement and implementation of the UK Soft Drinks Industry Levy on sugar content, price, product size and number of available soft drinks in the UK, 2015-19: A controlled interrupted time series analysis. PLoS medicine, 17(2), e1003025.

[2] Thomas et al. (2019). The English plastic bag charge changed behavior and increased support for other charges to reduce plastic waste. *Frontiers in Psychology*, 10, 266.

[3] Committee on Climate Change (2020). The Sixth Carbon Budget The UK's path to Net Zero.

[4] West et al. (2020). Achieving behaviour change: A guide for national government. PHE publications.

[5] Moore et al. (2019). From complex social interventions to interventions in complex social systems: future directions and unresolved questions for intervention development and evaluation. *Evaluation*, 25(1), 23-45.

[6] Skivington et al. (2021). A new framework for developing and evaluating complex interventions: update of Medical Research Council guidance. *BMJ*, 374.

3.4. A rapid evidence review of public policy and behavioural science successes and failures and expert consultation was commissioned for BEIS titled "Net Zero: principles for successful behaviour change initiatives".[7] Its findings, backed by large bodies of behavioural science research include:

- Fairness and inclusion are essential to the success and legitimacy of interventions[8]
- Information provision alone is not enough to change behaviour[9]
- Values and identities are important influences on pro-environmental behaviour[10,11]
- Narratives, including about co-benefits, can be effective communication tools[12]
- Systems-based approaches are needed to address macro (e.g. policy, market), meso (e.g. organisation, neighbourhood) and micro (e.g. intrapersonal) level influences on behaviours, and consider synergies, trade-offs and spill-over[13]

The report highlighted that principles summarised from past interventions are not a replacement for established behaviour change frameworks.[7] We review pros and cons of frameworks in section 4.

Practices associated with designing successful interventions

3.5. Six common practices by policymakers which prevent success were identified by experts in health behaviour change. These were summarised as "seeking simple non-scientific answers to complex problems":[9]

- Drawing on common sense rather than science
- Focusing mainly or solely on messaging
- Assuming that knowledge and information are sufficient to drive behaviour
- Assuming that people act rationally all or most of the time
- Failing to examine the reasons for people's behaviour
- Underestimating the uncertainty of predicting people's future behaviour

3.6. Practices associated with designing successful behaviour change interventions include:[14]

- Engaging with the people whose behaviour the intervention seeks to change. Participatory and co-design approaches are associated with fairness, effectiveness and trust in interventions.[8] The UK climate assembly is an example of best practice.
- For greatest benefits, the people whose behaviour the intervention is seeking to change should be represented among those responsible for designing the intervention. The team's position adopted about a problem and its social, historical and political context will influence how the work is conducted, its outcomes, and results;[15] social and cultural biases may hinder intervention success.

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[7] Londakova et al. (2021). Net Zero: principles for successful behaviour change initiatives. BEIS Research Paper Number 2021/063

[8] Demski (2021). Net zero public engagement and participation: A research note. BEIS.

[9] Kelly & Barker (2016). Why is changing health-related behaviour so difficult?. *Public Health*, *136*, 109-116.

[10] Wang et al. (2021). I Am vs. We Are: How Biospheric Values and Environmental Identity of Individuals and Groups Can Influence Pro-environmental Behaviour. *Frontiers in psychology*, *12*.

[11] Wang et al. (2020). Britain Talks Climate: A toolkit for engaging the British public on climate change. Oxford: Climate Outreach.

[12] De Meyer et al. (2020). Transforming the stories we tell about climate change: from 'issue' to 'action'. *Environmental Research Letters*, *16*(1), 015002.

[13] Corner (2020). System change vs behaviour change is a false choice – Covid-19 shows how they're connected.

[14] Colquhoun et al. (2017). Methods for designing interventions to change healthcare professionals' behaviour: a systematic review. *Implementation Science*, *12*(1), 1-11.

[15] Rowe (2014). "Positionality." The SAGE Encyclopedia of Action Research, edited by Coghlan & Brydon-Miller. SAGE.

