

# Net zero behaviours in the recovery from COVID-19

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## Executive summary

### Aims

The COVID-19 pandemic brought about extraordinarily rapid changes in individuals' behaviours. Lockdown restrictions designed to contain the spread of the virus had a knock-on impact on our daily movements and behaviours relevant to Scotland's net zero target.

This study aims to explore the experience of behaviours with a positive or negative impact on net zero. It followed a cohort of people in Scotland through different phases of COVID-19 restrictions, from July 2020 to June 2021, to:

- identify the range of different ways in which net zero behaviours changed following the outbreak of COVID-19;
- understand the full context in which people were experiencing behaviour change, including their attitudes towards those changes, how they felt about them, and the impact it was having on them;
- understand how behaviours, and attitudes towards them, evolved over time as COVID-19 restrictions changed, and the reasons for that; and
- understand the range of factors influencing whether changes will be sustained when pandemic-related restrictions and guidelines are relaxed.

The aim of the research is to provide an in-depth understanding of the contextual factors influencing behaviour change, including how those changes are experienced and whether the changes 'stick'.

### Context

The research involved following a cohort of the same 30 participants in Scotland through various stages of the COVID-19 pandemic. A qualitative, rather than quantitative, approach was chosen as the most effective way of addressing the research aims, since it allowed for an

in-depth exploration of behaviour change, getting to the root of the factors influencing participants' net zero behaviours, and their attitudes to those behaviours.

The sample size was large enough to allow a range of different circumstances and experiences to be represented in the study, while remaining small enough to allow sufficient time to be spent with each participant to explore their experiences and perceptions in depth. To help contextualise the research findings, reference is made to quantitative survey data collected over the same time period.

This research is framed around the ISM tool for measuring behaviour change. ISM is based on theory and evidence which shows that three different contexts - the Individual (I), Social (S) and Material (M) - influence people's behaviours. One of the key principles of ISM is that interventions should take account of the influences across these multiple contexts in order to achieve substantive and long-lasting change.

The research also takes into account the interlinked nature of net zero behaviours. This builds on previous research for ClimateXChange<sup>1</sup>, which highlights the importance of interlinked practices. The analysis considers how social practices cut across the main household consumption emissions domains, recognising how practices interact with various net zero behaviours.

## Key findings

- 1) The disruption brought about by COVID-19 restrictions led to changes across the full range of net zero behaviours investigated. A central driver of these changes was the requirement to spend more time at home. This triggered changes to routines and schedules which impacted on many aspects of travel, leisure, shopping and cooking.
- 2) The behaviour changes that flowed from the disruption to daily schedules were wide reaching and did not take place in isolation, with many net zero behaviours being interlinked. For example, changes to travel behaviours as a result of a switch to working from home was found to have knock-on effects for shopping habits which, in turn, affected cooking habits.
- 3) Using the ISM tool to analyse participants' behaviours revealed that changes to behaviours were influenced by a range of individual, social and material factors including: participants' values, attitudes and beliefs; their time and schedules; the availability (or lack of) supporting infrastructure and objects required to adopt particular behaviours; and the networks and relationships surrounding them.
- 4) There was an appetite for a number of the changes to participants' daily lives to be sustained, particularly reduced reliance on cars, shopping locally, reducing waste and cooking from scratch. However, participants also highlighted barriers to maintaining these behaviours, including a lack of infrastructure or services, a knowledge or skills gap, and cost.
- 5) Participants were generally in support of actions being taken by government to encourage positive net zero behaviours. In particular, participants were positive about government providing advice, information, financial incentives and infrastructure. Participants were generally unsupportive of charges, regulation or enforcement of behaviour by government.

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<sup>1</sup> Climate Change Behaviours – Segmentation Study. Black, I., and Eiseman, D., 2019. Available at: <https://www.climateexchange.org.uk/media/3664/climate-change-behaviours-segmentation-study.pdf>, last accessed 23<sup>rd</sup> September 2021

## Implications for future policy

While the findings above show that there has been a change in behaviour since the outbreak of the COVID-19 pandemic, the extent to which these change in behaviours will ‘stick’ is less certain. The preference for ‘pull’ (supportive) measures over ‘push’ (restrictive) measures is well-established in the wider policy acceptance literature, and reflects the importance of perceived fairness and personal cost in shaping policy support.

**Our findings underscore the importance of creating an ‘enabling environment’ for net zero lifestyles in the recovery from COVID-19 which will help individuals to sustain the positive net zero behaviours that they have adopted during the pandemic.** There is a clear risk of individuals simply re-adopting their pre-pandemic behaviours in key areas such as transport and active travel, even though they expressed positive intentions about sustaining the net zero behaviours adopted during the pandemic. This is in part because of the centrality of work in influencing net zero behaviours.

**It will be essential for this ‘enabling environment’ to address the full range of barriers to adopting net zero behaviours that people currently face.** These include costs (e.g. of electric vehicles), infrastructure (particularly in relation to public transport and cycling) and knowledge and skills (e.g. in relation to ways to repair or reuse items). These barriers had existed prior to the pandemic, and had not been removed by the significant disruption to daily life and routine as a result of the restrictions.

**To normalise and encourage households and communities across Scotland to take action on climate change, it will be necessary to appeal to motivations other than environmental considerations.** Across the range of net zero behaviour changes seen during the pandemic, environmental considerations were typically secondary motivations, while other factors such as convenience and cost were more important.

**Our findings highlight the importance of climate literacy and the power of deliberation in understanding how the vast majority of the Scottish public, who will not have taken part in deliberation, are likely to react to different policy options.** This is particularly relevant to public views on stronger policy interventions, such as changes to taxation and regulation. Participants felt that interventions which would result in increased costs would potentially be unfair on those already struggling to afford the cost of living. This contrasts with the relatively high levels of support seen in Scotland’s Climate Assembly recommendations for taxation measures such as a frequent flyer tax or levy, or a carbon tax on food.

**Lastly, our findings underline the importance of ensuring that an understanding of behavioural science is embedded in net zero policymaking.** While COVID-19 restrictions were the catalyst for many net zero behaviours, these behaviours do not exist in silos, but are interlinked. Indeed, one of the most important and novel insights from the research has been the extent to which changes to *work* routines (notably moving to home working) can impact on so many other behaviours, from food preparation and waste to shopping for clothes. As a range of individual, social and material factors contributed to the changes in behaviours, there is a need for a broad range of interventions to help support positive behaviour change.

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# 1 Introduction

This report presents the findings from research into net zero behaviours in the recovery from COVID-19. The research was carried out by Ipsos MORI and Professor Lorraine Whitmarsh of the Centre for Climate Change and Social Transformations (CAST) on behalf of ClimateXChange and the Scottish Government.

## 1.1 Background

The COVID-19 pandemic brought about extraordinarily rapid changes in individuals' behaviours. Lockdown restrictions designed to contain the spread of the virus had a knock-on impact on our daily movements and behaviours. For example, many of us started working or studying from home, avoiding public transport, using private vehicles less often, changing how we shop, and pursuing different leisure activities. These types of behaviours in turn have implications for climate change mitigation and/or adaptation.

Facilitating behaviour change is a crucial element in achieving Scotland's ambitious climate change targets. On 6 May 2020, the Committee on Climate Change (CCC) provided an initial response to the Scottish Government's request for advice on a green recovery from the pandemic for Scotland. In this letter, one of the six principles for a resilient recovery recommended by the CCC is for the Scottish Government to "Lead a shift towards positive long-term behaviours", identifying the recovery period as an opportunity to embed new social norms.

Building on this principle, an emphasis on sustaining positive behaviour change is evident in the Scottish Government's Programme for Government 2020-2021, which highlights the unique opportunity that recovery from the pandemic presents. It highlights the opportunity to "*not simply go back to how things were, but to address with a renewed impetus many of the deep-seated challenges our country faces*"<sup>2</sup>. Central among those challenges are the climate emergency (as declared in April 2019), and Scotland's target of net zero emissions by 2045 (as legislated in the 2019 Climate Change (Scotland) Act).

More recently, the drive towards sustaining positive behaviours was highlighted in the Update to the Climate Change Plan<sup>3</sup>, in which the Scottish Government makes clear its aim to support consumers and businesses to maintain positive behaviour changes in the recovery from the pandemic. The Programme for Government 2021-22<sup>4</sup> also recognises the need to "*ensure the necessary collective response*" to Scotland's climate change ambitions, including through the launch of the #LetsDoNetZero campaign which provides the Scottish public with information and resources to support the steps we can all take to reduce emissions.

Sustaining net zero behaviour change is also a key principle underlying the Scottish Government's Public Engagement Strategy for Climate Change.<sup>5</sup> It states that building widespread public awareness, understanding and motivation to act on climate change is essential for Scotland to achieve its climate goals. However, public engagement must also be supported by policies and programmes that facilitate the required reconfiguration of societies, institutions and infrastructure to create an enabling environment for net zero lifestyles.

The Strategy sets out a holistic, systemic approach to public engagement which recognises that while behaviour change at the individual and household level is a key element of the transition

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<sup>2</sup> The Scottish Government Programme for Government 2020-2021

<https://www.gov.scot/publications/protecting-scotland-renewing-scotland-governments-programme-scotland-2020-2021/pages/1/>

<sup>3</sup> Update to the Climate Change Plan 2018-2032 <https://www.gov.scot/publications/securing-green-recovery-path-net-zero-update-climate-change-plan-20182032/>

<sup>4</sup> The Scottish Government Programme for Government 2021-2022 <https://www.gov.scot/publications/fairer-greener-scotland-programme-government-2021-22/>

<sup>5</sup> Climate change - Net Zero Nation: Public Engagement Strategy [Climate change - Net Zero Nation: public engagement strategy - gov.scot \(www.gov.scot\)](https://www.gov.scot/publications/climate-change-net-zero-nation-public-engagement-strategy-gov.scot/)

to net zero, achieving net zero also requires a more fundamental shift in the way we live our lives, including changes to underlying social and cultural norms. With this shift, low carbon behaviour will become part of the fabric of our society and people will have the information and access they need to take advantage of new infrastructure and technology as it becomes available.

The Strategy also highlights that the green recovery from COVID-19 and the transition to net zero and a wellbeing economy offer numerous opportunities with potential benefits to health, wellbeing and local communities. To take advantage of those opportunities, behavioural interventions need to address the many individual, societal, and material influences shaping actions, and recognise that behaviours are not isolated but link together to form our daily routines and practices. These principles have helped to shape the objectives and approach taken to this study.

## 1.2 Objectives

Against the policy background outlined above, ClimateXChange and the Scottish Government commissioned this study to explore how behaviours with a positive or negative impact on net zero were changing following the outbreak of the COVID-19 pandemic.

The study aimed to provide an in-depth exploration of the experiences of a cohort of people in Scotland over time to:

- identify the range of different ways in which net zero behaviours changed following the outbreak of COVID-19;
- understand the full context in which people were experiencing behaviour change, including their attitudes towards those changes, how they felt about them, and the impact it was having on them;
- understand how behaviours, and attitudes towards them, evolved over time as COVID-19 restrictions changed, and the reasons for that; and
- understand the range of factors influencing whether changes will be sustained when pandemic-related restrictions and guidelines are relaxed.

The aim of the research was to provide an in-depth understanding of the contextual factors influencing behaviour change, including how those changes are experienced and whether the changes 'stick'.

The research was designed to help inform how the Scottish Government supports the behaviour change required to deliver emissions reduction targets and climate change adaptation outcomes. Of particular importance to this study was developing an understanding of how behaviours had changed in the unique context of COVID-19, and what can be learned for sustaining positive behaviours in future.

## 1.3 Methodology

### 1.3.1 Qualitative, longitudinal approach

The research involved a qualitative, longitudinal approach with a cohort of 30 participants in Scotland.

A qualitative, rather than quantitative, approach was chosen as the most effective way of addressing the research aims, since it allowed for an in-depth exploration of behaviour change. The qualitative methodology (in the form of in-depth interviews, participant-generated diary content and group discussions) allowed us to explore not only the extent to which the cohort's behaviours and attitudes changed over time, but also the reasons behind those changes and the range of factors that influence them. It enabled us to get to the root of the factors influencing participants' net zero behaviours, and their attitudes to those behaviours.

While a quantitative approach would have the benefit of providing nationally representative survey data, overall a quantitative approach would have been less well suited to addressing the research questions. For example, the qualitative design allowed us to understand the impact of different factors (across the full range of individual, social and material factors) on behaviour change, the factors underlying behaviours, and why some behaviours are likely to ‘stick’ while others are not. This depth of understanding would not have been possible using a quantitative approach.

The number of participants involved in the research (30) was therefore appropriate for longitudinal qualitative research of this nature. This sample size was large enough to allow a range of different circumstances and experiences to be represented in the study (see section 1.3.5 below), while remaining a small enough sample to allow sufficient time to be spent with each participant to explore their experiences and perceptions in depth.

To help contextualise the research findings, reference is made to survey data collected over the same time period. In particular, this report draws on findings from a survey carried out by CAST in parallel with this study<sup>6</sup>, which explored how COVID-19 affected net zero behaviours and climate attitudes. This was a Great Britain-wide survey, but for the purposes of this report we have shown the data for respondents in Scotland (who numbered approximately 100 respondents at each wave), while also including comparisons with the findings for Great Britain.

### 1.3.2 Research phases

Following a rapid, desk-based review of evidence on how COVID-19 has changed net zero behaviours in Scotland and the UK, the research was then carried out over four phases:

- **Phase 1 (21 July to 3 August) – In-depth interviews** by video or telephone, to establish baseline behaviour changes in the early stages of lockdown.
- **Phase 2 (21 September to 3 October) – A mix of in-depth interviews and a qualitative diary exercise using Ipsos’ Applife mobile app.** Half of the cohort took part in interviews that explored the extent to which their day-to-day behaviours had changed since Phase 1. The other half were asked to complete an app-based diary of their day-to-day behaviours. AppLife participants were selected based on a number of considerations: their ability to use and likelihood of using an app; a range of demographics relating to gender, location and age; and the types of net zero behaviour changes they had experienced, meaning each behaviour was explored in this exercise.
- **Phase 3 (30 November to 17 December) – In-depth interviews** by video or telephone. The interviews explored the extent to which participants’ day-to-day behaviours had changed since Phase 2, and then covered some individual behaviours in further depth, focussing in detail on the factors influencing behaviour change. Of the original cohort of 30, 28 took part in this phase (two did not return contact).
- **Phase 4 (3 June to 30 June) – Mini-group discussions** (of 2-4 participants per group) by video **and in-depth interviews** to explore future behaviours. This final phase of the research focussed on future behaviours and views on potential interventions from government that might encourage behaviour change. Mini-groups were used to give participants the chance to hear others’ views and reflect on how they compare with their own, with the discussion helping to draw out a range of views. Interviews were carried out with those unable to or uncomfortable with taking part in a group. Of the original cohort of 30, 25 took part in this phase (five either declined to take part due to other commitments or to recent bereavement, or did not return contact).

The interviews, group discussions and mobile diary exercises were structured around discussion guides designed by Ipsos MORI and CAST and in consultation with

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<sup>6</sup> Links to two briefing papers from CAST available at: <https://cast.ac.uk/how-has-covid-19-affected-low-carbon-behaviours/>

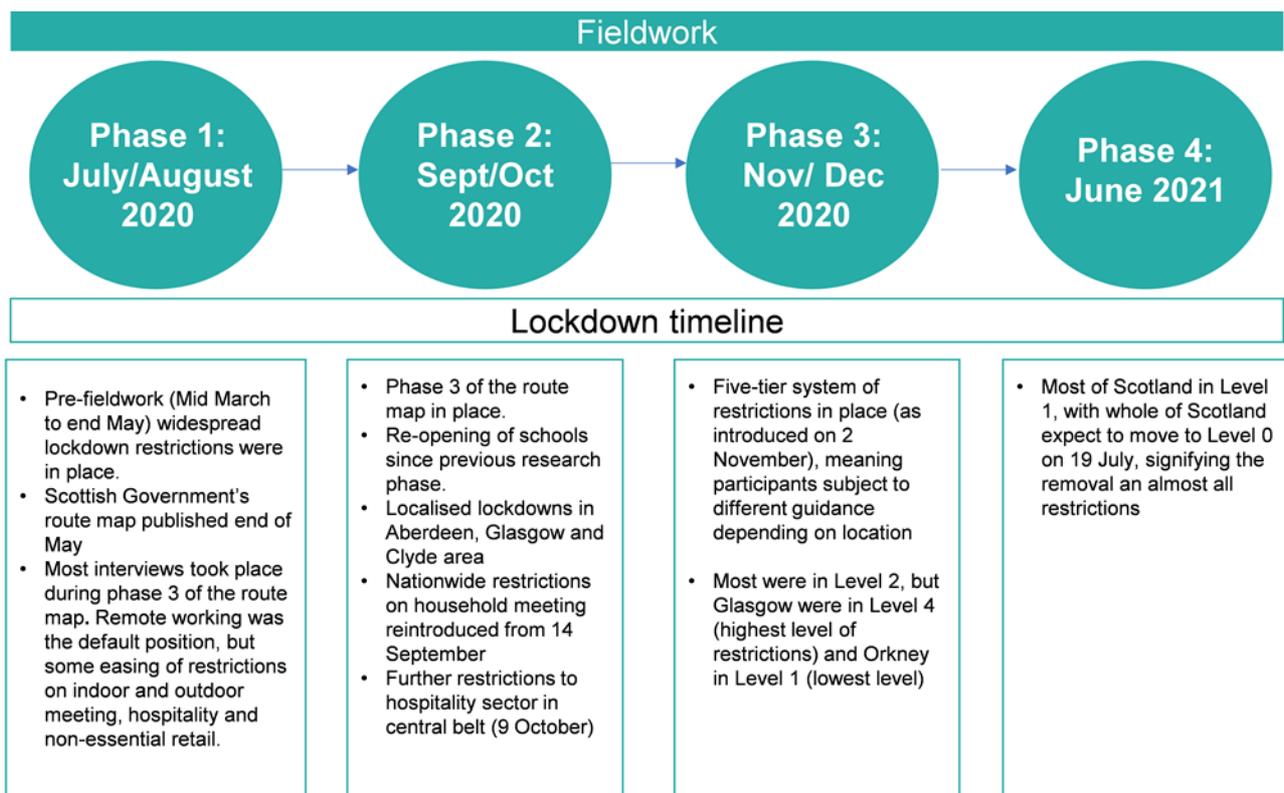
ClimateXChange and the Scottish Government. The discussion guides drew on the ISM tool for measuring behaviour change (explained in more detail in chapter two).

In the first three phases, participants were not explicitly asked to think about or discuss their “net zero behaviours” or “climate change behaviours”. Framing the discussion around the terminology of net zero or climate change was avoided, to help minimise the risk of priming effects – whereby participants’ behaviour can be influenced to an extent by their participation in the research, in this case meaning they might change their net zero behaviours as a result of being asked about them. The discussions were therefore framed more openly, using language such as “how have things been for you?” or “how are you getting around these days?”. In the final phase, the topic of climate change was introduced more explicitly and participants were told that one of the aims of the research was to understand how net zero behaviours could be sustained in future.