- Identifying what influences current behaviour. Theories and models can inform the process of gathering information about what influences current behaviours.
- Applying theory to select intervention components which address the influences on current behaviour. We summarise pros and cons of theoretical frameworks in section 4.
- Considering implementation issues in the initial stages of designing interventions to ensure that any intervention found to be effective can be implemented at scale across the desired populations and settings.[16] Where possible, working in partnership with the organisations and people key to implementation.

4. (F) What are the pros/cons and limitations of different frameworks and methods for promoting behaviour change?

4.1. There are many existing frameworks (ways of organising knowledge) and methods (processes) for promoting behaviour change. In Table 1 we list 14 frameworks and methods developed and/or applied in UK policy contexts. A good framework for promoting behaviour change should be comprehensive (cover a full range of influences on behaviour and options for intervention), coherent (describe elements which are organised by type and specificity) and linked to a model or theory of behaviour.[17] To be most useful, frameworks and methods should also be usable without specialist training. In Table 1 we summarise strengths and limitations with respect to these criteria. Strengths and limitations were identified by three behavioural scientists at CBC and consensus reached through discussion. For greatest confidence we recommend a formal expert consensus exercise.[18]

4.2. Of the frameworks included in Table 1, the only one which meets all criteria is the Behaviour Change Wheel (BCW).[17] It was developed from a formal synthesis of existing frameworks, and it is the most extensively researched and evaluated in peer-reviewed scientific publications. The BCW has been applied to environmental issues including water use,[19] energy use,[20] home retrofit,[21] littering,[22] recycling,[23] composting,[24] rewilding,[25]

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[16] Craig et al. (2008). Developing and evaluating complex interventions: the new Medical Research Council guidance. *BMJ*, *337*.

[17] Michie et al. (2011). The behaviour change wheel: a new method for characterising and designing behaviour change interventions. Implementation Science, 6*(1), 42.*

[18] Okoli & Pawlowski (2004). The Delphi method as a research tool: an example, design considerations and applications. *Information & management*, *42*(1), 15-29.

[19] Addo et al. (2018). Household Water Use and Conservation Behavior: A Meta-Analysis. *Water Resources Research*, *54*(10), 8381–8400.

[20] Staddon et al. (2016). Intervening to change behaviour and save energy in the workplace: A systematic review of available evidence. *Energy Research & Social Science*, *17*, 30–51.

[21] Decarbonisation of Homes in Wales Advisory Group (2019). Better Homes, Better Wales, Better World: Decarbonising existing homes in Wales

[22] Kolodko et al. (2021). #LetsUnlitterUK: A demonstration and evaluation of the Behavior Change Wheel methodology. *PloS one*, *16*(11), e0259747.

[23] Gainforth et al. (2016). Developing interventions to change recycling behaviors: A case study of applying behavioral science. *Applied Environmental Education & Communication*, *15*(4), 325-339.

[24] Allison et al. (2021). Barriers and Enablers to Buying Biodegradable and Compostable Plastic Packaging. *Sustainability*, *13*(3), 1463.

[25] Webb & Moxon (2021). A study protocol to understand urban rewilding behaviour in relation to adaptations to private gardens. *Cities & Health*.

sustainable food consumption,[26] and household air pollution.[27] It is used by national and local governments in the context of sustainability.[4,28,29]

[26] Hedin et al. (2019). A systematic review of digital behaviour change interventions for more sustainable food consumption. *Sustainability*, *11*(9), 2638.

[27] Williams et al. (2020). Designing a comprehensive behaviour change intervention to promote and monitor exclusive use of liquefied petroleum gas stoves for the Household Air Pollution Intervention Network (HAPIN) trial. *BMJ open*, *10*(9), e037761.

[28] West et al. (2019). Achieving behaviour change: A guide for local government and partners. PHE publications.

[29] https://local.gov.uk/our-support/climate-change-hub/behaviour-change-and-environment

Table 1. Strengths and limitations of 14 frameworks and methods for promoting behaviour change.