### 1.3.3 Context for timings of the fieldwork

Each phase of the research took place while Scotland was under lockdown restrictions, though these varied between phases, with phase one taking place while most restrictions were in place and phase four when restrictions were approaching being fully eased. The relationship between the fieldwork phases and corresponding lockdown stages is summarised in Figure 1.1. It should be noted that at Phase 1, although the country had just moved to the third stage of the Scottish Government’s route map through and out of the crisis, participants largely focussed on their experiences of the stricter restrictions that had been in place over the preceding few months.

**Figure 1.1: Fieldwork phases and lockdown timeline**



### 1.3.4 Recruitment of participants

Recruitment was carried out by telephone using a database of people who had taken part in the 2019 Scottish Household Survey and agreed to be recontacted for research purposes. The recruitment was carried out by an Ipsos MORI telephone interviewer who was provided with a script covering the purpose of the research and what taking part would involve. It was explained that participation was entirely voluntary and that participants could change their mind about taking part at any stage. A screening questionnaire was used to check people’s details were still correct.

All participants received a monetary incentive for taking part in fieldwork. They received a total of £140 for taking part in all four phases (£30 per phase after the first and the second, and £40 per phase after the third and fourth).

### 1.3.5 Sample profile

To help ensure the sample reflected the characteristics of the population as closely as possible, quotas were set at the recruitment stage. These covered standard demographics to reflect the population (gender, age, geography, deprivation level) and characteristics that may have had an impact on experiences of COVID-19 and lockdown restrictions (working status, whether or not children were living in the household, health). Quotas were also set to include a range of attitudes to climate change (based on participants' responses to the Scottish Household Survey), as it was probable that these attitudes may have had an impact on net zero behaviours.

The profile of the original cohort of 30 participants is summarised in table 1.1. On these quota categories the profile of participants was broadly comparable with that of the population, though it should be noted that this was a small cohort and therefore was not designed to be a representative sample of Scotland.

**Table 1.1: Profile of interview sample**

Quota	Number of participants
Gender	Female x 15, Male x 15
Age	18-34 years x 8 35-54 years x 12 55-69 years x 7 70+ years x 3
Geography	Large urban x 11 Other urban/non-remote rural x 16 Remote rural/remote small town x 3
Working status (based on pre-COVID 19 status)	Working full time/part time/self-employed x 22, including: Key workers* x 9, Furloughed x 4 Not working/retired x 8 <i>*The key workers included teachers, health and social care workers, courier/delivery drivers and a gas engineer. During lockdown they continued to go out to work, though some experienced changes to working patterns (e.g. hours either reduced or increased) and some (e.g. teachers) worked from home in early lockdown. None of the key workers were furloughed.</i>
Children at home	Children (under 16) in the household x 7
Health	Those with a long-term health condition x 7
Attitudes to climate change	Saying it is an immediate/urgent problem x 24 Saying otherwise x 6 <sup>7</sup>
Deprivation (SIMD) level	1 (Most deprived) x 4 2 x 1 3 x 6 4 x 10 5 (Least deprived) x 9

<sup>7</sup> Views of those saying otherwise were: Not convinced climate change is happening (1), Climate change is not really a problem (2), Climate change is more a problem for the future (1), Don't know (2)

## 1.4 Presentation of the data

Qualitative research aims to identify and explore the different issues and themes relating to the subject being researched. The assumption is that issues and themes affecting participants are a reflection of issues and themes in the wider population concerned. Although the extent to which they apply to the wider population, or specific sub-groups, cannot be quantified, the value of qualitative research is in identifying the range of different issues involved and the way in which these impact on people. As the findings from qualitative research are not intended to be generalisable to the wider population, where prevalence of a particular view is described in this report, using terms such as “most”, “some” or “a few”, this relates only to the sample of research participants and not the wider population.

In order to protect anonymity, participants are identified using pseudonyms. Quotes from participants are included to illustrate points made throughout the report and in the form of more detailed participant stories to demonstrate changes in experiences over time. Key characteristics (such as age, working status, location) are also included beneath each quote and in the participants’ stories to further contextualise their views.

## 1.5 Participants' stories: introduction

The participant stories used through this report are based on real participants, though their names have been changed to protect anonymity. Participants have been chosen to help illustrate a range of different circumstances, behaviours and attitudes towards climate change. For example, we include one participant who describes themselves as very “environmentally minded”, one who does not believe in human contribution to climate change, and others who are aware of climate change impacts but these are not a central influence on their behaviour.

Here we introduce the five participants and their circumstances when they first took part in the research. They will appear again throughout the report to help illustrate some of the key findings.



**Peter**

Peter is in his late-50s and lives alone in Elgin, where he grew up. He runs a small company doing financial work for clients in the hospitality industry. He usually drives a lot to see clients across the North of Scotland, averaging 1,500 miles a month in his petrol car. However, during the initial period of lockdown restrictions Peter furloughed himself and his staff, as client demand for his services was much lower than usual.

Peter doesn't think that his personal travel choices have much of an impact on climate change. While he acknowledges that his car and flight use might make a small difference, he thinks that a lot of global warming is 'natural – climate change has always happened'.



**Faith**

Faith is in her early-30s and lives in Edinburgh. She rents a flat, which she shares with her flatmate. Faith is a care worker and has two jobs, both on zero-hours contracts. At the beginning of lockdown the number of shifts she was given reduced dramatically, meaning she had gone from working most days and being very busy, to just working one day a week. During this time her flatmate started working from home every day, meaning they were both spending a lot more time at home than they used to. Faith believes that climate change is an immediate and urgent problem. However, she says that it is not something she thinks about a lot day-to-day.



**Ellen**

Ellen lives with her husband in a town outside of Glasgow. She works part-time at the airport, in an industry heavily impacted by the COVID-19 pandemic. She was initially furloughed from her job, and was brought back (at reduced hours) a few months later. A few of her colleagues have been made redundant in the last year, and although she has been assured that her job is safe, work was still very quiet in the early stages of lockdown.

Ellen and her husband have 3 cars in the household and enjoy flying for overseas holidays at least once a year. She believes climate change is an immediate and urgent problem.

**Henry**

Henry is in his mid-60s, and lives in a rural area on the west coast of Scotland. He retired from running his own business a few years ago, but still works part-time delivering food for local restaurants. When COVID-19 hit Scotland, Henry was asked to shield for 12 weeks.

Henry thinks that climate change is an immediate and urgent problem, and he is careful to recycle effectively, minimise his food waste and install the latest energy-efficient home improvements.

**Susan**

Susan is in her early fifties and lives in Orkney with her husband and teenage daughter. She works from home, while her husband works in a local shop.

When lockdown restrictions were introduced, Susan was able to continue working from home as usual and her husband's workplace remained open, so he continued to either cycle or drive to work. Her daughter was at home while schools were closed. When lockdown restrictions were introduced, the family stopped going to church, stopped visiting other households, and reduced how often they were going to shops.

Susan feels that she and her family are very environmentally conscious. They drive a hybrid vehicle, have domestic wind turbines to generate energy, do not eat meat, and rarely fly.

## 2 Understanding net zero behaviours

This chapter provides context for the rest of the report by setting out two central components of the research. Firstly, it outlines what we mean by ‘net zero behaviours’ and how these have been explored in the research. Secondly, it explains the approach used to understand behaviours and behaviour change.

### 2.1 Defining net zero behaviours

In this study, ‘net zero behaviours’ refers to any individual or household behaviours that may have implications for mitigation or adaptation to climate change.

In understanding how net zero behaviours have been defined, it is important to remember that this research was exploratory in nature. This meant that it allowed findings to be led by the lived experiences of our cohort of participants, rather than being confined to testing a pre-determined list of behaviours. This exploratory element was particularly important considering the longitudinal nature of the research – it was difficult to predict at phase one how daily life could change over the next year or so, therefore it was important to allow participants the flexibility to define and share their own experiences over time.

That said, a common structure was required to help ensure that the research objectives were met and to ensure that key net zero behaviours were not overlooked. The research materials (discussion guides and supporting stimulus materials) were therefore designed to strike a balance between these two aspects of the research – they had a clear structure, but allowed interviewers the flexibility to respond and adapt to what participants said. Discussion guides were structured around broad themes relating to net zero behaviours, such as “car travel”, “public transport” and “food shopping”, but allowed each participant to describe their individual circumstances, behaviours, and attitudes in their own words. To help with the structure of the discussions, the net zero behaviours of interest to the research were defined in advance.

As a starting point, the rapid evidence review (see Annex) and a review of published data on average annual reduction in emissions per person per behaviour<sup>8</sup> helped to identify two key aspects of net zero behavioural themes that formed the structure for the discussions and from which participants described their own individual behaviours:

1. Behaviours most likely to have changed as a result of COVID-19 restrictions
2. Behaviours that were likely to have the greatest impact on climate change.

Based on the evidence review, a range of net zero behaviours were identified, along with their likelihood of being impacted by COVID-19 restrictions. Behaviours were classed as having a ‘high’ positive environmental impact if their average emissions mitigation potential was above 1.0 CO<sub>2</sub>eq/cap, a ‘medium’ positive environmental impact if their average mitigation potential was between 0.5 and 1.0 CO<sub>2</sub>eq/cap, and a ‘low’ positive environmental impact if their average mitigation potential was lower than 0.5 CO<sub>2</sub>eq/cap.

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<sup>8</sup> Ivanovna et al, 2020 <https://iopscience.iop.org/article/10.1088/1748-9326/ab8589/pdf>

This mapping exercise helped to identify the range of net zero behaviours to be explored in phase one, which were structured around the following topics:

- **Home and family** – including any changes to household or living situation, such as more or less people living at home
- **Work and childcare** – including working from home and any other changes such as being furloughed or changes to work patterns
- **Travel, holidays, walking and cycling** – covering any changes to day-to-day transport, leisure and active travel
- **Food, drink and shopping** – covering how food and non-food shopping behaviours changed, food preparation practices, and the types of dietary choices being made
- **Water and energy use** – with energy including both electricity and home heating
- **Waste and recycling** – covering any changes to volume and type of waste and how it was being disposed of

These topics were then refined further as the research progressed, to more closely reflect the specific behaviour change patterns that were emerging from participants' feedback. Chapter three explores in detail the types of net zero behaviours that had been experienced at each research phase and the extent to which they changed over time.

## 2.2 Behaviour change approach

Behaviour change research improves our understanding of why people demonstrate certain behaviours. Various behaviour change models exist, all of which use a series of factors or characteristics to 'diagnose' or categorise behaviours. Models can also offer insight into the types of interventions that could bring about behaviour change, if required.

The research was framed around the ISM tool for measuring behaviour change. At the design stage this was chosen over an alternative approach, Ipsos MORI's in-house MAPPS model (based on the COM-B system and Behaviour Change Wheel<sup>9</sup>). MAPPS explores the Motivations, Ability, Processing, Physical and Social aspects of behaviour change. The dimensions of MAPPS and ISM are closely aligned, with each allowing the individual, material and social barriers and facilitators to behaviour change to be explored. For this study, ISM was chosen as it aligned closely with the Scottish Government's Public Engagement Strategy (under drafting at the time) and would therefore have potentially wider recognition across Scottish Government than MAPPS.

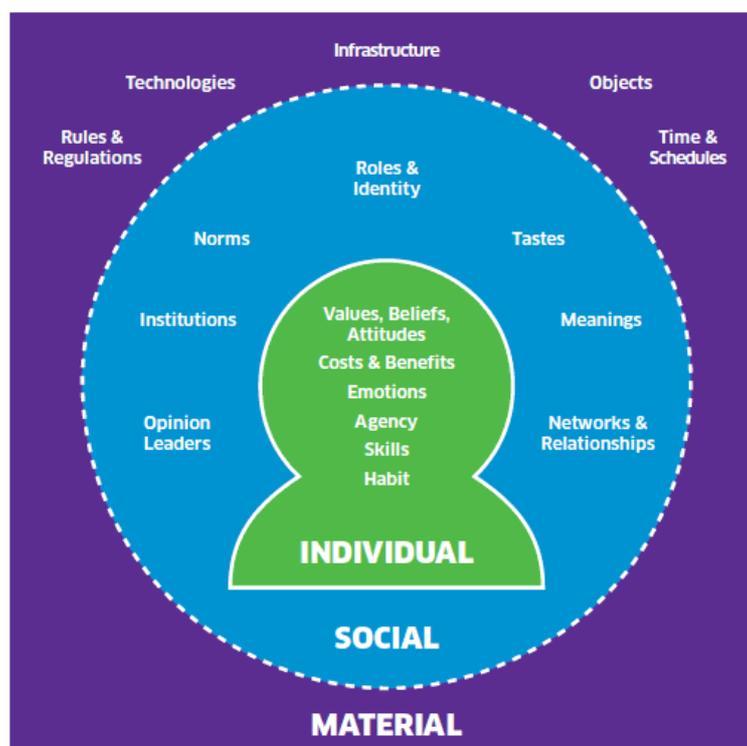
ISM is based on theory and evidence which shows that three different contexts - the Individual (I), Social (S) and Material (M) - influence people's behaviours. One of the key principles of ISM is that interventions should take account of influences across multiple contexts - I, S and M - in order to achieve substantive and long-lasting change.<sup>10</sup> Within each of the I, S and M contexts are a range of factors that influence behaviour (summarised in Figure 2.2):

<sup>9</sup> Source: Michie S, van Stralen M, West B. The behaviour change wheel: A new method for characterising and designing behaviour change interventions. *Implement Sci* 2011 <https://doi.org/10.1186/1748-5908-6-42>.

<sup>10</sup> Description of the ISM tool and the image used in figure 1.2 are taken from: Darnton and Horne (2013), *Influencing Behaviours: Moving Beyond the Individual* available at <https://www.gov.scot/publications/influencing-behaviours-moving-beyond-individual-user-guide-ism-tool/pages/1/>

- **The Individual context:** This includes the factors held by the individual that affect the choices and the behaviours they undertake. These include an individual's values, attitudes and skills, as well as the calculations they make before acting, including personal evaluations of costs and benefits.
- **The Social context:** This includes the factors that exist beyond the individual in the social realm yet shape their behaviours. These influences include understandings that are shared amongst groups, such as social norms and the meanings attached to particular activities, as well as people's networks and relationships, and the institutions that influence how groups of individuals behave.
- **The Material context:** This includes the factors that are 'out there' in the environment and wider world, which both constrain and shape behaviour. These influences include existing 'hard' infrastructures, technologies and regulations, as well as other 'softer' influences such as time and the schedules of everyday.

**Figure 2.2: ISM tool**



The ISM tool was used in the design of the discussion guide to enable us to fully consider a wide range of potential factors influencing participants behaviours. For example, when asking about specific behaviours the ISM tool helped us to probe around the different types of factors that may have had an impact. It was also used in the analysis of data, as a way of grouping and categorising the factors that participants said had influenced their behaviours. Chapter four in particular sets out the factors that influence behaviour change using the ISM categories.

## 3 How behaviours changed

Following our cohort of participants over the course of a year has provided in-depth insights into how daily behaviours have been impacted by COVID-19 and associated lockdown restrictions. This chapter draws on those experiences to outline the extent to which net zero behaviours had changed over the course of the study, starting from the period shortly after the first lockdown restrictions were in place (July 2020) to almost a year later when the country was approaching the easing of restrictions (June 2021). It also explores how participants felt about net zero behaviours at each stage of the research. The factors that contributed to these behaviour changes are then explored in the next chapter.

### 3.1 Overview and context

#### 3.1.1 Summary of behaviour change

As a result of the disruption caused by the pandemic, participants experienced changes across the full range of net zero behaviours investigated, including how they worked, travelled, shopped, cooked and consumed. However, the extent of those behaviour changes varied over the course of the year.

In the early stages of lockdown in spring 2020, there were signs of a positive shift in some net zero behaviours among participants. Overall, participants were driving less, largely as a result of working from home and a disruption to typical daily activities. Public transport use had also decreased, while walking and cycling for exercise had increased. Flying had been reduced or stopped entirely. In those early days, shopping had mainly moved online, causing an increase in packaging, although there was also a move towards more local food shopping rather than using supermarkets. Some participants were planning their meals and cooking more from scratch, leading to less food waste, and consuming less pre-packaged food and drink.

As restrictions gradually eased, some aspects of pre-pandemic daily routines returned, which meant an increase in driving, a decrease in walking and cycling, and a return to shopping in supermarkets in person. However, even by the final phase of the study, some behaviours had not yet returned to pre-lockdown levels; some participants were still driving less than they had been, planning and cooking more meals, and avoiding overseas travel by air. Looking ahead, there was generally an appetite for many of these behaviour changes to be sustained.

#### 3.1.2 Wider context

The types of behaviour changes experienced by the participants and explored in this chapter echo those found in other research on this topic. Since May 2020, CAST has carried out three waves of a survey<sup>11</sup> (at similar points in time to this research) exploring how COVID-19 restrictions impacted on net zero lifestyles and attitudes towards climate action. This study provides valuable representative survey data that helps to set our qualitative findings in context (the data relevant to this study is provided in the Appendix). Looking at the findings for Scotland, the pattern of behaviour change is similar to that seen among our cohort.

Among Scottish respondents to the CAST survey, the proportion working entirely from home almost doubled when lockdown came into place (from 22% to 42%) and then remained at a similar level. The proportion commuting by car fell dramatically in the early stages of lockdown (from around half to 10%) and though it increased in October 2020 as restrictions had eased somewhat (to 25%), it still had not returned to pre-lockdown levels by June 2021.