Framework or method & overview of elements	Compre-hensive	Coherent	Linked to model or theory	Usable without specialist training	Major strengths and limitations
3B Framework[30] Methodological framework for product design: 1. Identifying key behaviours 2. Reducing barriers 3. Amplifying benefits				●	**Strengths:** Simple, user-friendly **Limitations**: Focuses on barriers to behaviour which excludes factors that maintain/enable a desired target behaviour. Focuses on motivation and decision-making as principal drivers of behaviour.
4Es / 6Es[31] Framework for applying MINDSPACE checklist in policy-making: • Explore (6Es) • Enable (4Es) • Encourage (4Es) • Engage (4Es) • Exemplify (4Es) • Evaluate (6Es)				●	**Strengths:** Simple, user-friendly. Describes a comprehensive range of policy levers. **Limitations:** Contains a mix of elements of different types, including policy levers (e.g. 'Encourage - Legislation') and intervention design processes (e.g. 'Engage - Deliberation'). No clear links from MINDSPACE (influences on behaviour) to Es (policy options).
BASIC Toolkit[32] Theoretical and methodological framework for designing behaviour change interventions: ABCD framework • Attention • Belief formation • Choice • Determination BASIC stages • Behaviour • Analysis • Strategies • Intervention • Change		●	●		**Strengths:** Describes coherent set of stages in intervention design process, linked to ethical considerations at each stage. **Limitations:** ABCD model focuses on cognitive factors and neglects other influences on behaviour. Little guidance on links from ABCD (influences on behaviour) to intervention options. Requires some expertise in behavioural science to apply the framework.

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[30] Irrational Labs (2020). The 3B Framework.
[31] Dolan et al. (2010). MINDSPACE: influencing behaviour for public policy.
[32] The BASIC Toolkit: Tools and ethics for applied behavioural insights. OECD.

Framework					Strengths/Limitations
Behaviour Change Wheel (BCW)[17] Theoretical and methodological framework for designing interventions, comprising: COM-B model of behaviour • Capability • Opportunity • Motivation 9 Intervention types 7 Policy options	●	●	●	●	**Strengths:** Comprehensive and coherent synthesis of 19 existing frameworks. Clear basis in a model of behaviour. Provides a systematic approach for linking influences on behaviour to intervention types and policy options. User-friendly guides and a wide range of accessible training materials available. **Limitations:** Requires some training to get the most from the framework.
Behavioural Systems Mapping[4] Method for representing actors, behaviours, influences on behaviour within complex systems, and the relationships between these elements.	NA	NA	●	●	**Strengths:** Enables the integration of knowledge about the influences on multiple behaviours within a system, which can increase fairness, quality and legitimacy of intervention strategies. Influences on behaviour can be linked to theories and models such as COM-B. **Limitations:** Needs to be used in conjunction with other frameworks for selecting among intervention options. Requires some training to get the most from the method.
EAST[33] Principles for encouraging behaviour: • Easy • Attractive • Social • Timely				●	**Strengths:** Simple, user-friendly. **Limitations:** Adopts a reductionist, 'stimulus-response' view of human behaviour. Focuses on incremental change through 'nudges'. Focuses on automatic motivational influences on behaviour and neglects influences such as capability. Little guidance on how to design and implement interventions.
Energy Cultures[34] Theoretical framework for understanding energy behaviours: • Material culture • Cognitive norms • Energy practices		●	●	●	**Strengths:** Describes a coherent set of interacting influences on energy consumption behaviour. **Limitations:** Does not describe intervention options linked to influences on behaviour. Focus on energy consumption may limit application to other behaviours.
IN CASE[35] Methodological framework for anticipating consequences of an intervention: • Intended behaviour • Non-target audiences • Compensatory behaviours • Additional behaviours			●	●	**Strengths:** Simple, user-friendly. Designed to be used in conjunction with other frameworks including MINDSPACE and BCW. **Limitations:** Not comprehensive. Needs to be used in conjunction with other frameworks for selecting among intervention options.

[33] Hallsworth et al. (2014). EAST: Four simple ways to apply behavioural insights. The Behavioural Insights Team Publications, Cabinet Office.
[34] Stephenson et al. (2010). Energy cultures: A framework for understanding energy behaviours. *Energy policy*, *38*(10), 6120-6129.
[35] Emery et al. (2021). IN CASE: A behavioural approach to anticipating unintended consequences. Government Communication Service.