Other patterns of behaviour change suggested by the CAST survey data include:

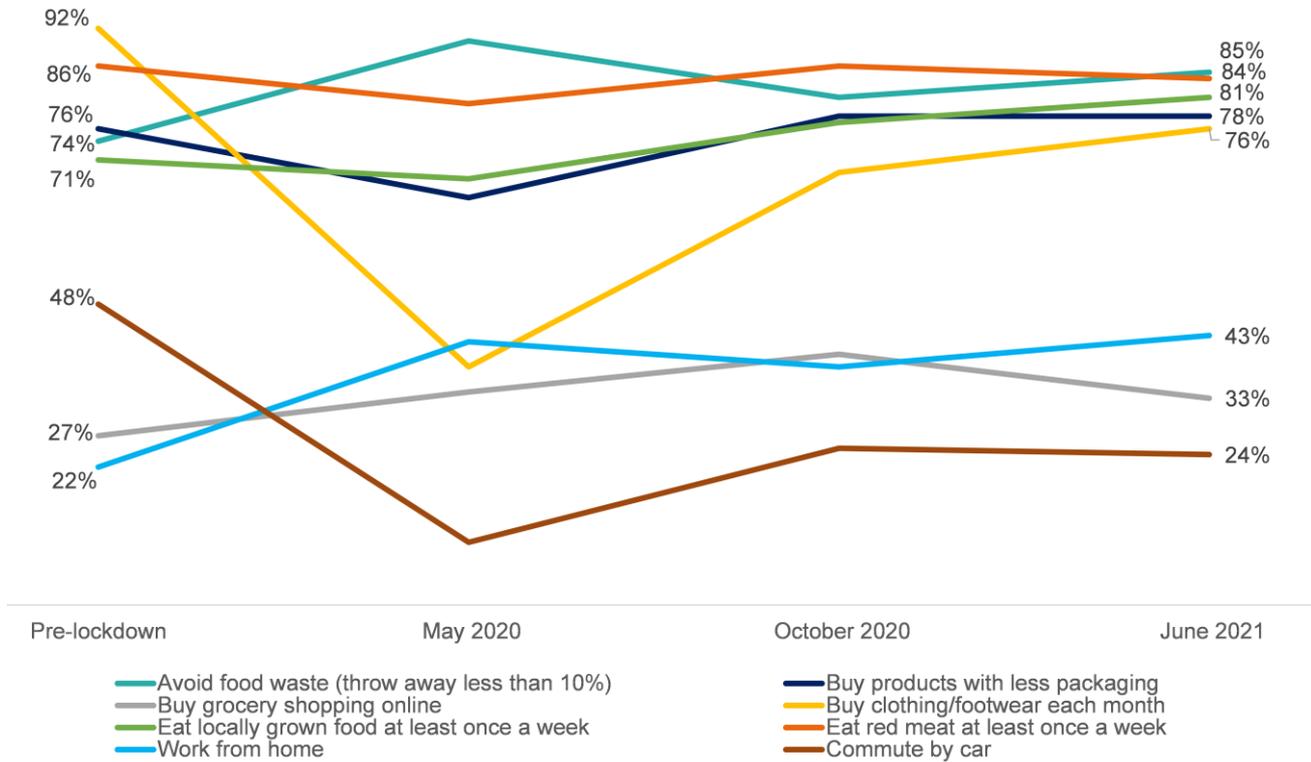
- 1) A large decrease in the amount of clothing and footwear purchased immediately after lockdown, which started to rise again over time but not yet reaching pre-lockdown levels.

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<sup>11</sup> Links to two briefing papers from CAST available at: <https://cast.ac.uk/how-has-covid-19-affected-low-carbon-behaviours/>

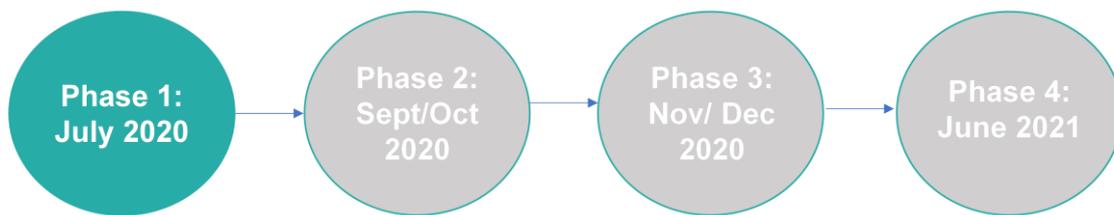
- 2) Avoidance of food waste increasing in the early stages of lockdown, and remaining relatively high as lockdown continued.
- 3) Consumption of organic or locally grown goods increasing while consumption of red meat remained relatively unchanged.
- 4) Early in lockdown people were less likely to buy low-packaged items, but over time this returned to pre-lockdown levels.

**Figure 3.1: Net zero behaviours captured in CAST survey (Scotland)**



The individual behaviour changes identified over our four phases of research are discussed in more detail in the remainder of this chapter.

## 3.2 Phase 1: July 2020



### Baseline behaviour changes:

- Walking and cycling ▲
- Online shopping ▲
- Shopping locally ▲
- Cooking from scratch/batch cooking ▲
- Home energy ▲
- Flying ▼
- Driving ▼
- Public transport use ▼
- Food waste ▼
- Household waste ▬

### 3.2.1 Introduction

This relatively early stage of lockdown was when the most significant changes in behaviours were apparent. Restrictions on movement and an increase in the amount of time participants were spending at home (including working from home) had knock-on effects for almost every net zero behaviour.

Participants had mixed views on these changes, with certain aspects of life under lockdown viewed more positively than others. Much of the positive sentiment about the early stages of lockdown was in relation to having more spare time which could be used for healthier or more fulfilling activities such as walking and cycling (in place of commuting) and cooking from scratch at home. More negative views related to missing social interaction and the enjoyable aspects of typical day-to-day life.

### 3.2.2 Work

**Our findings underline the centrality of work as a driver of other net zero behaviours. Work was the area where most significant change had occurred for participants, as a result of which a number of net zero behaviours were impacted.**

For those who had been working before COVID-19, lockdown restrictions had caused major changes including working from home all of the time, being furloughed, and working reduced hours as a result of a downturn in their business. These changes all meant that participants were spending more time at home. For key workers, changes to work patterns (e.g. working different hours, or at a different location) and to the way in which they performed their work (e.g. replacing face-to-face with virtual meetings in some cases) meant they too were spending more time at home.

For those who were working from home due to the pandemic, positive aspects of this change in routine included a sense of control over daily schedules, peace and quiet, feeling less rushed and stressed by the process of commuting or travelling to meetings, and generally having more time each day. Having more time had in turn led to other behaviours such as walking or exercising more and cooking more from scratch. Negative aspects of working at home included difficulties with IT or internet connections, challenges balancing work with childcare or home schooling, and missing social interaction with colleagues.

*“It has actually been surprisingly nice... being at home, not having to work five days a week and rush everything on a Saturday and Sunday, cooking properly, fresh, every single day, working out every day, sleeping for the right amount of hours. In my eyes, in a lot of ways it has actually been really good health-wise.”*

*Female, 30, Working, Edinburgh*

*“I found it really hard just trying to adapt. The isolation and not being able to [see colleagues]. I'm quite chatty and quite sociable. I just missed the girls in the office.”*

*Female, 50, Working, Shetland*

### 3.2.3 Transport and travel

The requirement to stay local had led to significant changes in transport behaviours. These included reductions in driving and public transport use, particularly in the months shortly after the beginning of lockdown, and flights being cancelled or postponed.

**Transport changes included a significant reduction in car use**, which was largely a consequence of less commuting, but also of fewer trips out of the home more generally. While cars were still being used for food shopping, trips to shops were being made less frequently. For those with children, family played an important role in decisions around driving, with the reduction in car use at the beginning of lockdown being at least partly attributed to schools being closed and children’s extra-curricular activities not taking place.

Those who were using their cars less were generally positive about this change. Benefits included having more time for activities like walking or cycling, spending less money on fuel, and the positive environmental impacts of reduced car use (saying that this could help lead to reduced carbon emissions). On the other hand, some felt that they missed the independence and sense of freedom that driving gave them, particularly those who lived alone and typically drove to see friends and family.

*“I’m kind of a hypocrite, because I do like the fact that I am using less carbon. But at the same time there are not many places to go out within walking distance around here, and I do like exploring in the car rather than just walking around the local area.”*

*Male, 23, Not working, Moray*

**Participants had moved away from public transport**, both because they had less need to use it and because of concerns about the safety of communal transport and the risk of catching or spreading COVID-19. In some cases, this had negative implications for reducing carbon emissions, with individual car journeys taking the place of communal modes of transport. For those who had been avoiding public transport, this was also linked to social norms around what participants felt people “should” and “should not” be doing to help suppress the virus.

Echoing feelings about travelling less by car, participants were generally positive about travelling less by public transport as it afforded them more time within their daily routine to do other things. The exception to this was when public transport journeys were being replaced by individual car journeys.

Reluctance to travel on public transport was reflected in the survey by CAST exploring low carbon lifestyles since COVID-19, which showed (in August 2020) that 55% of Scottish respondents intended to use public transport less after lockdown compared to before (compared with the overall figure of 52% among UK respondents), whereas 41% intended to

use it the same amount and only 4% intended to use it more (43% and 5% respectively UK-wide).

**COVID-19 and associated lockdown restrictions had impacted a great deal on leisure travel;** it was typical for participants to have had holidays postponed or cancelled, including visits to see family members. While some were keen to fly again in the next few months, others were reluctant to do so due to fears about the spread of the virus and/or concerns about changes to lockdown restrictions taking place while on holiday. Flying behaviour was therefore influenced by the rules and regulations associated with lockdown restrictions, but also by individuals' own attitudes in relation to concerns about safety and a desire to avoid the "hassle" and "disruption" associated with wearing face masks or potentially facing lockdowns in other countries.

*"We were considering booking a trip to Canada to see our son, but I think it will be a long time before we do. I wouldn't consider going on an aircraft...because of the hygiene levels, I will just be giving that a miss...COVID-19 wrecks lives and I don't want to be part of that."*

*Female, 54, Working, Key worker, Children at home, Argyll & Bute*

**Across each transport behaviour, environmental considerations were typically secondary to other factors.** For example, participants acknowledged that reductions in driving or switching to electric or hybrid vehicles were better for the environment. However, several said this was not something they thought much about, and there was a sense that they as individuals reducing their driving would not have a significant impact on climate change. Environmental concerns were less apparent when it came to flying. However, there was an awareness that flying had a negative impact on the climate.

Key factors influencing transport behaviours in Phase 1:

- Material factors – Rules and regulations (lockdown restrictions)
- Social factors – Networks and relationships with family; Social norms
- Individual – Values, attitudes and beliefs (e.g. concerns about safety, inconvenience of potential disruption taking flights)

#### Participant story: Ellen

In the early stages of the pandemic, Ellen's car use dropped dramatically. While furloughed from work, she enjoyed lots more cycling, walking and running, although she still tended to use the car for grocery shopping. With her husband working from home, they have been able to cut down on the number of cars they owned from three to two.

### 3.2.4 Walking and cycling

**The early stages of lockdown saw increases in both walking and cycling, mainly as forms of exercise or as ways of getting out of the home.**

Generally, walking and cycling were not being used as forms of active travel: there was little evidence that increased recreational walking or cycling had replaced car journeys, which may reflect the overall reduction in all forms of commuting due to more working from home. However, there were a few exceptions to this, such as participants walking to the local shop when they previously would have taken the car.

*“If I was going to [the supermarket] I would take the car, but if I was just going to [the smaller shop] up the road, I would just walk instead. [Before lockdown] I probably would have always just jumped into the car and gone to one of the bigger ones, whereas now I just go to one of the smaller ones because it's not as busy.”*

*Female, 24, Key worker, Clackmannanshire*

Increases in walking and cycling were partly driven by a desire to exercise and to enjoy the health benefits of doing so. Also, working from home and other changes to working routines had allowed participants more free time, which was being used for activities such as walking and cycling. Whether or not these behaviours would be sustained in future was seen as dependent on still having the time to do so when lockdown restrictions are eased. Encouragement from family and friends also had an influence, with participants describing how other members of their household had encouraged them to go for walks or cycle rides, and saying that these activities were an enjoyable way of spending time together as a family.

Key factors influencing walking and cycling behaviours in Phase 1:

- Material factors – Rules and regulations (lockdown restrictions); Time and schedules
- Social factors – Networks and relationships with family
- Individual – Values, attitudes and beliefs (e.g. attitudes towards health)

#### Participant story: Henry



Early in lockdown, Henry found that he was using his car much less than he normally would. Although he was still driving for work, when it came to his personal travel he was walking and cycling much more often. He would cycle to the nearest shop and carry the shopping home in his bike panniers.

Henry loves to cycle – he and his wife enjoy taking their bikes on holiday and are part of a local cycling club. He spoke positively about the reduced traffic on the roads and the people getting into cycling for the first time during lockdown.

### 3.2.5 Food shopping, diet and food waste

**Early stages of lockdown saw fewer in-person shopping trips and an increase in online shopping. There was also a move towards more local food shopping. Changes to diet included more meal planning, cooking from scratch and batch cooking.**

**Food shopping behaviour had changed in several ways, each of which were linked to travel behaviour patterns.** Fewer trips were being made to shops, because of a general change in daily routines and a reduction in the number of times participants were leaving their homes. Those who avoided travelling to the supermarket altogether had replaced shopping in person with online food deliveries.

There was also a move to more local shopping, in part driven by a desire to avoid travelling further afield to large supermarkets, with visits to local shops typically being by foot or by bike compared with supermarket shopping by car. Shopping locally was also seen as a way of supporting local businesses and the local community. For example, one participant mentioned that shopping locally was particularly important to them as they had friends who owned small shops.

**Shopping more locally and less often was linked to changes in behaviours that drive and prevent food waste,** including planning shops and meals, stock-taking, batch-cooking and

freezing food. While planning meals was generally seen as helping reduce food waste, a few participants noted that doing larger shops had occasionally caused them to waste food because they miscalculated how much they needed and did not manage to use it before it went off.

Participants often reported doing more cooking from scratch during the early stages of lockdown, trying new ingredients and recipes, and enjoying experimenting, where time allowed. Lunch habits in particular had changed substantially, with fewer convenience foods and sandwiches and more alternatives such as omelettes, soups and salads, often including more fruits and vegetables and less bread.

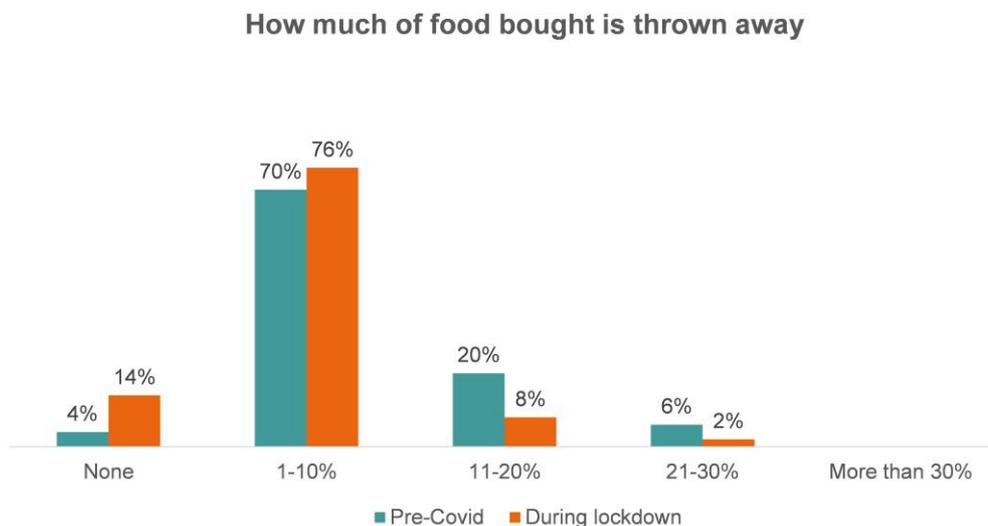
*“I have bought less. Before lockdown I could easily go to the local shop two, three times a week and buy things for the sake of buying them. Now we restrict it to just once a week...we plan for the week, make a list and take it with us. That is a new thing for us. With the restrictions in the shop, you feel you want to get around the shop quickly and get out - if you have a list with you, you can do that.”*

*Female, 50, Working, West Lothian*

Participants generally enjoyed planning their meals in advance and hoped to continue doing so in future. Cooking and eating provided a focus, gave structure to the day, and were family activities that participants had enjoyed. That said, a few participants said they rarely cooked from scratch, instead eating mainly frozen meals, and that this had not changed.

The CAST survey also suggested a move towards less food waste in the early stages of lockdown, with 14% of Scottish respondents (16% among UK respondents) saying they threw no food away during lockdown (an increase from 4% pre-COVID 19):

**Figure 3.2: Reduction in food waste over lockdown**



Base: 119

Source: Scotland data collected as part of the UK-wide study reported in: CAST Briefing 04 (August 2020) How has Covid-19 impacted low-carbon lifestyles and attitudes towards climate action?

Changes to food behaviour were influenced by a range of factors, which were similar to those noted earlier in relation to walking and cycling. The time afforded to participants as a result of working from home or other changes to work routines had provided them with the opportunity to cook more from scratch. Family relationships were also influential, with participants enjoying cooking meals from scratch for their family members and trying new things to accommodate the tastes of others, for example vegetarian or vegan dishes.

There were varied meanings apparent when it came to different dietary choices. One the one hand, the health benefits of cooking from scratch and eating less pre-packaged foods were

noted. On the other hand, participants also described eating more 'comfort food' in this earlier, stricter phase of lockdown including more processed and packaged foods such as crisps, while others said they had increased their dairy intake as it was a common component of foods they considered 'treats'.

Again, environmental considerations in relation to food shopping and diet were less apparent at this phase, though they did emerge later in the research.

Key factors influencing food shopping and diet:

- Material factors – Rules and regulations (lockdown restrictions); Time and schedules
- Social factors – Networks and relationships (with local community and family); Meanings associate with food
- Individual – Values, attitudes and beliefs (e.g. attitudes towards healthy eating, supporting local economy)

#### Participant story: Peter



During the initial period of lockdown restrictions Peter's net zero behaviours shifted, largely due to changes in his work. As he was furloughed, he used his car much less as he was not travelling to see clients. It also meant that he spent more time at home, which in turn led him to make lunches from scratch more often. Peter also found that he was wasting more food than usual, as he was going to the supermarket more often and buying more than he usually would, but not always managing to use it all.

#### Participant story: Faith



Early in lockdown, Faith noticed some positive impacts on her diet. As she was spending most of her time at home, she had time to go to plan meals, go shopping in person and choose ingredients, and then cook meals from scratch. Faith has a vegan diet (since childhood) and she considers herself to be a generally healthy person, but she had found herself grabbing quick and easy food when she was working. This could be a sandwich from a supermarket, or a coffee and cake from a coffee shop. Since lockdown started, she hasn't bought any pre-made food or takeaway coffees.

### 3.2.6 Household waste and recycling

**There were mixed experiences in relation to the amount and type of waste that households were disposing of over lockdown.**

Local authorities across Scotland had reduced the recycling services during lockdown. Participants had reacted differently to this change – some participants had binned or incinerated things they would normally have recycled, while other had saved their recycling waste until services resumed– although less convenient than the normal process, this was felt to be worth it by some. Participants' attitudes towards reduced recycling services varied depending on factors such as the type and amount of excess recycling waste (for example, it was easier to store paper to recycle later than food waste) and how easy it was to store (for example, whether they had a garage to store it in).

While for some, the forced closure of non-essential retail services contributed to an increase in online shopping and household waste from packaging, others reported consuming less as they realised they could do without items they used to “buy for the sake of it” when they were able to browse in person. For those that had been spending more time in their garden over lockdown, an increase in garden waste was commonly mentioned. For other participants, household waste had not changed.

Key factors influencing household waste and recycling:

- Material factors – Rules and regulations (lockdown restrictions); Infrastructure
- Social factors – Social norms
- Individual – Values, attitudes and beliefs (e.g. attitudes towards the environment); Skills

### 3.2.7 Home energy

**Spending more time at home was perceived to have increased home energy use, though this had not caused a great deal of concern.**

Participants tended to speculate that their electricity use had increased during lockdown compared with pre-lockdown, with an increase in IT, lights, and general appliances being used more in the home. However, participants had not seen this change reflected in their electricity bill, either because they were not monitoring their energy bills closely or were paying a fixed monthly amount that had not yet changed over lockdown.

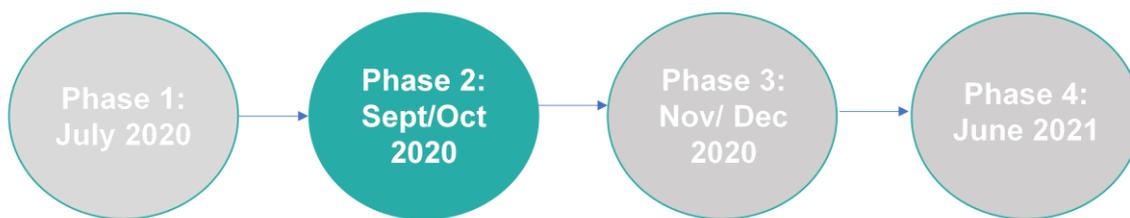
In terms of home heating, participants felt this had not been impacted by COVID-19 restrictions – they typically said their heating had not been used due to the warm weather they had experienced at this time of year.

When discussing home energy use, participants tended to reference the cost implications (i.e. whether or not they had noticed a change in their bills) rather than environmental considerations.

Key factors influencing home energy use:

- Material factors – Time and schedules; Objects (e.g. IT and other equipment associated with working from home).
- Individual – Costs and benefits.

### 3.3 Phase 2: September-October 2020



#### Behaviour changes since Phase 1:

- Driving ▲
- Public transport use ▲
- Flying ■
- Shopping locally ■
- Cooking from scratch/batch cooking ■
- Walking and cycling ▼
- Online shopping ▼
- Household waste ▼
- Food waste ■
- Home energy ■

#### 3.3.1 Introduction

Between Phases 1 and 2, with lockdown restrictions having eased somewhat, the most notable change was that there had been an increase in driving and a decrease in walking and cycling. There had also, to a lesser extent, been some changes in public transport use and shopping habits. These changes were largely attributed to a change in participants' routines as a result of work, school and gradual easing of lockdown restrictions, which again underlines the centrality of work in influencing changes in other net zero behaviours.

The behaviours that had been sustained between Phase 1 and 2 related to food, such as meal planning and batch cooking, meaning that food waste also remained below pre-lockdown levels. Those that had started shopping more locally over lockdown had continued to do so, while overseas flying continued to be on hold.

#### 3.3.2 Transport and travel

**One of the main changes between Phases 1 and 2 was an increase in driving and car use. Only a few participants had increased their use of public transport, and flying behaviour remained largely unchanged.**

**Increased driving was largely attributed to changes to working patterns**, with some participants returning to work after having been furloughed, and others experiencing increased working hours as businesses had become busier with the easing of lockdown restrictions. The increase in driving was particularly apparent for those who drove for a living (e.g. a delivery driver) or whose job was reliant on the use of a car (e.g. those visiting clients or patients at home) who felt their working patterns either returned to pre-pandemic levels or had not yet returned to those levels but were nonetheless higher than earlier in lockdown. Increased car use was also seen among others who had returned to driving to their workplace, used their car to do the school run, and to go shopping or visit family and friends.

However, while driving levels had increased since Phase 1, they were generally still lower than they were pre-lockdown. Even among those that had returned to work, overall use of cars was lower than it had been, with some conscious decisions being made to use alternative forms of transport.

*“On my day off I have started to think about other methods of transport e.g. on Monday I decided to cycle to my fitness class (before I would have automatically got in the car because it was sat on the drive). I think that the slow down of life in lockdown has made me think of other choices /options. I like the opportunity of not having to rush around and reduce pollution.”*

*App diary content - Female, 50, Working, Fife*

Habit was an important factor influencing driving behaviour. In the early stages of lockdown, the disruption caused by the pandemic had made some people reassess their habits and consider alternative modes of transport. However, when restrictions started to ease, old habits began to return and driving increased as some participants began to resume activities such as driving into work or driving to see friends and family.

Family again played a role in decisions around travel. The increase in driving as lockdown restrictions started to ease was, at least in part, attributed to the return of school runs and other family needs. Reliance on driving for these daily activities also highlighted the role of agency in transport behaviour, with driving often seen as the only way of getting to certain destinations or carrying out certain tasks.

**A few participants had started using public transport again** since Phase 1, whether because a change in their circumstances required them to use it (e.g. one participant started a new job that required her to travel by bus), or because they wanted to leave the house more and re-establish a routine (e.g. one retired participant made a train journey to pick up his prescriptions, even though they could be delivered). Among those that had returned to public transport, there were mixed feelings about the experience – some felt safe due to social distancing and use of masks, while others felt they were too crowded and therefore were keen to avoid. However, as noted, others were still avoiding public transport entirely because of safety concerns and choosing to travel by car instead.

**Flying behaviour remained unchanged since Phase 1.** Only one participant had flown overseas, to go to their second home in Spain. For others, no overseas travel had taken place. Participants were generally content to avoid flying for the next few months; for some this was mainly motivated by safety concerns about COVID-19, while for others it was due to concerns about lockdown restrictions while overseas or the need to quarantine after travelling. Several, however, were keen to fly overseas next year once they felt it was safe to do so.

Those that had replaced overseas with domestic holidays were generally very positive about the experience. However, this did not translate into an intention to change holiday behaviours in the long term. The general sentiment was a desire to return to the previous routine of an overseas holiday at least once a year, because they valued the chance to have a change of scene, enjoy sunshine, and give themselves or their families a treat. Where family lived overseas, there was a particularly strong desire to return to flying to visit them (and for family members to be able to come to Scotland).

Some participants, particularly in rural areas, also felt that a lack of suitable alternatives meant that they would likely return to flying when restrictions eased, as taking the train was often much longer and not as easy to access.



*“We ventured to Fife for a week - very much a staycation. Flying is not a particularly attractive option at the moment given the risk of cancellation and/or quarantine. We are currently working on the basis that in 2021 we will be able to travel with more confidence and have reserved a place in Italy... We have some nervousness about booking to go abroad but those concerns are currently offset by our desire to go somewhere warm next year.”*

*(Male, 52, Not working, Edinburgh)*

*App diary content*

#### Key factors influencing transport behaviours at Phase 2:

- Material factors – Rules and regulations (lockdown restrictions); Time and schedules; Infrastructure (availability of alternatives to cars)
- Social factors – Networks and relationships with family; Social norms
- Individual – Values, attitudes and beliefs (e.g. concerns about safety), Habits and Agency

#### Participant story: Peter



By September, more of Peter's regular clients required his services again. This meant that while his car mileage was not yet back up to pre-lockdown levels, it had increased to around 900 miles a month, and he expected it to increase further in the coming months. While driving he tried to cluster other jobs, like picking up his food shopping on the way home from work.

#### Participant story: Ellen



Since Ellen returned to work, she has returned to commuting by car. She knows that she could commute using public transport, but the convenience of the car is hard to give up. When she drives to work, she can leave whenever it suits her, and she doesn't have to plan her day around the bus routes. Ellen shared some thoughts on daily transport on her app diary:

*“The journey I made today was to go to work. I used my car because it is sat on my drive. I don't usually think about using other options to get to work – my usual excuses are distance, cost of public transport. But overall, as a household we are looking at reducing our car usage and looking at other methods we can use on our days off.*

*All my journeys yesterday had more than one purpose, I used my return journey home from work to do my weekly shop. I then later went to an exercise class and called to see my daughter and Grandson on the way. I have always done this, usually to reduce the number of journeys.”*

**Participant story: Susan**

Susan and her family had been considering reducing their overseas flights due to concerns about climate change, and she feels that COVID-19 has hastened that change. It made them realise that they can be happy staying at home and holidaying within Scotland, and that they can sacrifice an overseas holiday if it means they are helping to reduce carbon emissions. For their next holiday they expect either to remain in Scotland or to travel to France without taking a flight.

**3.3.3 Walking and cycling**

While walking and cycling had increased in the early stages of lockdown, levels of both had decreased between Phases 1 and 2.

**A reduction in walking and cycling was partly due to participants having less free time than they did earlier in lockdown;** with working hours increasing and children being back at school, participants felt they now had less time on their hands. For example, one participant described having cycled more at the beginning of lockdown because “life had slowed down” and she had more time, but that her return to work meant that “time is now in much shorter supply.” The change in weather was also noted as a reason for both walking and cycling levels decreasing.

Thinking about future cycling behaviour, a few said they would cycle more if they had friends or family to go with. Those who already cycled in clubs or with friends said that this had helped make the experience more enjoyable and motivated them more.

*“I think I found it easier [to cycle] when the initial restrictions lifted where you were able to meet up with one other person, that made it easier... I have got a friend that lives round the corner and [...] we decided we would meet up and go out once or twice a week.”*

*Male, 48, Working, Glasgow*

**Participant story: Susan**

Susan had barely used her car since lockdown restrictions were place, apart from giving her daughter a lift to the bus stop when schools reopened in August. Though she misses seeing other people, she does not miss the stress of driving into town when it is busy and the feeling of “rushing around”. She and her daughter had started cycling more at the beginning of lockdown, though this has decreased as her daughter was back at school. Susan would like to cycle more and would take her bike to go shopping if it was easier to do so; there are no cycle lanes where they live, and it can feel unsafe cycling on the main road.

### Key factors influencing walking and cycling behaviours at Phase 2:

- Material factors – Time and schedules;
- Social factors – Networks and relationships with family and friends
- Individual – Values, attitudes and beliefs (e.g. willingness to walk or cycle in poor weather)

### 3.3.4 Food shopping

Shopping habits had changed a little since Phase 1, with some returning to shopping in person at supermarkets instead of online.

Those who had returned to shopping in person felt more comfortable doing so as shops were less busy than they had been earlier in lockdown, queues were not as long, they were fairly well-stocked, and people tended to wear face coverings. Those who were driving more also said that this meant they were going to the supermarket on their way home from work, as they were already out in the car. Though there were signs of an increase in shopping in person, this was still happening less frequently than before lockdown. Indeed it was common for participants to say that since lockdown they had been doing one large shop that would allow them to stock up their cupboards and freezer for a number of weeks, so as to minimise the number of trips they had to make to shops.

As noted in Phase 1, participants felt that planning their meals and food shopping had helped them to reduce their food waste. That said, one participant found that online food shopping made it harder to reduce food waste, since they couldn't choose foods with appropriate expiry dates the way they could when shopping in person.

Others were still avoiding shops as much as possible because they felt uncomfortable being in contact with large groups of people. Reflecting the timing of this phase (the week that further restrictions were announced) some participants also voiced concern about panic buying, noting that they had recently seen empty shelves in their supermarkets.



*“Early in the main part of lockdown I did as much of the food shopping online as possible. As lockdown restrictions eased we have done a mixture of online and in store shopping. We intentionally did a bigger shop including topping up on store cupboard staples. Hopefully this means for next couple of weeks we will just need to get fresh food.”*

*(Female, 32, Key worker, Children at home, Aberdeen)*

*App diary content*



*“I’m buying more fresh meat monthly to freeze rather than weekly, to curb amount of times I need to shop, Now buying less of cold meats as I found these were going to waste.”*

*(Female, 50, Working, West Lothian)*

*App diary content*

For the most part **those who were shopping more in local shops had continued to do so.** These trips to local shops were often made by walking or cycling and were mainly motivated by a desire to continue supporting local businesses. As one participant put it, “they have looked after this community during this time, so I think we should support them.” Shopping locally did not always mean buying local products; often trips to local shops were being made for small items such as bread and milk, to top up a larger supermarket shop.

Shopping locally was influenced by attitudes towards the quality and cost of produce. Some had continued to support local butchers and greengrocers and enjoyed the quality of the produce, though they noted the high costs which in some cases would prevent them from shopping this way more often. Fresh and unpackaged meat, fruit and vegetables were perceived as more expensive than more processed, pre-packaged foods. Those who were restricted by budget therefore felt they often had to buy food with more packaging. However, others felt that they would be prepared to pay extra for items that had less packaging and were therefore better for the environment if it was available.

### 3.3.5 Diet

**The behaviours that had been sustained most between Phases 1 and 2 were those relating to food, particularly planning meals in advance, preparing food from scratch, and batch cooking.**

A range of benefits of these behaviours were identified, including a reduction in food waste as a result of planning ahead, and enjoying eating healthier and tastier food that they had prepared. Cost savings as a result of fewer food takeaways and coffees were also noted. Again though, changes in schedules had impacted on the extent to which food behaviours were sustained – those who had returned to work or increased the amount they were working had occasionally returned to eating packaged sandwiches or other pre-made food from shops at lunchtime.



*"I'm at home today, so I'm making myself an omelette. A lot of the time at work I just grab a sandwich when I'm out and about. At home I'll rarely eat any ready-made meals"*

*(Male, 47, Key worker, children at home, Inverclyde)*

*App diary content*

One of the perceived benefits of planning meals and batch cooking was that it had reduced food waste, and participants felt that their **levels of food waste had remained low**. Participants using the app diary showed photos of the food that they disposed of after their main meals and after having unpacked their shopping, which illustrated a range of experiences; from those who had very little or no food waste, to those who threw away unused bread, meat and fruit that had passed their sell-by dates. Overall, however, participants felt that their food waste had reduced from pre-lockdown levels.

**Consumption of meat and dairy remained largely unchanged** since Phase 1: since the beginning of lockdown meat, fish and dairy consumption had gone up for some, and down for others, therefore no obvious overall pattern emerged. For those whose meat and dairy intake had increased at the beginning of lockdown, this had been linked to working from home and because of more cooking from scratch involving more meat and dairy produce being used. In terms of reduced consumption, two respondents discussed having used more plant milk than cow milk. Both cited health reasons for making this switch, and one also said it was also due to environmental reasons, having seen media coverage saying that plant milk was better for the environment.

#### Participant story: Peter

Now that Peter was driving more for work, he had also reverted to his pre-lockdown eating and shopping behaviours, both for reasons of time and because lunch is often provided for him by his clients. He felt pleased that he was no longer wasting as much food, as this meant he was spending less money.

#### Participant story: Ellen

Since the beginning of lockdown, Ellen has continued to cook a lot more and try new meals, but she hasn't seen much change in her food waste. Ellen is conscious of her consumption habits and tries to shop locally where possible. She has made a particular effort to shop from local businesses since lockdown, such as local butchers. She has also used the extra free time she's had over the last year to get more into gardening, and has enjoyed growing her own vegetables. Though she has grown vegetables for years, in lockdown she decided to use her free time to try growing a wider variety of produce.

### Participant story: Faith

Come September, Faith has kept up her new food habits of cooking from scratch and buying less take away and pre-made food. As well as saving money, she says her diet makes her feel healthier and that she has more energy. She also really enjoys cooking and trying new ingredients. She was brought up to not waste food, so she often batch cooks, freezes, and uses up leftover food. Though she feels there are health and financial benefits to planning meals and cooking from scratch, Faith doesn't mention any environmental considerations relating to her diet.

### 3.3.6 Household waste and recycling

**Household waste and recycling habits had largely returned to pre-lockdown levels. There was broad awareness of the need to reduce waste and participants were generally comfortable with the system they had in place for household recycling.**

As online shopping habits had returned to pre-lockdown levels, so too had packaging. Frustrations at the disruption to recycling collections early in lockdown had also eased as normal collections had resumed. Participants generally had separate bins (including separate internal kitchen bins) for disposing of packaging, food waste and general waste and said they felt comfortable using these.

There was broad awareness of the need to reduce waste, and particularly plastics because of their negative impact on the environment. However, this was less of a factor in the amount of waste participants disposed of due to a perception that it was largely out of their control due to the packaging produced in deliveries and in food packaging. Environmental considerations were more influential when it came to how people disposed of their rubbish, such as separating it and recycling. One participant suggested that individuals may make more of an impact through their recycling than through reducing flying, as recycling was a regular activity compared to flying which was typically once per year.

Despite a general understanding that recycling was a positive thing to do for the environment, there were still some questions about what could be recycled or how to dispose of particular items that presented barriers to those looking to deal with their waste responsibly. For example, some were unclear about whether they could recycle plastic food packaging along with their other household waste.



*"Our bins are just outside our back garden. We are usually pretty good at trying not to use too many disposable items and we have been able to stick to that throughout this time period. We are not throwing out a lot of food or anything which we used to before lockdown so I'm happy we have managed to find a way of being more efficient and planning our meals in advance to prevent food waste.*

*(Female, 24, Key worker, Clackmannanshire)*

*App diary content*

### 3.3.7 Home energy

Energy and water use remained largely unchanged since Phase 1, but were expected to be higher than pre-lockdown levels.

Participants once again said electricity and water use were likely to have increased due to more time being spent at home. Increases in both electricity and gas consumption were noted by those that monitored their energy use either by using a smart meter, by checking their online energy account, or by manually checking their meter readings. Those that did not monitor their energy use (and paid a fixed amount monthly that had not changed over lockdown) nonetheless speculated that they were likely to have used more energy.

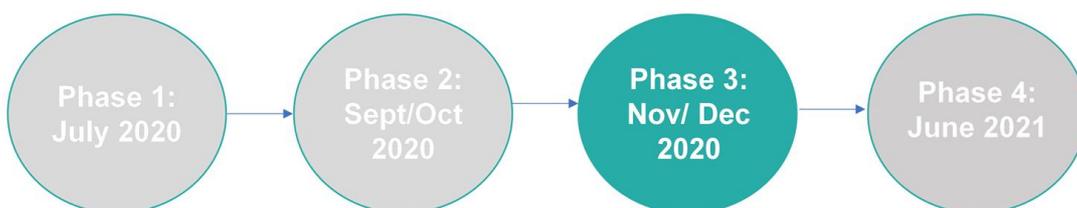
These increases were linked to participants spending more time at home and using more appliances on a day-to-day basis. Ovens, washing machines, dishwashers, tumble dryers, and computers were thought to be the biggest users of energy. Though home heating had not yet been used much, with colder months approaching participants noted this was likely to change.

Cost was seen as an important factor in home energy use but was generally not causing a great deal of concern. Participants typically did not consider making savings on their heating costs, although they did say that cost savings might encourage them to make changes such as investing in a more energy efficient heating system.

#### Participant story: Faith

Faith does not check her energy use regularly, as she has a fixed monthly direct debit, which did not change over lockdown. However, she feels like their energy is “bound to have increased” as she and her flatmate have been spending so much time at home. This does not worry her too much, as her employer offers money towards additional energy costs when she has to work at home. When discussing energy consumption, she does not mention environmental impacts.

### 3.4 Phase 3: November/December 2020



#### Behaviour changes since Phase 2:

- Online shopping ▲
- Household waste ▲
- Home energy ▲
- Shopping locally ▬
- Cooking from scratch/batch cooking ▬
- Food waste ▬
- Walking and cycling ▼
- Driving ▬
- Public transport ▬
- Flying ▬
- Home energy ▬

### 3.4.1 Introduction

Overall, participants' behaviours had not changed to a great extent between Phases 2 and 3. Though there were some changes to individual circumstances, such as some changes to working patterns, or people changing jobs, generally life felt similar to how it did back in October. The frequency with which people were leaving the home, and their day to day routines, were largely the same.