• Signalling • Emotional impact					
Intervention Mapping[36] Methodological framework: 1. Logic model of the Problem 2. Program Outcomes and Objectives 3. Program Design 4. Program Production 5. Program Implementation Plan 6. Evaluation Plan	●	●			**Strengths:** Describes a comprehensive and coherent set of elements in intervention design, including evaluation. Facilitates the development of multi-level interventions (individual, interpersonal, organisation, community). **Limitations:** Needs to be used in conjunction with other frameworks for selecting among intervention options.
ISM[37] Theoretical framework of influences: • Individual • Social • Material		●	●	●	**Strengths:** Describes a comprehensive and coherent set of influences on behaviour. Simple, user-friendly with a step-by-step guide to using the framework within a participatory intervention design process. **Limitations:** Does not specify intervention options linked to ISM influences on behaviour.
MINDSPACE[31] Checklist for policy-makers of influences: • Messenger • Incentives • Norms • Defaults • Salience • Priming • Affect • Commitments • Ego			●	●	**Strengths:** Simple, user-friendly. Integrated with the 4Es/6Es framework. **Limitations:** Checklist of influences on behaviour is not comprehensive. Contains a mix of elements of different types. Needs to be used in conjunction with other frameworks for selecting among intervention options.
ORGANISER[38] Mnemonic for policy-makers of influences on organisational behaviour: • Operating environment • Relationships • Gaining advantage & reputation • Aims • Norms & organisational culture • Internal structures		●			**Strengths:** Elements are organised coherently and linked to suggested actions for policy-makers. **Limitations:** Not intended to be comprehensive. Not linked to a model or theory of behaviour. Requires expertise in behaviour change to undertake suggested actions. Focus on organisational behaviour may limit application to other contexts.

[36] Eldredge et al. (2016). Planning health promotion programs: an intervention mapping approach (4th Edition). John Wiley & Sons.
[37] Darnton & Horne (2013). Influencing behaviours - moving beyond the individual: A user guide to the ISM tool. Scottish Government.
[38] Fell & Giorgi (2016). ORGANISER: A behavioural approach for influencing organisations. HM Government.

• Strategic processes • Estimation • Relying on trusted sources					
RESPONSE[39] Methodological checklist for designing communications: • Recipient • Effect • Sender • Pain points • Opportunities • Nudge • Spillovers • Evaluate				●	**Strengths:** Simple, user-friendly. **Limitations:** Focuses only on communication-based interventions.
Theoretical Domains Framework (TDF)[40] Framework of influences: 1. Knowledge 2. Skills 3. Social/professional role and identity 4. Beliefs about capabilities 5. Optimism 6. Beliefs about consequences 7. Reinforcement 8. Intentions 9. Goals 10. Memory, attention and decision processes 11. Environmental context and resources 12. Social influences 13. Emotion Behavioural regulation	●	●	●		**Strengths:** Comprehensive and coherent synthesis of 33 theories of behaviour. Integrated with the COM-B model of behaviour and BCW framework. **Limitations:** Focuses mainly on intrapersonal factors with less elaboration of factors in social and physical environments.

[39] Jones et al. (2019). RESPONSE: A behavioural insights checklist for designing effective communications. Local Government Association.
[40] Cane J, O'Connor D, Michie S. Validation of the Theoretical Domains Framework for use in behaviour change and implementation research. Implementation Science. 2012;7:37.

5. (G) What are the main evidence gaps relating to these frameworks and methods, and how might they be addressed?

5.1. We have identified no systematic investigations of evidence gaps regarding the extent to which these frameworks and methods have been used to achieve pro-environmental behaviour change within different populations and settings. This represents a major knowledge gap beyond the scope of our submission. This gap can be addressed through:

- More thorough and comprehensive reporting of interventions and underpinning behavioural theories or frameworks, e.g. using the Template for Intervention Description and Replication[41], the Consolidated Standards of Reporting Trials Statement (CONSORT) for social and psychological interventions,[42] and the Action, Actor, Context, Target, Time (AACTT) framework.[43]
- Development and application of systematic ways to characterise existing behaviour change interventions, their contexts and evaluations. The Behaviour Change Intervention Ontology (BCIO) has been developed for this purpose.[44] It facilitates systematic investigation of what interventions work, compared with what, how well, with what exposure, with what behaviours, for how long, for whom, in what settings and why.[45]
- Prioritisation and resourcing to build capability, opportunity and motivation for those designing interventions to engage in better reporting and conduct systematic investigations of evidence gaps. We comment on government behavioural science resources in section 8.