Phase 3 therefore looked very similar to Phase 2, reflecting the fact that lockdown restrictions had not changed to a great extent. Where changes in behaviour had been noted, these were seen as linked to the time of year. For example, in the winter months, levels of walking and cycling had decreased while use of home heating had increased.

There were few strong opinions about specific net zero behaviours in this phase. However, overall there was a notable difference in the mood and mindset of participants compared with the previous phase. It was common for them to say they were tired of restrictions and “fed up” with lockdown, a feeling exacerbated by the prospect of colder, darker winter days. Some also noted the negative mental health impacts of living under restrictions, including worry and anxiety over the virus itself.

Phase 3 also saw more in-depth discussion about the factors underlying certain behaviours, including the extent to which participants might sustain or change behaviours in future. Participants were therefore asked to look ahead more, particularly in relation to electric or hybrid vehicles, cycling, and reducing meat and dairy consumptions. These factors are therefore outlined in more detail in this section.

### 3.4.2 Transport and travel

**Levels of driving and use of public transport were similar to those reported in Phase 2, though generally remained lower than they were before the first lockdown. While there was support for electric and hybrid vehicles in principle, a number of potential barriers to switching were identified.**

While levels of driving were largely similar to Phase 2, exceptions to this were those who drove as part of their jobs, who were either driving at the same level as pre-lockdown or were driving more (for example, a delivery driver who was busier with Christmas deliveries).

As noted in previous phases, the amount people drove was very closely linked to their time and schedules, particularly working patterns and other daily routines such as children being at school. Participants said that the amount they drove could change depending on their work situation; for example, it increased or decreased depending on the amount they (or partners) were able to work from home. With driving so closely linked to daily routines, it was clear that habit was also an important factor.

Reflecting on what driving meant to them, participants who drove had strong associations between driving and “freedom” or a sense of independence. This reiterated the barriers to reduced driving mentioned previously, as public transport was considered less tailored to individual needs. Driving was described as “essential” and “a necessity” by those who relied on their cars for work and who lived in places without suitable access to public transport.

*“For me driving is essential. I need a car for my job. Plus it gives me freedom. Public transport options are limited here, and I can't get on and off a bus easily with a dog, a pram, a toddler. So if I didn't have a car I would be much more limited.”*

*Female, 31, Working, Children at home, Aberdeen*

Use of public transport was also largely unchanged since phase 2. While some said they would like to use public transport instead of driving, there were a number of barriers related to infrastructure. Issues included bus stops being too far from their home, buses being infrequent,

or journey times being longer than the equivalent by car. A few also noted still having concerns about the safety of communal modes of transport due to the pandemic, which had led them to replace their usual train or bus journey with driving.

It was noted that ongoing restrictions had decreased some participants' ability to cut down on their transport emissions, for example prohibiting people from car-sharing. For example, one participant had driven more since Phase 2 after returning to work, as the colleagues he previously car shared with now had to travel separately to maintain social distancing.

In this phase participants who drove were specifically asked for their views on switching to electric and hybrid vehicles (EVs and HVs). Participants were generally positive about EVs and HVs, recognising that they were the more environmentally friendly option compared with petrol or diesel vehicles, and several were actively considering it for their next car. It was also noted that fairly soon there would be no choice, with the phasing out of fossil fuel cars. However, a number of issues were raised that highlighted some of the perceived barriers to switching to an EV or HV:

- **Cost**, with participants aware that electric vehicles were more expensive to buy than a petrol or diesel car. Some felt they would be willing to switch in the future if the cost came down, while one participant noted that they might switch sooner if a grant or financial incentive scheme became available. Financial incentives are explored in more detail in chapter five.
- Issues related to **infrastructure**, with concerns about the availability of public charging points and those in flats saying it would be impractical for them to charge electric vehicles at home. A barrier to switching to electric cars was a concern that the technology was not yet good enough to do the amount of mileage that some participant felt they needed, which was of particular concern to those who drove long distances for work or to visit relatives.
- Some **knowledge gaps (skills)**, for example lack of clarity on how long the battery life would last and where charging points were located.
- Individual **taste**, with some criticism of how electric or hybrid vehicles looked and the range of cars available, with one participant describing them as looking like “toy cars” which they felt to be off-putting.
- The influence of **networks**, as knowing people who had an electric or hybrid vehicle was important when participants considered switching themselves. Those who knew somebody with an electric or hybrid car had heard positive reviews from people they trusted, which helped them form a positive opinion on the technology. Not having these reviews from others was seen as a potential barrier.

*“Without having my own driveway to charge an electric car, then they don’t make a great deal of sense for me. But I would look at hybrids for my next car because we are doing less mileage now, plus environmentally I wouldn’t want to have a fully fossil fuel car. They feel more expensive upfront, but presumably they are cheaper to look after.”*

*Male, 52, Not working, Edinburgh*

**There was little change in flying behaviour** since Phase 2, reflecting the ongoing travel restrictions that had been in place. Aside from a couple of examples of cancelled or postponed trips, for the most part participants had not made any travel plans during this period. Mixed feelings about flying were still apparent. Some emphasised the important role it typically played in their lives, associating it with a sense of adventure, escape, and a break from daily routines. Others, however, remained cautious about flying again as a result of potential travel chaos and the health risk of the virus. While environmental concerns were not front of mind, there was an awareness that flying had a negative impact on the climate and after not being able to fly for so long, one participant described feeling uneasy about returning to this behaviour in future.

*“I think we have all realised we can’t go on the way we’re going, and we are already starting to feel guilty about thinking about going on holiday again which involves flying. We have thought that we will probably go by maybe Eurostar if we ever wanted to go to the continent, or ferry or some other way other than flying.”*

*Mini-group participant*

#### Participant story: Peter



By December, Peter’s job had got much busier, meaning his work mileage had increased to a similar level to what would have been this time the previous year. He was content with this level of driving, as driving is something he enjoys doing.

His behaviours are not driven by environmental motivations, but by other factors such as price and convenience. For example, he would consider switching to a hybrid vehicle if a good deal was available, but wouldn’t consider an electric car at present, due to the high number of miles he often needs to drive in a single work trip.

### 3.4.3 Walking and cycling

**Overall, levels of walking and cycling had decreased since Phase 2. There was appetite for more cycling in future, but a number of barriers to doing so were raised.**

**Overall, levels of walking and cycling had decreased** since phase 2, mainly attributed to the weather. However, there was an appetite for more cycling once the weather improved again. Participants who cycled generally described it in positive terms, making reference to the sense of freedom it provided them, as well as the health and wellbeing benefits of cycling for exercise. For the most part cycling was carried out for recreational purposes, as a form of exercise or for socialising, rather than in place of journeys that might be taken in a car, such as food shopping. When thinking about the likelihood of cycling more in future, a number of barriers emerged, many of which were seen as beyond participants’ control (particularly those in relation to infrastructure). However, participants did feel that they would be encouraged to cycle more if certain conditions were in place:

- **Cycling infrastructure**, in terms of cycle lanes, cycle routes, racks and storage. In one sense this was about the practicalities of cycling; having somewhere to shower and store their bike at work or being able to take bikes on a bus or train. More commonly, however, infrastructure was linked to **perceptions of safety**, with some participants feeling it was dangerous to cycle on busy roads that did not have dedicated cycle lanes. Linked to concerns about safety was a perceived need for awareness raising among drivers about road safety in relation to cyclists, since cars and bikes often share the same roads.
- **Objects** such as bikes, equipment and clothing, were generally not seen as a barrier, as most participants that were interested in cycling more already had access to a suitable bike, and felt the equipment needed was accessible and affordable. However, the lack of storage on a typical bike was off-putting when participants considered tasks like carrying shopping.

- **Opinion leaders** One participant said that she might be encouraged to cycle more if she heard or saw more about it in the media. Another noted that there was anti-cycling sentiment in some media and felt that dispelling of myths and more positive promotion of the benefits of cycling would help encourage more to take it up.

*“Good cycle lanes and routes would definitely help [encourage me to cycle more]. I tend to cycle on the roads because there isn’t an alternative. And the roads are so busy that safety is a concern... my daughter used to come out with me cycling when we were in lockdown, as there were no cars on the roads. I wouldn’t encourage her to when roads are busy.”*

*Male, 48, Working, Glasgow*

#### Participant story: Henry



By December Henry found he had not taken his bike out in weeks. He put this down to a few reasons - his life got busier, the weather changed, and he went through some stressful times in his personal life, meaning it no longer suited him to take the bike out. He is keen to get back out on his bike again, but feels there needs to be improved cycling infrastructure to make it safer, and public information to help educate motorists on how to share the roads safely with cyclists.

### 3.4.4 Food shopping and diet

**Food behaviours were largely unchanged between Phases 2 and 3, with meal planning and cooking from scratch still apparent. However, there were a few examples of old habits returning. Attitudes towards consumption of meat and dairy were explored in detail this phase, with a range of factors influencing views.**

**Food shopping and diet behaviours were largely unchanged** since the previous phase, though there were a few examples of the healthier eating patterns established earlier in lockdown being replaced with a return to quick, convenient pre-packaged meals and takeaways. As one participant put it, some of the “good intentions went out the window” as time went on.

In this phase, more time was spent discussing future diet choices, particularly consumption of meat and dairy. Those who ate meat and/or dairy were largely content with the amount they consumed and had no plans to change. However, a few were aiming to reduce their meat and dairy intake in future, mainly due to health-related benefits but with environmental reasons also influencing their decision. When asked to reflect on their likelihood of reducing meat and dairy in future, a range of factors emerged:

- Different **attitudes** towards the meat and dairy industry were apparent. While some avoided meat and dairy for animal welfare reasons, others distinguished between ‘good quality’ Scottish produce as opposed to imports. There was also a sense that buying meat and dairy helped to support local businesses and the Scottish economy. There was some awareness that meat and dairy products had a higher carbon footprint than other foods, and one participant explained that they had recently switched to plant-based milk for this reason.
- **Skills and knowledge** also had an impact. Some felt they would not know how to prepare appealing plant-based meals and would not know what to replace meat and dairy with. Another barrier to changing to a more environmentally friendly diet was simply not knowing

which foods were better or worse in this regard, whereas knowledge on other net zero behaviours such as waste and recycling was more widely understood.

- Individual **taste** and **habit**, meaning a general reluctance to change from what people were used to and enjoyed. One retired participant felt it was harder to change dietary habits at a certain age, as you have been having the same meals for most of your life. Another suggested it would be easier for people to switch to vegetarian or vegan diets if they were introduced to a wider variety of foods as children to help them develop a taste for it, or 'learn to like all the foods'. Some felt that taste would be an important factor for eating more plant-based meals in the future.
- **Cost** was seen as a potential barrier to reducing meat and dairy consumption. Meat free options (including both meat substitutes and fresh vegetables) were considered generally more expensive than some types of meat. Some therefore felt they would be open to trying more meat free options if they were cheaper. However, there was a view that this was more about knowledge and skills and that if people knew how to shop for vegetarian food better it would not necessarily be expensive. Among those who consumed meat, there was a belief that if the price increased, they may buy it less often.
- **Media** had also influenced some to reduce their consumption of meat and dairy, for example watching TV programmes and David Attenborough's documentaries. One participant was specifically avoiding fish after watching a programme about the negative impacts of trawling and other related practices.

*"My daughter eats vegan food and it looks vile - [it could be made to] look more appealing"*

*Female, 50, Working, West Lothian*

#### Participant story: Henry



Henry eats meat and dairy, but his wife has recently returned to a vegetarian diet for health reasons. He feels that the meat and dairy available in Scotland is generally of a high quality and is therefore healthy, so does not plan to reduce his consumption. He feels that greater choice of plant-based produce might help make this a more attractive option. However, he is worried about some of the ingredients in plant-based foods – he feels a lot of them are processed and have unrecognisable ingredients listed on the packaging.

#### Participant story: Susan



Though Susan considers herself as an environmentally conscious person, she still feels there is more that she could do. All of their food shopping comes from a large supermarket, as there are a limited number of shops close to them. She says that the food shortages in the early stages of COVID-19 made her more aware of how fragile things can be in the food supply chain, which prompted them to think more about food shopping. She feels they do not pay enough attention to where the food they buy comes from, so plans to try and buy more local produce where possible.

### 3.4.5 Household waste and recycling

Since phase 2 there had been some increase in the amount of packaging being used in households, due to deliveries of Christmas shopping which was largely being carried out online. Otherwise, levels of household waste and recycling were similar.

Participants were already taking a range of actions to help reduce and manage their household waste, including recycling, buying loose fruit and vegetables, avoiding single use plastic or plastic packaging, and repairing items. Generally, participants felt there was not much more they could do to reduce their household waste.

Food packaging was seen as difficult to reduce, as pre-packaged items (such as fruit and vegetables) were considered easier to access and cheaper than loose or low-packaging alternatives. There was a suggestion that supermarkets bore more responsibility for the reduction of packaging waste and that consumers currently had very little choice in this regard. Similarly, there was some concern that a 'throwaway culture' encourages people to buy single use items and fast fashion. Without changes being implemented by retailers and manufacturers, participants felt they were restricted in the extent to which they could reduce their own household waste.

The influence of habit and participants' own values were apparent in attitudes toward waste. A few talked about repairing items, including electrical items, clothes, shoes, because this was something they were brought up doing and simply because they enjoyed doing it. These participants also said that avoiding waste was simply one of their values, and part of 'who they were' as individuals. This had influenced their behaviours in relation to trying to minimise household waste and food waste and trying to repair items rather than throw them away.

### 3.4.6 Home energy

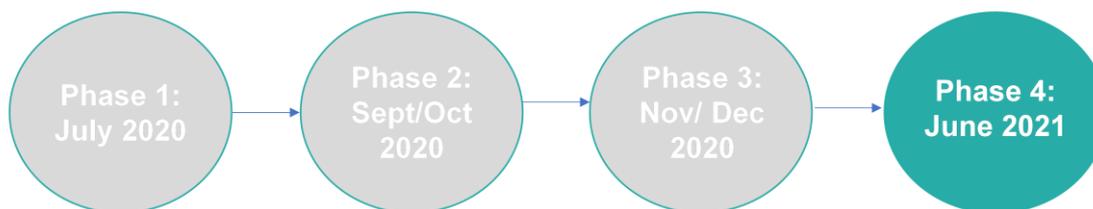
Electricity use had not changed a great deal since Phase 2, though some reported it was higher than pre-lockdown levels due to more time being spent at home. Home heating was being used more than in Phase 2 due to a combination of the time of year and the amount of time being spent at home.

Participants gave several examples of changes they had already made to help reduce their energy consumption. These included improving the energy efficiency of their homes through double glazing, wall and loft insulation, or buying more energy efficient appliances and lightbulbs. There was less evidence of energy-related behaviour changes, such as turning thermostats down, reducing temperature on washing machines, or limiting the use of electrical appliances. However, when prompted, participants acknowledged that they could make these changes.

Smart meters had helped some participants become more aware of their energy consumption, and encouraged them to make adjustments (for example, reducing the amount they used their tumble dryer). However, others said these had not made much of an impact on their energy use. There was also some reluctance to get a smart meter due to concerns about their accuracy and reports of technical faults. A couple of participants used a Hive to monitor and control their energy use, but did not feel this had changed their behaviour significantly.

In relation to energy consumption, one participant said that he might be influenced to change energy provider if it was recommended by his neighbours (having set up a neighbourhood WhatsApp group since lockdown started). Another described how her neighbour had installed an air source heat pump, which had led her to explore this option for her own home.

### 3.5 Phase 4 (June 2021) and looking to the future



#### Behaviour changes since Phase 3:

- |  |                         |
|--|-------------------------|
| - Driving ▲                            |                         |
| - Public transport ▲                   |                         |
| - Online shopping ▬                    | - Walking and cycling ▬ |
| - Shopping locally ▬                   | - Flying ▬              |
| - Cooking from scratch/batch cooking ▬ | - Home energy ▬         |
|  | - Food waste ▬          |

In this final phase there was a sense of certain aspects of life beginning to return to pre-pandemic levels. Participants talked of spending less time at home than in the earlier stages of lockdown, and were spending more time seeing family and friends, returning to places to work, and doing more shopping in person. However, there was still a sense that life had not fully returned to normal, with levels of driving, public transport use and flying all still lower than they were pre-pandemic.

Participants were generally a little more positive in their outlook than they had been in the previous phases. Some participants were looking ahead to a different way of working, with hybrid working between the office and home being considered as likely long-term approaches. Others mentioned looking forward to being able to see more of family and friends over the summer.

As participants reflected on the changes over the past year, and looked ahead to life post-COVID-19, there was an appetite for a number of the changes to their daily lives to be sustained. These included:

- less reliance on cars
- more use of public transport and cycling where available
- shopping locally
- reducing waste
- meal preparation and cooking from scratch.

Participants were broadly aware of the benefits of reducing carbon emissions and showed an interest in making changes that would help make a positive contribution to climate change. However, as already outlined in chapter 4, sustaining some of these behaviours was conditional on a number of factors being in place, such as transport infrastructure, affordability and time.

In this section we look at participants' views on working from home in future, as this was of central importance to participants' daily routines and acted as a catalyst to many of the other interlinked net zero behaviours (this is explored further in section 3.6). We then focus on three key topics that participants discussed in the context of future behaviour: transport (including driving, public transport and cycling), shopping (including circular economy principles), and diet (including meat and dairy consumption). These topics were selected for coverage in this final phase because of their wide relevance to participants and their potential for behaviour changes made during the pandemic to be sustained.

### 3.5.1 Working from home

There was a general feeling among those who had switched to working from home during the pandemic that this practice had now become 'the norm' and that because of this, they expected to continue working from home to some extent in the future. This was seen as contributing to longer-term changes to transport behaviours based around commuting and for other behaviours linked to daily routine and people's time and schedules outlined earlier.

Over time, there were cases of participants forming new habits which they had enjoyed and hoped to maintain in the longer run, particularly walking, cycling and cooking from scratch. There was also a shift in attitude towards home working as people became used to it, and some participants who had not initially welcomed the change were happy to work from home at least some of the time going forwards.

### 3.5.2 Transport

#### Driving

**There were mixed views on whether changes to transport behaviour would be sustained, but overall there was a desire for reduced reliance on cars and a shift towards either EVs or alternative forms of transport.**

As lockdown restrictions had gradually eased and participants had re-established routines, driving levels had increased, particularly for those using their cars for work, school runs or children's activities. However, participants were still driving less than they had been prior to COVID-19 restrictions. Those who drove for work were still driving either around the same amount or more than they had been, but even these types of drivers were driving less outside of work meaning an overall reduction in mileage. For example, one participant noted that they would usually have driven 12,000 miles over a year but had done 6,000 since the same time last year, because of fewer leisure trips.

No strong feelings about driving were expressed, though some did say they missed being able to drive for leisure purposes. One participant talked of missing "fun mileage" associated with driving for day trips or visits to family. However, some of the positives about reduced travelling noted at Phase 1 were echoed again: less time spent travelling, less money and less use of fuel.

For those who had enjoyed a reduction in driving over lockdown because they were not having to commute as much, this was something they wanted to sustain. These participants had enjoyed having more free time as a result of less commuting, and did not want to return to the hassle and stress of navigating busy traffic every day. However, those that drove for work felt that the amount they drove was unlikely to change in the near future. The exception to this were older participants who were approaching retirement, who anticipated driving much less once they no longer needed to for work.

Echoing findings from earlier phases, there was also a sense that there was a lack of options when it came to modes of transport that met the needs of participants, meaning driving was often seen as the only way of getting to certain destinations or carrying certain tasks.

*"I don't really have a choice, so I really have to drive. The bus service has been cut and it is quite limited. If I wanted Edinburgh and I wanted to take the bus, I've got to get a bus from our village to another village, to link up with another bus, and then if I wanted to come back after half past six, basically I have got to arrange for someone to come and pick me up, so it kind of defeats the exercise."*

*Mini-group participant*

When thinking about driving in future, there was an expectation that they would be using EVs rather than petrol or diesel vehicles. However, as previously noted, the appeal of EVs was dependent on three key factors:

- 1) the upfront cost of the vehicles being affordable
- 2) more widespread availability of charging points
- 3) and having confidence that the range would be long enough for the journeys they typically made.

Participants were broadly aware of the environmental benefits of EVs over petrol or diesel vehicles and felt their current environmental impacts could be improved with a shift to EVs. However, there was some scepticism. One participant felt that their reducing driving or changing to an EV would be unlikely to have much impact, compared with changes that could be made by industry or by the public sector – for example, they felt it more important to ensure that public transport and council vehicles were all electric. Another was more generally sceptical about the impacts of human activity on climate change and therefore felt ambivalent about his own transport choices in relation to climate change.

#### Participant story: Peter



In June 2021, Peter has been very busy in work again, continuing to drive a high number of miles each week. Some of his longer journeys have been 250 mile round trips in a day. Peter feels that he does not have a great deal of choice about the amount he drives.

Thinking ahead, Peter had no intention of changing the way he drives, until he retires. He is fairly ambivalent about his future driving behaviour - he still enjoys driving but would like to slow down and do less when he retires.

He does not think his own driving has an impact on climate change. He feels that “*me, one person, is not going to make a lot of difference...if any*”. He would consider an electric vehicle, but would need some reassurance that he could do the same amount of mileage on a single charge as he does now. He thinks that more charging stations are important, especially in a rural area such as his. He also feels that the upfront cost of electric vehicles should be cheaper.

#### Participant story: Ellen



Five years from now, Ellen expects to still be driving to work and thinks her husband might have returned to driving to work too. However, she thinks they may have invested in an electric car by then. Ellen would like to see better infrastructure in place to make it easier for people to choose electric vehicles.

*I think in five years I will still be travelling to work, [but] if my husband has been working from home in lockdown and hasn't been into the office apart from one day, so we have rationalised the number of cars that we have. So, we share a car now, [but] if he goes back to the office that dynamic might change. So, we might look at alternative, you know, like electric cars, something more environmentally friendly, so that might be a change perhaps we wouldn't have got to quite as quick if this hadn't have come along.*

## Public transport and cycling

While there had been some return to public transport, there were lingering concerns about the safety of communal modes of transport due to the pandemic. There was interest in using public transport or cycling as alternatives to driving, but infrastructural barriers were again raised.

Use of public transport varied. While some had returned to public transport for commuting or leisure purposes, for others it was still below pre-pandemic levels, driven by concerns about safety and a desire to avoid crowded transport.

*“At the moment you still have to socially distance, so the numbers that can be on a bus or train is vastly reduced. You’re not guaranteed to be able to get on. So it is easier to take your car, then you can go where you want when you want. The first lockdown there was a public message saying not to use public transport unless you really have to - I’m not aware of any other message saying we can now use it.”*

*Female, 32, Key worker, Children at home, Aberdeen*

There were a number of infrastructural barriers for participants to using public transport instead of driving, even when participants said they would like to do this in theory. Issues included bus stops being too far from their home, buses being infrequent, or journey times being longer than the equivalent by car.

*“The only reason I don’t take [the bus] is because the loop it does goes in the opposite direction, through the other villages nearby, so it takes like an hour. So I can drive in six minutes or sit in a bus for an hour”*

*Mini-group participant*

Looking ahead, there was some interest in using more public transport as an alternative to driving, but this was dependent on it being safe to do so (when there is no longer a risk of COVID-19) and on it being available and convenient to use. Participants living in more rural areas who said public transport was not available or convenient felt that this was unlikely to change and therefore felt restricted in their choice, with driving being seen as their only option.

There was also some interest in cycling either continuing or increasing in future, being seen as a healthy and enjoyable means of transport. However, this was once again dependent on suitable infrastructure being in place: cycle lanes or safe cycling routes.

Key factors influencing whether transport behaviour changes would be sustained or change further:

- Material factors – The upfront cost of EVs, the availability of charging points, and vehicle range; Availability of public transport; Availability of cycle lanes and routes
- Individual – Feelings of safety using public transport and cycling

**Participant story: Henry** 

Five years from now, Henry expects to own an electric car – his wife is set on it, and he feels positive about the idea too. He knows that once you have an electric car, the running costs are cheap. He also expects to limit his flying to only once a year, as he's conscious of the environmental impact.

In five years, he expects to have stopped working completely, so he won't be driving for work anymore. He thinks he'll be back to using his bike more for local errands and visits, and the electric car for longer trips.

**Participant story: Faith** 

Faith started a new job in October, as a care worker, meaning she now leaves the house every day. Faith takes the bus to work (she does not drive or cycle). Before she made her first trip on the bus (for the job interview) she felt very anxious about the spread of the virus on public transport, but was very reassured when the bus was very quiet, people were wearing masks and keeping their distance. Now she is used to be on public transport again and feels comfortable using it everyday, as it is usually very quiet when she is on the bus. However, Faith is starting driving lessons and would like to get a car when she is able to. She feels this would give her a bit more freedom to get around and would be more convenient than the bus for getting food shopping.

**3.5.3 Shopping**

**Thinking about future shopping behaviours, a mix of approaches were deemed likely, with shopping online, in supermarkets, and in independent shops all set to continue. Overall there was interest in buying more locally and reducing waste.**

In relation to non-food shopping, participants generally felt they were still shopping much less than they were before lockdown. However, there were some examples of participants returning to shopping in stores as restrictions had eased and enjoying being able to do so.

In relation to food shopping, a mix of shopping behaviours were apparent at this phase. In relation to food, online deliveries, supermarkets, farm shops, vegetable boxes and meal delivery schemes (such as Hello Fresh) were all mentioned. Some described having recently become more interested in food provenance meaning they were buying more local produce, either at a shop or through box deliveries. These were viewed as positive changes, with benefit in terms of quality of produce, taste, support for local industry, and reducing negative climate change impacts.

*"I started going when I can to a local farm shop, which I have really enjoyed. They tend to be a little bit more pricey because it is home grown but you pay for what you're getting which I don't mind... I like the fact that it is not sitting in the back of a lorry coming from miles away, it tends to be less processed stuff, no pesticides, and it's tastier.*

*Male, 20, Working, Stirling*

Reflecting the sentiment raised in earlier phases, for some there was a continued sense of pride and connection to the local community which fostered a feeling of obligation to support independent local shops and businesses.

*“There’s some lovely wee shops there and nice little restaurants and cafes and these are all local people trying to earn their crust, and I would like to think I helped them do that.”*

*Mini-group participant,*

How people shopped was also shaped to an extent by local **infrastructure** - which shops were in their local area and what was available. Participants explained that there were certain items, such as vegetarian or vegan products, that they could only find in a supermarket so they could not rely solely on using smaller local shops.

Though some felt it was likely they would still use online shopping due to its convenience, others questioned their own use of online retailers such as Amazon. The number of deliveries, transport and packaging used were seen as having negative climate change impacts, which participants were keen to see reduced. Related to the shift away from online shopping was a desire for waste to be reduced, both in terms of packaging and food waste. Again, it was felt that this was dependent on supermarkets and manufacturers reducing the amount of packaging they used.

*“I would like to think in the future I will continue to do that, like I will stop buying things off of Amazon or the kind of like generic ones and I will try and stick to little businesses in the UK, because I think the last year kind of showed you that like everybody, you need to help each other out a wee bit.”*

*Mini-group participant*

While there was an interest in supporting local independent shops and buying more local produce in future, the higher cost of independent shops (compared with supermarkets) was mentioned, meaning cost may be a barrier to this change. That said, some felt they would be willing to pay more for local produce as they felt the benefits justified the higher cost.

Generally there was hope that these combinations of changes, such as more local or home grown produce, less packaged products and less waste, would have positive climate change impacts. In terms of what would need to be in place, the main factors were availability and cost – having more local produce and items with less packaging available in shops, at an affordable price. There was also a desire for more information to help people make environmentally friendly and informed decisions. For example, local councils could facilitate better waste behaviours by providing more information on how to separate rubbish and what can be recycled and what cannot.

*“Give direction [...] the councils they maybe have the job of disseminating that information or making it available, because that’s where I go is to my council tip and separate all my things out, which I do to the best of my ability.”*

*Mini-group participant*

**Few participants talked about the circular economy principles of re-using and repairing, and there was low awareness of ‘circular economy’ as a term.** However, a few participants did say that in future they would like to see a move towards items being repaired rather than replaced, as a way of helping reduce waste. They would welcome more information on how they could best do this.

Key factors influencing whether consumption behaviour changes would be sustained or change further:

- Material factors – Affordability of local produce; Availability of alternatives to packaged produce from overseas
- Individual – Understanding how to repair items rather than replace; Understanding more about the provenance of goods

#### Participant story: Henry

When thinking about how he would be shopping five years from now, Henry expects things to be much the same – using local shops for groceries and occasionally driving further for a better supermarket, supplemented by some online shopping. He feels happy enough with the environmental impact of his shopping and eating and expects it to be similar in five years.

### 3.5.4 Diet

**Participants were largely keen to sustain positive food behaviours including meal planning, cooking from scratch and eating fresh produce.**

**The interest in sustaining positive food behaviours was emphasised again** in this phase. It was noted that food had become more important over lockdown, and meals were seen as more of an “event” because of spending so much time at home. Some of the food behaviours seen in the earlier stages of lockdown had therefore continued, including meal planning and cooking from scratch. However, some mentioned that over time they had become less adventurous with the meals they were planning and had started to return to preparing dishes that were quick and easy.

A recent emphasis on local provenance had also meant that people were thinking more about the types of food they were eating. As well as trying to buy more local produce, in this phase a few participants noted that they were thinking more about their meat consumption and trying to reduce it.

*“There is a lot more emphasis on food when we have been stuck at home - there is nothing much else to think about or look forward to. Because we have been thinking more about food, we have noticed more where food is coming from and stopped buying like blueberries from South Africa. And we are definitely moving away from meat, even now fish because of watching TV programmes and about trawling, etcetera.*

*Mini-group participant*

In relation to future meat and dairy consumption, views were mixed. A few participants discussed having reduced their meat and dairy consumption over lockdown and expected to do so more in the future. These intentions were driven by a combination of health and environmental factors. However, they were not common. Others did not expect much change in their meat and dairy consumption and questioned the extent to which this would have positive climate change impacts. Some felt that buying local, responsibly farmed meat and dairy minimal negative climate change impacts when compared with large scale food production and items that were sourced from overseas. It was also suggested that reducing meat and dairy may have negative impacts on the agricultural industry in Scotland.

One participant referenced their role as parent when deciding whether to buy meat and dairy products. Although they personally would like to reduce their intake, they decided to buy meat to make sure that the children were getting a range of nutrients and to give them a personal choice about whether to be vegetarian or not.

As noted earlier, skills and knowledge also had an impact on whether people felt likely to reduce their meat or dairy consumption. It was suggested that if supermarkets promoted more meat and dairy-free foods and made them more visible to customers, it would increase the amount that people bought.

*“You also need [...] to know what to replace meat and cheese with, you know, [...], you might know intellectually that it is a good idea, but unless you know practically how to make it happen it might just fall by the wayside.”*

*Mini-group participant*

Key factors influencing whether food behaviours would change/be sustained:

- Material factors – Affordability of local produce; Availability and affordability of alternatives to pre-packaged convenience foods;
- Individual – Enjoying eating different foods including alternatives to meat and dairy; Having the skills to grow food, and to prepare non-meat alternatives

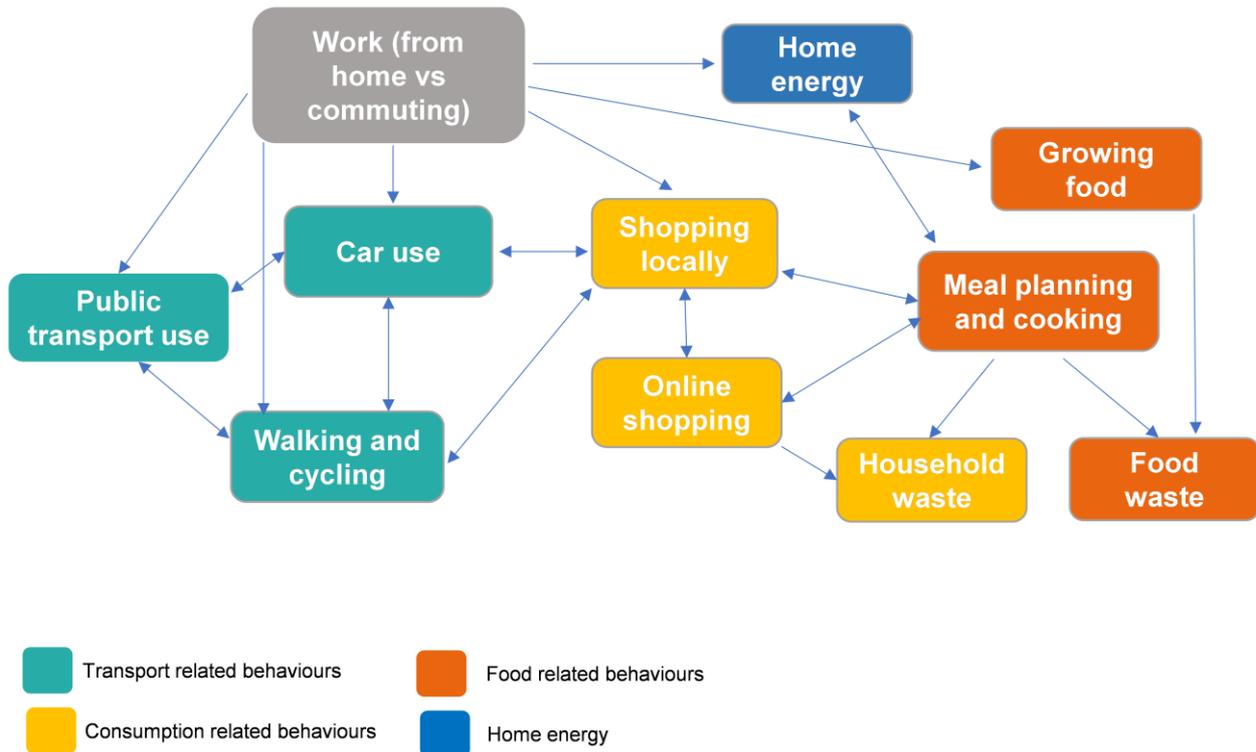
### 3.6 Interlinked behaviours

Changes in daily patterns as a result of the pandemic – such as working from home – have been a central driver of adoption of net zero behaviours. The behaviour changes that flowed from this disruption to daily schedules were wide reaching and did not take place in isolation, with many net zero behaviours being interlinked. The importance of interlinked practices has been discussed in previous research for ClimateXChange<sup>12</sup>, which has highlighted how certain practices cut across the main household consumption emissions domains.

The relationships between behaviours are illustrated in figure 3.3 below. Changes to work were central in bringing about change in many of the other behaviours, as they impacted on many of the individual, social and material factors shaping behaviour (such as time). Three further links emerged:

- 1) Transport behaviour was linked to shopping behaviour. A reduction in car use had led to an increase in online shopping or making shorter journeys by foot to local shops. Fewer trips by car also led to combined practices, such as picking up grocery shopping on the way to or from work.
- 2) Shopping behaviours were linked to food behaviour. Spending more time at home had resulted in an increase in both online shopping and shopping in local independent shops, both of which were used to help with meal planning and cooking from scratch. These food preparation behaviours had an impact on food waste.
- 3) Shopping behaviours were also linked to household waste, with an increase in online shopping contributing to higher amounts of packaging to dispose of.

<sup>12</sup> Climate Change Behaviours – Segmentation Study. Black, I., and Eiseman, D., 2019. Available at: <https://www.climatexchange.org.uk/media/3664/climate-change-behaviours-segmentation-study.pdf>, last accessed 23<sup>rd</sup> September 2021

**Figure 3.3: Interlinked behaviours**

### 3.7 Summary

Viewing behaviours through the ISM lens highlights the range and complexity of factors influencing net zero behaviour change. While initial behaviour change was largely a consequence of emergency lockdown restrictions introduced to contain the spread of the virus (or rules and regulations, to use ISM terminology), over time it was clear that net zero behaviour changes were not solely a response to those restrictions. That said, the easing of restrictions over time had seen the return of some former behaviours and the lessening of some of the newer behaviour changes. A number of factors under each of the Individual, Social and Material contexts were at play, with some of the most dominant being: participants' own values, attitudes and beliefs; their time and schedules; the supporting infrastructure and objects required; and the networks and relationships surrounding them.

The ISM tool also highlights the interconnectedness of behaviours. The centrality of work was again apparent, with disruption to time and schedules, and change of daily habits having knock-on impacts on a range of behaviours such as transport, shopping, food and energy consumption. Beyond those work-related changes, each of the other factors highlighted in this section were also driving more than one type of behaviour. For example, infrastructure and objects, networks and relationships, and values, attitudes and behaviours each influenced a range of different net zero behaviours.

## 4 Views on government action

This section looks at what government could do to help encourage net zero behaviour change, including participants' reactions to potential interventions designed to help encourage or discourage certain behaviours.

### 4.1 Role of government

Before considering specific examples of approaches to encourage behaviour change, participants discussed the role of government more generally in relation to transport, shopping and diet. Drawing on the Government as a System Toolkit<sup>13</sup>, four potential approaches were considered (as summarised in figure 5.1).

**Figure 5.1: Different roles for government**



Participants generally favoured a softer, supportive approach over stricter forms of regulation or enforcement of behaviours. However, views on the role of government varied depending on the topic, or behaviour, in question.

In relation to transport, participants tended to say that a combination of incentivising and building would be preferable. Taking the example of EVs, two of the main barriers to uptake related to cost and perceived lack of charging points, which could be addressed through incentivising and building infrastructure. While influencing was seen as an acceptable approach for government to take in relation to transport, its effectiveness was questioned – some felt that this advice and support may simply be ignored by the public.

In relation to shopping and diet, participants were less sure about what role if any the government should take. They welcomed the idea of advice and support being provided on both these areas, to help people make informed decisions about the types of things they could buy and eat. However, they felt that going any further than that was perhaps an encroachment on their right to choose how to behave. In relation to diet in particular, participants were wary of government intervening in what they saw as personal choices. Reference was made to minimum unit pricing and the sugar tax already being in place, meaning participants did not want further measures that might restrict their diet choices.