5.2. A recent review of behaviour change models and interventions to address climate change has argued that most existing models fail to address the social and physical context of behaviour, non-linear effects such as feedback and spill-over and non-rational influences on behaviour.[46] In addition, research has not focused on the highest-impact behaviours. This has contributed to suboptimal intervention strategies, e.g. focusing on information provision.[46] These gaps can be addressed through greater uptake of more comprehensive behaviour change models and frameworks such as the BCW, in conjunction with better understanding of the main actions needed to reduce carbon emissions and protect the environment. We outline these in section 6.

6. (N) What should be the respective roles of different actors in delivering behaviour change, including Government, local authorities, businesses, civil society including community groups, and individuals and households?

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[41] Hoffmann et al. (2014). Better reporting of interventions: template for intervention description and replication (TIDieR) checklist and guide. *BMJ*, *348*.

[42] Grant et al. (2018). CONSORT-SPI 2018 explanation and elaboration: guidance for reporting social and psychological intervention trials. *Trials*, *19*(1), 1-18.

[43] Presseau et al. (2019). Action, actor, context, target, time (AACTT): a framework for specifying behaviour. *Implementation Science*, *14*(1), 1-13.

[44] Michie et al. (2021). Representation of behaviour change interventions and their evaluation: Development of the Upper Level of the Behaviour Change Intervention Ontology. *Wellcome Open Res* 2021, 5:123

[45] Michie et al. (2017). The Human Behaviour-Change Project: harnessing the power of artificial intelligence and machine learning for evidence synthesis and interpretation. *Implementation Science*, *12*(1), 1-12.

[46] Whitmarsh, L., Poortinga, W., & Capstick, S. (2021). Behaviour change to address climate change. *Current Opinion in Psychology.*

6.1. We can consider the roles of different actors in terms of (a) what main actions each group of actors needs to take to reduce carbon emissions and protect the environment, and (b) the contribution of different actors to developing and implementing strategies which deliver these actions.

Main actions needed to reduce carbon emissions and protect the environment[47][48]

6.2. Government and local authorities
- Stop burning coal and natural gas and invest in renewable energy
- Invest in and subsidise electric cars and public transport
- Cut fossil fuel investment and subsidies
- Tax fossil fuel use
- Build new low carbon infrastructure
- Reforest and rewild
- Promote low emission farming and diet
- Support the Emissions Trading Schemes
- Universal Basic Income

6.3. Businesses
- Set ambitious long-term environmental sustainability goals
- Set emission reduction targets and transparently measure carbon footprints
- Switch to renewable energy and reduce energy use
- Apply the circular economy: design out waste and pollution in companies and products
- Embed sustainability objectives into all aspects of daily work
- Switch vehicle fleets to electric (long-term) or biodiesel (short-term)
- Buy from sustainable suppliers and evaluate and audit supply chains
- Influence governments

6.4. Civil society, including community groups, and individuals and households[49]
- Talk about climate change
- Switch to more vegetable-based diets
- Switch to renewable energy
- Make homes energy efficient and reduce energy use
- Use cars less and use electric or hybrid
- Reduce flying
- Divest pensions and investments from fossil fuels
- Refuse/reject excessive consumption
- Reduce, reuse and recycle as much as possible
- Protest and vote

The contribution of different actors to delivering these actions

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[47] Maslin, M. (2021). How to Save our Planet: The Facts. Penguin.
[48] Committee on Climate Change (2020). The Sixth Carbon Budget The UK's path to Net Zero.
[49] Grantham Institute (2019). 9 things you can do about climate change.

6.5. All sections of society need to be represented in contributing to the development and implementation of policies and interventions to enable these actions. The links between the groups of actors and between activities within a system of mutual influence need to be identified and disseminated. Joined-up action can be facilitated through a combination of co-design and systems thinking approaches.[50] A large body of international systems research in the domains of policy-making and sustainability demonstrates that bringing stakeholders together in developing a systems view of a problem can help to: build shared insight and agreement about the nature of a problem and shared commitment to tackling it, develop interventions that work and are accepted.[50,51,52]

7. **(U) What are the main strengths and weaknesses of current Government policies on behaviour change, and what are the key improvements that could be made?**

What are the main strengths and weaknesses?