Following this discussion of the broad role for government in each area, participants were asked to consider some specific interventions government hypothetically could take to help reduce emissions. The examples used were not based on current government policy, but were

<sup>13</sup> <https://openpolicy.blog.gov.uk/2020/03/06/introducing-a-government-as-a-system-toolkit/>

created to represent a diversity of different types of potential interventions across the three topics.

The hypothetical interventions were chosen, at least in part, to be reflective of suggestions made in previous public engagement on climate change – specifically Scotland’s Climate Assembly<sup>14</sup>. In March 2021, the Assembly made 81 recommendations on how Scotland should change to tackle the climate emergency in an effective and fair way. Some of those recommendations, on areas such as transport, taxation and circular economy, were drawn upon for the interventions we tested with participants.

#### 4.1.1 Interventions to encourage change in transport behaviour

Views on the role of government were very much echoed in participants’ reactions to possible interventions designed to encourage changes in transport behaviour. Those that related to incentivising and building infrastructure had widespread appeal, while those that were closer to regulation met with a mixed response. Reactions to each of the four interventions are outlined below<sup>15</sup>.

##### Transport intervention 1: Taxes on forms of transport that have higher carbon emissions (such as sport utility vehicles and frequent flying)

This form of taxation was met with mixed views. Those in favour felt that it would put people off making unnecessary air journeys or reduce the amount that larger, high emissions vehicles were used on the roads. Some felt that these forms of transport were a luxury, rather than a necessity, and that people should therefore be willing to pay more for them.

However, others felt that this may unfairly penalise people that needed to travel in these ways. For example, one participant felt that larger vehicles were required by families with children (like her own) and felt that it was unfair to be taxed higher. Others felt that a higher tax on frequent flying may have a negative impact on businesses that might need to travel this way and might reduce tourism and therefore have economic impacts.

Should this, or a similar taxation approach, be used it was felt that the money generated should be allocated towards helping meet net zero targets. This would make this intervention more acceptable than if the money raised was used for an unrelated purpose.

*“If these [forms of transport] are having [negative] impacts on the environment, than it would seem logical to tax the areas that are causing the greatest harm. But government would need to really clear in saying ‘this is what we are spending [the money from taxation] on’ so that you can actually see the link between taxation and the benefits for the environment”*

*Mini-group participant*

<sup>14</sup> <https://www.climateassembly.scot/>

<sup>15</sup> The full descriptions of all the interventions tested are included Annex B.

**Participant story: Faith**

Faith understood the rationale behind a higher tax, as it could help to discourage people from using higher carbon forms of transport which could help to reduce carbon emissions. However, she felt that higher taxes might unfairly impact people who need to drive larger vehicles because they have large families or those who need to fly regularly for work. She felt that people shouldn't have to pay more because of circumstances that may be out of their control – such as the requirements of their job – so had some concerns about this intervention.

**Transport intervention 2: Financial incentives for using forms of transport that have lower carbon emissions**

There was widespread support for this idea. Participants had previously noted that cost was a potential barrier to the uptake of EVs and this approach was seen as a way of addressing those concerns. This was seen as a positive approach for government to take, in comparison with more negative approaches such as enforcing the use of EVs.

*“At the moment cost is one of the challenges in terms of the uptake of hybrid and electric cars, so I think you need government to step in in the short term if you want to accelerate this... in the immediate term this could resolve in a big way the challenge we've got in front of us.”*

*Mini-group participant*

While this intervention was seen as having no drawbacks, it was noted that it did not address the infrastructure-related barriers to using EVs. Therefore for this intervention to be most effective, it was felt that it should be accompanied by improvements to the availability of charging points.

**Transport intervention 3: Restrictions on where and how cars can be used – for example through no-car zones or low-traffic neighbourhoods**

While participants generally liked the idea of reducing traffic congestion, potential drawbacks of this intervention were raised. It was felt that it could cause problems by diverting traffic to nearby roads meaning they become more congested. Concerns were also raised over potential impacts on those with mobility issues or with young children, as they may be more reliant on accessing these areas by car.

For this intervention to be appealing, it was felt that access should still be available for local residents and businesses and that practical alternatives should be available for others (such as clearly signposted alternative routes). Before any changes were implemented, it was stressed that there should be clear information and engagement with the local community.

**Participant story: Ellen**

Ellen was uncertain when asked about the idea of a ‘frequent flier’ tax. As she works in an airport, she cares about Scotland’s tourist income.

*Those flights that come in bringing tourists that pay, you know, come and visit all our attractions and things, I'm speaking as somebody who works for the airport so I'm a bit biased, but those people bring in money, Scotland relies a lot on tourism doesn't it.*

Further, Ellen loves to go on overseas holidays herself, and associates flying with ‘adventure, excitement, and new experiences’.

She was also less positive about the idea of low traffic neighbourhoods – she had concerns about access for emergency vehicles, and worried that cars would just be pushed out somewhere else causing more emissions.

#### Transport intervention 4: Charging road users – for example through road tolls and congestion charges

Participants generally understood the rationale behind charging road users and could see the environmental benefits in reducing the number of cars on the road. However, they had some issues with the concept of charging people who may have no choice but to drive. For example, it was suggested that people who drive long distances for their jobs could be unfairly penalised under this approach. In areas that lacked public transport options, it was suggested that charging people to drive would be unfair.

#### 4.1.2 Interventions to encourage changes to consumption

Examples of interventions related to consumptions were generally well received. Participants saw the benefits of approaches to reduce waste and encourage re-use and repair of items. However, there was some doubt about the impacts of these interventions on participants themselves. The need for clarity of information and messaging were also considered important.

#### Consumption intervention 1: Encouraging the development of infrastructure for reusing and repairing goods

This intervention was well received. Participants gave examples of items they had bought, such as gardening equipment or household tools, but then not used as much as they had thought they might. They therefore felt that schemes such as tool libraries would help to reduce waste by removing the need to buy these types of item and allow people to only use them when they needed. Some were aware of these schemes in other areas and felt they would make use of one if it was close to them. No drawbacks from this intervention were identified.

*“How many times have all of us bought something, like a gardening tool, that spends most of the time sitting in the garden hut after you bought it? There’s one I paid a lot of money for and I think I've used it three times, so I think [this is a fantastic idea. [It would have been better] if I could have gone and hired that for an hour or two or a day and taken it back.”*

*Male, 65, Not working, Glasgow*

### Consumption intervention 2: Developing quality standards for second-hand goods

Overall, this intervention was supported. However, some participants felt that it would be unlikely to have an impact on them personally as they rarely bought second-hand goods.

The main perceived benefit of this approach was that it would give reassurance that the second-hand goods being sold were safe and unlikely to break down soon after purchase. This was compared with buying second-hand goods online, through sites such as Facebook Marketplace, where it can be difficult to judge the quality and reliability of items. Indeed, some felt they would like to see this intervention extended to second-hand goods sold by individuals online, rather than only in stores, as they felt that online sales were probably the more common way of purchasing these items.

One participant mentioned that there could be negative associations with the phrase 'second-hand' and felt that other phrases such as 'pre-used' or 'pre-loved' would be a better way of marketing second-hand goods to encourage people to re-use instead of buying new.

### Consumption intervention 3: Improved labelling on products so that consumers are better able to choose low-carbon products and that it is clear to people how repairable products are

There were mixed views on this intervention. A repairability index on labelling was seen as useful, as it could help make repairability more of a factor in decision making when purchasing goods and therefore encourage people to repair rather than replace. While participants were not against labelling to show the carbon footprint of products, they felt this could potentially require a lot of information that might be difficult to understand, which they would find off putting when trying to choose between items.

Whether labelling was used to indicate repairability, carbon footprint, or other aspects to distinguish between items, participants stressed that the information should be clear and easy to understand. Visual ways of communicating the difference between products, such as traffic light colours, were seen as preferable to lots of written information.

### Consumption intervention 4: Charges or bans for single use products, including a minimum charge on bags for life

This intervention received a lukewarm response. Participants were generally supportive of the banning of plastic straws and single use plastic bags as means of reducing waste, and talked of how they had become used to bringing reusable bags with them when they went food shopping. However, some felt that there should be more of a focus on reducing plastic food packaging, particularly from supermarkets, and on making clear how people can recycle or dispose of that packaging. They felt this would help to have more of an impact on household plastic waste than a ban on plastic straws would.

*"I'm not against a ban on single use, but I just don't think [that is] focussing on the big issues. It's easy for people to say 'oh I'm not using plastic straws' but they're then putting the plastic that their supermarket carrots came in in the bin."*

*Mini-group participant*

There was a degree of confusion over the potential introduction of a minimum charge for bags for life, as some thought this was already in place. There was doubt, however, about the impact of this intervention. Some felt that people may not notice a minimum charge on bags for life and that it would need to be a significant increase to have any impact.

**Participant story: Henry**

Henry thinks it's a great idea to provide incentives like VAT exemption for those buying electric vehicles. He's also positive about the idea of traffic free neighbourhoods and congestion charges in Scotland, having seen them work elsewhere in Europe.

*For me, incentivising and building infrastructure are most important. Yes, you should nudge people along [but] the last thing they should do is enforce. [...] Regulations piss people off a bit. Without the infrastructure it's pointless, and without the incentive nobody will change.*

He does wish there was a repair café near where he lives, as it would be really helpful to have someone help him fix broken things and learn how to fix it himself for next time. He also loves the idea of a tool library, as it'd save people from having a shed full of tools they rarely use. He would also feel more confident buying things second hand if he knew it was an approved and audited recycling/second-hand business. Recycling is important to him, and another change he would like to see is clearer labelling on packaging so people can easily understand what can be recycled and what can't.

**4.1.3 Interventions to encourage changes to diet**

Views on potential diet-related interventions emphasised participants' views on the role of government in this area. They tended to support interventions that encouraged behaviour change through providing advice and support, and to oppose stricter approaches such as charges.

**Diet intervention 1: Encourage people to eat locally produced food**

Participants were in favour of encouraging people to eat locally produced food. As noted in chapter three, shopping and eating locally had become increasingly important to participants over the course of lockdown, and they therefore welcomed interventions designed to encourage more people to do so. Perceived benefits of this approach were that it would help to support local businesses selling locally produced food and encourage people to think more about the provenance of their food, which could in turn help to reduce the amount of waste associated with supermarket shopping. Physical health benefits of eating less processed foods, and mental health benefits of taking part in hands-on activities such as growing vegetables, were noted.

There was awareness of and interest in existing initiatives such as community gardens and allotment schemes. For example, one participant said that she was aware of a community allotment scheme in her area, but had been restricted from using it because it had limited opening hours that conflicted with her work schedule. She felt that she would use it if it was available at evenings and weekends.

**Diet intervention 2: Develop national dietary guidelines to offer advice on how to eat more healthily and in a more climate-friendly way**

Positive aspects of new dietary guidelines were mainly framed in terms of health, rather than climate change, benefits. It was felt that guidelines could help to reinforce the importance of a healthy, balanced diet, ideally by using a clear and easy visual representation (similar to The Eatwell Guide<sup>16</sup> or the national dietary guidelines used in Denmark<sup>17</sup>). However, one participant

<sup>16</sup> <https://www.nhs.uk/live-well/eat-well/the-eatwell-guide/>

<sup>17</sup> <https://www.fao.org/nutrition/education/food-dietary-guidelines/regions/denmark/en/>

felt this intervention may prove unpopular, as he felt most people already knew what a healthy diet involved and did not need reminding.

### Diet intervention 3: Introduce carbon taxes on food products that have a greater negative impact on the environment, such as meat and cheese

This intervention was largely opposed. Concerns were raised over the impact that these taxes might have on people that were already struggling to afford food, particularly as food prices were already seen as increasing.

The distinction between different types of agricultural practice was again raised, with some saying that low-impact, small-scale meat production should not be penalised to the same level as higher-impact meat production. Though it was suggested that a carbon tax would likely reduce the amount of meat and dairy that were purchased, the negative impact on local businesses was also raised as a concern.

*“The better quality meats or cheese are more expensive already, and actually is the issue not about actually people’s diet? We really need to shift the balance away from the better quality things being much more expensive, and it should be the poorer quality things you want to drive them out of the market.”*

Mini-group participant

### Diet intervention 4: Communicate with people to encourage them to reduce their food waste

Participants were very supportive of this intervention. They welcomed both the purpose and the approach, agreeing that there was a need to reduce waste and that government had a role to play in providing information and communication around how best to do that. No drawbacks were identified for this approach.

## 4.2 Summary of reactions to interventions

Participants were generally in support of actions being taken to encourage positive net zero behaviours, however, not all examples of potential interventions were seen as acceptable. **Participants tended to favour those interventions that involved support for behaviour change, whether in the form of advice, information, financial incentives or infrastructure. They were generally against those that involved charges or forms of regulation or enforcement of behaviour.**

Among transport interventions, financial incentives for EVs received the most widespread support, as it was felt that nobody would lose out in this scenario. While some positive aspects could be seen for the other transport interventions involving charge or restrictions, concerns were raised about fairness - would these interventions impact unfairly on those who did not have alternative transport choices? Affordability was also raised as a concern. Higher taxes or road charges may not be an issue for those that can afford them, but those on lower incomes may be unfairly impacted.

Participants saw the benefits of approaches to reduce waste and encourage reuse and repair of items. However, there was some doubt about what impacts these interventions would actually have in practice on participants themselves. They were generally less supportive of government having a role in dietary choices, but welcomed actions that informed and encouraged people to eat locally and healthily, and reduce food waste.

## 5 Key findings and implications

### 5.1 Summary of key findings

This research set out to identify the different ways in which net zero behaviours changed following the outbreak of the COVID-19 pandemic, people's experiences of and attitudes towards these changes, and the factors influencing whether changes will be sustained.

Over the course of four phases (from July 2020 to June 2021), the research highlighted that the disruption brought about by COVID-19 restrictions had led to changes across the full range of net zero behaviours.

The early stages of lockdown pointed towards a positive shift in some net zero behaviours. Overall, participants were driving less, using less public transport, and flying less, while walking and cycling more. Shopping had mainly moved online, though there was also a move towards more local food shopping rather than using supermarkets. Some participants were also planning their meals and cooking more from scratch, meaning less food waste, and consuming less pre-packaged food and drink.

As restrictions gradually eased, some aspects of pre-pandemic daily routines returned, which meant an increase in driving, a decrease in walking and cycling, and a return to shopping in supermarkets in person. However, even by the final phase of the study, some behaviours had not yet returned to pre-lockdown levels; some participants were still driving less than they had been, planning and cooking more meals, and avoiding overseas travel by air. These behavioural patterns are consistent with other UK research (both qualitative and quantitative) undertaken during the pandemic<sup>18</sup>.

While initial behaviour change was largely a consequence of emergency lockdown restrictions introduced to contain the spread of the virus, over time it was clear that net zero behaviour changes were not solely influenced by those restrictions.

Consistent with wider research,<sup>19</sup> a number of factors under each of the individual, social and material contexts were at play, with some of the most dominant being: participants' own values, attitudes and beliefs; their time and schedules; the supporting infrastructure and objects required; and the networks and relationships surrounding them.

As participants reflected on the changes over the past year, and looked ahead to life post-COVID-19 restrictions, there was an appetite for a number of the changes to their daily lives to be sustained. These included: less reliance on cars, more use of public transport and cycling where available, shopping locally, reducing waste, meal preparation and cooking from scratch. Thinking about what might encourage future behaviour change, participants tended to favour supportive approaches from government, in the form of advice, information, financial incentives and infrastructure. They were generally against those that involved charges or forms of regulation or enforcement of behaviour. This preference for 'pull' (supportive) measures over 'push' (restrictive) measures is well-established in the wider policy acceptance literature, and reflects the importance of perceived fairness and personal cost in shaping policy support.<sup>20</sup>

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<sup>18</sup> For example: CAST's mixed-methods research on pro-environmental behaviours (<https://cast.ac.uk/wp-content/uploads/2020/08/CAST-Briefing-04-Covid-low-carbon-choices-1.pdf>; <https://cast.ac.uk/wp-content/uploads/2020/12/CAST-Briefing-05.pdf>), FSA and WRAP research on food behaviours (<https://www.food.gov.uk/research/research-projects/the-covid-19-consumer-research>; <https://wrap.org.uk/resources/report/citizens-and-food-waste-lockdown-eases>); and CREDS research on travel behaviours (<https://www.stir.ac.uk/media/stirling/services/research/documents/policy-briefings/covid-transport-report.pdf>).

<sup>19</sup> For example: <https://www.sciencedirect.com/science/article/pii/S2352250X21000427?via%3Dihub>; <https://wedocs.unep.org/xmlui/bitstream/handle/20.500.11822/34432/EGR20ch6.pdf?sequence=3>

<sup>20</sup> For example: <https://ideas.repec.org/a/eee/transa/v42y2008i8p1117-1128.html>; <https://onlinelibrary.wiley.com/doi/abs/10.1002/9781119241072.ch29>

## 5.2 Implications from the research

This research has built a rich, qualitative understanding of how our participants' net zero behaviours, and their attitudes and feelings towards those behaviours, have changed over the course of the pandemic between July 2020 and June 2021. It has a number of implications for future policy and research in this area, which are set out below.

**Our findings underscore the importance of creating an 'enabling environment' for net zero lifestyles in the recovery from COVID-19 that will help individuals to sustain the positive net zero behaviours that they have adopted during the pandemic.** There is a clear risk of individuals simply re-adopting their pre-pandemic behaviours in key areas such as transport and active travel, even though positive intentions about sustaining the net zero behaviours they had adopted during the pandemic were expressed. This is in part because of the centrality of work in influencing net zero behaviours, which means that as restrictions ease and offices re-open, individuals may slip back into their pre-pandemic transport and travel behaviours. This research has found that working arrangements and schedules had an impact on a range of net zero behaviours, not least the use of different transport modes. As set out in the Scottish Government's Public Engagement Strategy on Climate Change, public engagement "*must be supported by policies and programmes that facilitate the required reconfiguration of societies, institutions and infrastructure to create an enabling environment for net zero lifestyles*". This is also entirely in keeping with conclusions from previous research in this area, as noted above. Without this, individual-level behaviour change is not going to happen fast enough or to a large enough extent to bring around the far-reaching societal transformation that will be necessary for Scotland to become a net zero and climate resilient country.

**It will be essential for this 'enabling environment' to address the full range of barriers that people currently face that constrain them from adopting net zero behaviours.**

Participants were generally aware of the need for action on net zero, but highlighted several barriers that they felt were restricting their own behaviours from changing. These included costs (e.g. of electric vehicles), infrastructure (particularly in relation to public transport and cycling) and knowledge and skills (e.g. in relation to ways to repair or reuse items). These barriers were not unique to the pandemic. Indeed, they highlight that many of the barriers to net zero behaviours that might have existed before the pandemic had not gone away, in spite of the significant disruption to daily life and routine.