7.1. Current policies do not do enough to change behaviour to meet the UK's targets for reducing carbon emissions. The UK is on course to overshoot the fourth, fifth and sixth carbon budgets for reaching net zero.[53] The UK Committee on Climate Change (CCC)'s independent assessment of the Government's Net Zero Strategy highlighted that the role for behaviour change in those policies did not meet the level of ambition recommended by the CCC, and that this needs to be urgently resolved.[54] The CCC calculate that 62% of emissions reductions for reaching net zero will require some level of societal or behavioural changes, but this is a conservative estimate, as the remaining reductions expected from low-carbon technologies or fuels will also only be achieved through action by government, businesses and other organisations.

7.2. We are not on track to reduce carbon emissions because current policies do not sufficiently target the full range of actions needed to reduce emissions, summarised in section 6 above. In particular, the government's Net Zero strategy lacks any policies to shift diets away from meat and dairy or limit increasing demand for flying,[54] which are high-impact changes associated with co-benefits for health and the environment.[48,55] Policies set out in the Net Zero strategy place too much emphasis on technological innovations without enough consideration of the behaviour changes needed to achieve these.

What are the key improvements that could be made?

7.3. These weaknesses can be addressed by better integration of best practice for designing behaviour change interventions into policy development. Best practice includes engaging with the people whose behaviour the intervention seeks to change, identifying what influences current behaviour, applying theory to select intervention components, and creating an

[50] Jebb et al. (2021). Systems-based approaches in public health: Where Next? Academy of Medical Sciences.
[51] Barbrook-Johnson & Penn (2021). Participatory systems mapping for complex energy policy evaluation. *Evaluation*, *27*(1), 57-79.
[52] Antunes et al. (2015). Using participatory system dynamics in environmental and sustainability dialogues. In *Handbook of research methods and applications in environmental studies*. Edward Elgar Publishing.
[53] Committee on Climate Change. Advice on reducing the UK's emissions.
[54] Committee on Climate Change (2021). Independent Assessment: The UK's Net Zero Strategy.
[55] Cohen & Kantenbacher (2020). Flying less: personal health and environmental co-benefits. *Journal of Sustainable Tourism*, *28*(2), 361-376.

implementation plan (see section 3 above). These features were highlighted in a 2011 inquiry by the House of Lords Science and Technology Committee[56] but still are not consistently reflected throughout government policy development to change behaviours and are mainly limited to the work of small behavioural science teams.

7.4. Key improvements can be made in the following areas:
- Greater specification of behaviour changes needed to achieve targets for carbon emissions and other environmental outcomes.
- Greater coordination and systemic analysis of how different policies will work together. The Net Zero strategy does not sufficiently specify how this will be achieved.
- Greater analysis of structural and social influences on behaviours and use of criteria to select and apply suitable frameworks to develop appropriate interventions. Currently departments and teams select among frameworks without robust basis.
- More consistent specification and inclusion of plans for implementing and evaluating interventions.

8. **(W) For behaviour change efforts, how effective is the coordination between government departments and the split of Ministerial and departmental responsibilities, and are sufficient resources in place (staff and budgets)?**

8.1. Coordination between government departments on behaviour change efforts is characterised by informal networking, exchange and ad-hoc collaboration between behavioural science teams. Behaviour change is a primary function of the Government Communication Service, but it is important not to over-rely on communications for achieving behaviour change. Behavioural science teams in other departments are relatively small and projects frequently involve procurement from or collaboration with behavioural scientists outside of Government.

8.2. These levels of coordination and resource are insufficient, leading to a situation where current policies work against each other. Examples are encouraging people to use the train not the plane but then removing tax from short flights, trying to get people to use public transport and trains while spending billions on expanding roads and not subsiding public transport, and expanding roads but not electrifying the whole rail network.

8.3. An oversight committee of experts is required to coordinate policies between Departments and ensure they are mutually reinforcing and do not work against each other. Coordination needs expertise from outside Government and needs to be politically neutral.

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[56] House of Lords Science and Technology Select Committee (2011). Behaviour Change. 2nd Report of Session 2010–12.

Thank you for your consideration of this submission of evidence. For any inquiries, or requests for further evidence, please contact us.

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