**To normalise and encourage households and communities across Scotland to take action on climate change, it will be necessary to appeal to motivations other than environmental considerations.** While this research showed that COVID-19 restrictions had caused people to think differently about their habits and routines, it is clear that environmental considerations will not in themselves be enough to encourage most individuals to shift their net zero behaviours. Across the range of net zero behaviour changes seen during the pandemic, environmental considerations were typically secondary motivations for these changes at most, while other factors such as convenience and cost were more important. For example, while participants acknowledged that reductions in driving or switching to electric or hybrid vehicles were better for the environment, this tended not to be something they thought much about, and factors such as the cost of these vehicles, the infrastructure available to charge them, knowledge gaps, the look of the vehicles and the views and experiences of others around them with these vehicles were seen as more important factors influencing their take-up.

**Our findings highlight the importance of understanding how the vast majority of the Scottish public, who will not have taken part in deliberation, are likely to receive different policy options,** as this will be central to public acceptance of or opposition to these policies. **They also underline the importance of climate literacy and the power of deliberation** in shifting public views when it comes to stronger policy interventions such as changes to taxation and regulation. For example, although our participants warmly welcomed the idea of financial incentives for using electric vehicles, as well as infrastructure to encourage the reuse and repair of goods, and measures to encourage people to eat locally produced food and reduce their food waste, there was push back against potential approaches involving charges or regulation

of behaviour. Participants felt that interventions that would result in increased costs would potentially be unfair on those already struggling to afford the cost of living. This contrasts with the relatively high levels of support seen in the Scotland's Climate Assembly recommendations for taxation measures such as a frequent flyer tax or levy (78% of Assembly members supported this), or a carbon tax on food (77%), although some taxation measures such as increased road taxes for private car use did receive lower levels of support (63%). These differences are likely to relate to the very different levels of public engagement the two cohorts had participated in; Assembly members had undertaken an intensive process of learning and deliberation over seven weekends, while participants in this research were taking part in a 90-minute discussion group exploring their views on different policy interventions.

**Lastly, our findings underline the importance of ensuring that an understanding of behavioural science is embedded in net zero policymaking.** While COVID-19 restrictions were the catalyst for many net zero behaviours, the research has shown that a range of individual, social and material factors contributed to behaviours and points to the need for a broad range of interventions to help support positive behaviour change. This includes educational, social, economic and regulatory measures to motivate, enable and lock in net zero behaviours. Consistent with previous research, it has also highlighted that net zero behaviours do not exist in silos, but are interlinked. Indeed, one of the most important and novel insights from the research has been the extent to which changes to *work* routines (notably moving to home working) can impact on so many other behaviours, from food preparation and waste to shopping for clothes. This in turn highlights promising avenues for policy intervention, such as encouraging flexible/home working or even trialling shorter working weeks, in order to help reduce time pressures and facilitate more local lifestyles. As identified in the Public Engagement Strategy on Climate Change there is potential to maximise the effectiveness of the ISM tool by further embedding the tool in the policy-making process and ensuring that behavioural science is considered throughout. It will be important that the behavioural science tools that the Scottish Government uses in the policymaking process are both informed by a holistic model of decision-making, reflecting the interlinked nature of net zero behaviours, and result in clear guidance for the design, development and evaluation of policy interventions.

## 6 Annex A – Rapid evidence review

### 6.1 Introduction

The COVID-19 pandemic has caused disruption in a wide range of areas, such as hygiene practices, food provision, mobility, spending, water use and gardening, and housework, coordination and care<sup>21</sup>. Globally, this disruption has resulted in significant reduction in emissions from individuals and businesses. One study found that confinement as a result of COVID-19 lockdown had the effect of reducing daily global CO<sub>2</sub> emissions by 17% by 7 April 2020 compared with the mean 2019 levels<sup>22</sup>.

This rapid evidence review provides a brief summary of the evidence on how COVID-19 lockdown has changed the climate change behaviours of the Scottish and wider UK public so far. It outlines findings on the aspects of climate change behaviour for which data was available.

### 6.2 Travel

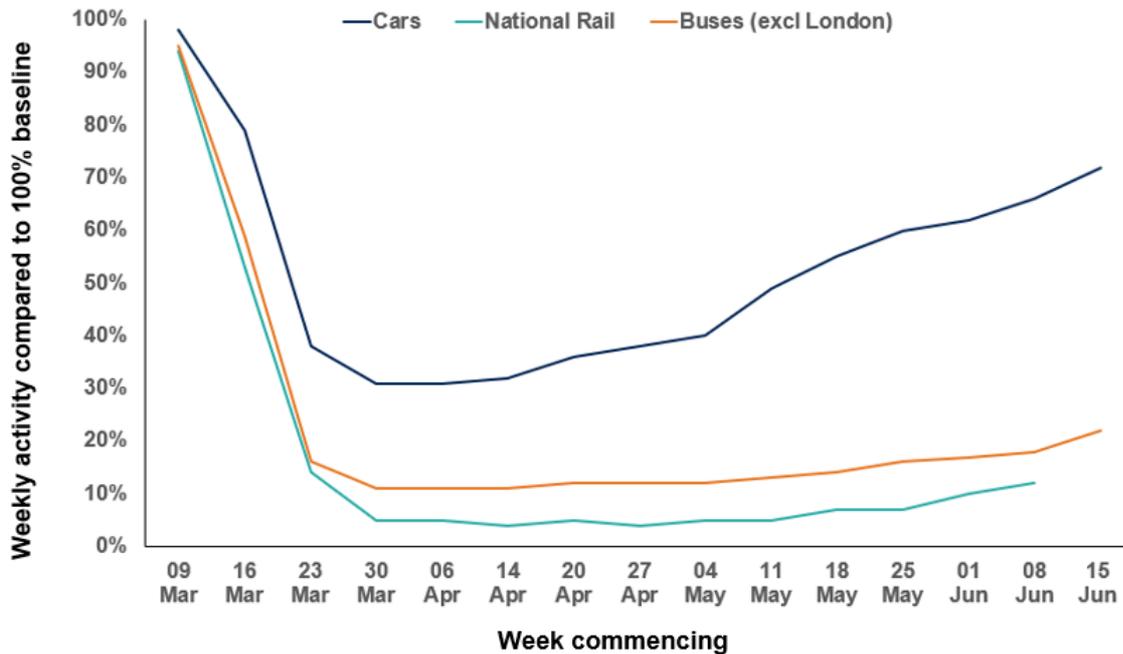
**COVID-19 has seen impacts on many forms of travel, with falls in car and public transport use in the UK as well reductions in international travel.** Data from the Department for Transport's weekly travel updates<sup>23</sup> shows a dramatic drop in the use of cars, trains, and buses in Great Britain during the beginning of lockdown (Figure 3.1). While these figures have remained stable and low for trains and buses, we can see a gradual rise in the number of cars on roads as lockdown began to ease.

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<sup>21</sup> Sustainable Consumption Institute, 2020. *COVID-19, changing social practices and the transition to sustainable consumption and production*. [pdf] Available at: <http://documents.manchester.ac.uk/display.aspx?DocID=49196>

<sup>22</sup> Le Quéré, C., Jackson, R.B., Jones, M.W. et al. Temporary reduction in daily global CO<sub>2</sub> emissions during the COVID-19 forced confinement. *Nat. Clim. Chang.* 10, 647–653 (2020).

<sup>23</sup> Department for Transport, 2020. *Transport use during the coronavirus (COVID-19) pandemic*. [online] Available at: <https://www.gov.uk/government/statistics/transport-use-during-the-coronavirus-covid-19-pandemic>

**Figure 1.1: Changes in GB transport use during COVID-19 lockdown**

Source: Department for Transport<sup>23</sup>

A telephone survey by Ipsos MORI of people aged 16+ in Scotland found that 41% expected to travel by foot more frequently after lockdown restrictions are eased, and 18% expected to travel by bike more frequently after lockdown is over<sup>24</sup>. Another recent Scotland-specific poll (among a sample of the economically active) found that although 58% report that they are more likely to work from home after lockdown (than they would have been had lockdown not happened), 65% said they were less likely to take public transport to work and 68% said they were less likely to share a ride to work<sup>25</sup>.

The major decrease in road traffic in urban areas of Scotland has dramatically improved air quality, especially as a result of decreases in nitrogen dioxide emissions. Analysis of nine air quality monitoring cities revealed decreases from 49% at Atholl Street, Perth to 72% at Hope Street, Glasgow<sup>28</sup>. These improvements, while noteworthy, are not as high as some expected because heavy diesel vehicles contribute much of the nitrogen dioxide, so the trucks and buses still on the road have a disproportionate impact on air quality.

International travel patterns have also been interrupted by COVID-19. A recent report by the Committee on Climate Change showed that, during April and May 2020, the number of total global scheduled flights fell by two thirds in comparison to 2019 figures<sup>26</sup>. Even more dramatically, there has been more than a 90% drop in flights to and from the United Kingdom. People in the UK also report levels of reluctance and nervousness around travel in the future. 80% agreed that they 'will make no travel plans until the situation is back to normal in the UK',

<sup>24</sup> Ipsos MORI, 2020. *BBC Scotland COVID-19 Polling*. [pdf] Available at:

<https://www.ipsos.com/sites/default/files/ct/news/documents/2020-05/bbc-scotland-tables-may-27-2020.pdf>

<sup>25</sup> Zubairi, S.S., and Diffley, M., 2020. *Expectations of returning to work after lockdown: Report for the External Advisory Group on Economic Recovery*. [pdf] Available at:

<https://www.gov.scot/binaries/content/documents/govscot/publications/consultation-analysis/2020/06/initial-submissions-supporting-the-advisory-group-on-economic-recovery-report-june-2020/documents/mark-diffley-consultancy-and-research/mark-diffley-consultancy-and-research/govscot%3Adocument/Mark%2BDiffley%2BConsultancy%2Band%2BResearch.pdf>

<sup>26</sup> Committee on Climate Change, 2020. *Reducing UK emissions: 2020 Progress Report to Parliament*. [pdf]

Committee on Climate Change. Available at: <https://www.theccc.org.uk/publication/reducing-uk-emissions-2020-progress-report-to-parliament/#:~:text=1.-,Outline,following%20the%20COVID%2D19%20pandemic>

and the Ipsos MORI poll in Scotland found that 43% expected to take holidays within Scotland more frequently after lockdown is lifted.

### 6.3 Water use

**Evidence suggests that household water use has increased during the COVID-19 lockdown.** The Committee on Climate Change report showed that some areas in the UK have seen peak demand of up to 40% above what they would expect at this time of year. This represents a rise of more than 2.2 billion litres consumed per day in the UK. Scottish Water reports that the volume of water used by Scottish people in April 2020 was the highest they had ever recorded due to COVID-19 related lifestyle changes<sup>27</sup>. On average, every person in Scotland typically uses approximately 165 litres of water every day in and around their home. In April 2020, this figure rose to 198 litres per person per day.

### 6.4 Energy use

**Although individual households are using more energy as they spend more of their time at home, this has been more than offset by the reductions in industrial and business emissions<sup>28</sup>.** Research by Octopus Energy estimates that UK customers who were staying home as a result of the lockdown used 30% more electricity and 25% more gas (this analysis was based on the segment of the population who showed a marked increase in energy use between 9am-5pm)<sup>29</sup>.

### 6.5 Food behaviours

**Data suggests a change in patterns of food consumption in the UK during lockdown.** Research by Kings College London and Ipsos MORI found that people food consumption has been affected by lockdown, with 35% saying they were eating more food or less healthy food than they usually would. The same research also found that one in ten have avoided eating meat because of a perceived risk that it might spread COVID-19. A survey by Attest for the Vegan Society also found that 1 in 5 people in Britain have reduced their meat consumption during lockdown, while 15% have reduced their dairy/egg consumption<sup>30</sup> (though, as the sample source for this survey is not clear, we cannot comment on the robustness of this source).

Before COVID-19, restaurants, cafes and canteens provided about one out of every six meals to the population of the UK, with around one third of household spending devoted to eating out. A recent report by the Sustainable Consumption Institute pointed out that although quantitative data suggests that eating out has a higher carbon footprint than preparing food at home, the

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<sup>27</sup> Scottish Water, 2020. *Water Efficiency During Dry Weather*. [online] Available at:

<https://www.scottishwater.co.uk/en/about%20us/news%20and%20views/070520%20water%20efficiency>

<sup>28</sup> Advisory Group on Economic Recovery, 2020. *Towards a robust, resilient wellbeing economy for Scotland* [pdf]. Available at: <https://www.gov.scot/binaries/content/documents/govscot/publications/strategy-plan/2020/06/towards-robust-resilient-wellbeing-economy-scotland-report-advisory-group-economic-recovery/documents/analytical-annex-report-advisory-group-economic-recovery/analytical-annex-report-advisory-group-economic-recovery/govscot%3Adocument/analytical-annex-report-advisory-group-economic-recovery.pdf>

<sup>29</sup> Sykes, D., 2020. *Domestic energy usage patterns during social distancing*. [online] Available at:

<https://octopus.energy/blog/domestic-energy-usage-patterns-during-social-distancing>

<sup>30</sup> The Vegan Society, 2020. *1 in 5 Brits cut down on meat consumption during COVID-19 pandemic*. [online] Available at: <https://www.vegansociety.com/whats-new/news/1-5-brits-cut-down-meat-consumption-during-covid-19-pandemic>

fact that many restaurants have switched to delivery options like Just Eat or Deliveroo will have consequences in terms of packaging waste<sup>31</sup>.

## 6.6 Textile use

**There is limited data available on the extent to which textile use has changed in Scotland or the UK.** Global research suggests the COVID-19 may contribute to an end to “extreme consumerism” and a reduction in the purchase of clothing and other textiles. Research by McKinsey<sup>32</sup> showed that in March 2020 more than 65% of consumers in Europe and the US expected to decrease their spending on clothing, and 15% expect to buy more ecologically and socially sustainable clothing. However, the review did not identify data on these trends for Scotland or the rest of the UK.

## 6.7 Reproductive rates

**Available data does not suggest an increase in reproduction as a result of COVID-19.**

While there was media speculation of a ‘baby boom’ as a result of lockdown, but recent research suggests this may not be the case. A five-country European study among 18-34 year olds by London School of Economics showed that 58% of those in UK were postponing their plans to have a child, while 19% had abandoned such plans altogether<sup>33</sup>.

## 6.8 Returning to ‘normal’ behaviour

While the findings above show that there has undoubtedly been a change in behaviour since the COVID-19 pandemic began, what is less certain is the extent to which these change in behaviours will ‘stick’.

Research conducted with adults in Great Britain in mid-May found that the majority of people would be uncomfortable going to bars/restaurants, using public transport, taking holidays abroad or attending large public gatherings if lockdown was to end (Figure 1.4).

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<sup>31</sup> Sustainable Consumption Institute, 2020. *COVID-19, changing social practices and the transition to sustainable consumption and production*. [pdf] Available at:

<http://documents.manchester.ac.uk/display.aspx?DocID=49196>

<sup>32</sup> McKinsey, 2020. *The State of Fashion 2020: Coronavirus update* [online] Available at:

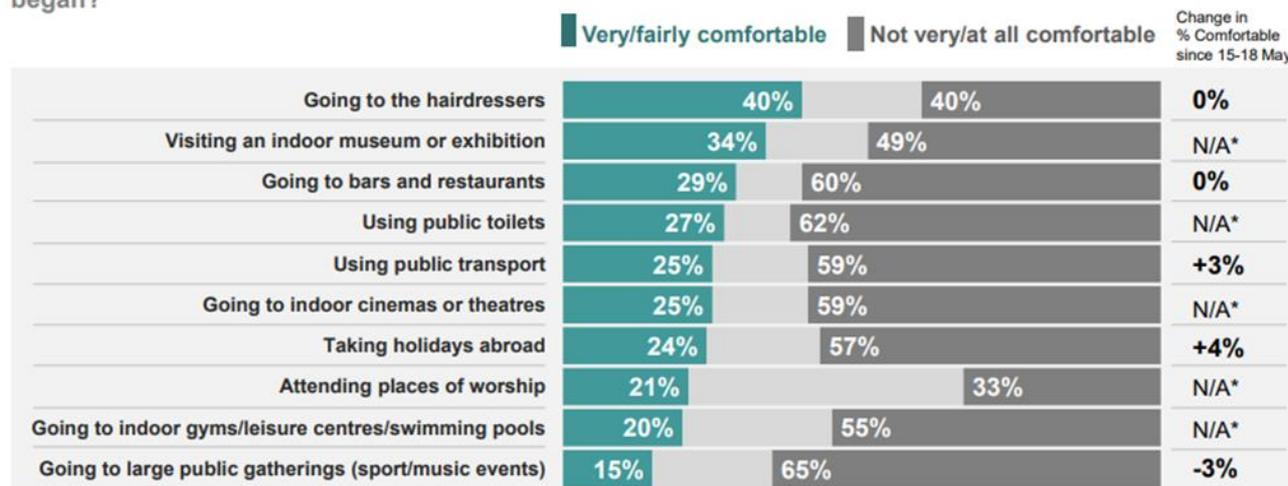
<https://www.mckinsey.com/~/media/mckinsey/industries/retail/our%20insights/its%20time%20to%20rewire%20the%20fashion%20system%20state%20of%20fashion%20coronavirus%20update/the-state-of-fashion-2020-coronavirus-update-vf.ashx>

<sup>33</sup> London School of Economics, 2020 *There is no evidence of a COVID-19 baby boom in Europe* [online]

Available at: <https://blogs.lse.ac.uk/politicsandpolicy/covid19-baby-boom-bust/>

**Figure 1.2: Levels of comfort with returning to 'normal' activities**

Assume the lockdown measures end within the next month. How comfortable, if at all, do you think you will feel doing each of the following in the same way as you did before the Coronavirus pandemic began?



Source: Ipsos MORI<sup>34</sup>

However, Ipsos MORI polling for BBC Scotland found that around half of Scots said that, once lockdown restrictions were lifted, they were likely to go back to doing all the things they did before lockdown. This feeling was more common among non-graduates (24% of non-graduates were very likely to go back to doing all the same things as compared to 12% of graduates), older people (28% of 55+ year-olds were very likely as compared to 16% of 16-34 year-olds and 17% of 35-54 year-olds) and men (23% were very likely as compared to 18% of women)<sup>35</sup>.

The 'stickiness' of behaviour change is difficult to predict, but it has been argued that the COVID-19 crisis could open up a 'window of engagement' as well as highlighting the vulnerability of our food systems and the importance of community in tackling crises<sup>36</sup>. The research to be carried out on behalf of ClimateXChange will shed light on the Scottish context, how behaviours have been shaped by experiences of lockdown and how they change during the coming months of the recovery.

<sup>34</sup> Ipsos MORI, 2020. *How comfortable are Britons returning to normal after lockdown? Just two in ten would be comfortable holidaying abroad.* [online] Available at: <https://www.ipsos.com/ipsos-mori/en-uk/how-comfortable-are-britons-returning-normal-after-coronavirus-lockdown>

<sup>35</sup> Ipsos MORI, 2020. *BBC Scotland COVID-19 Polling.* [pdf] Available at: <https://www.ipsos.com/sites/default/files/ct/news/documents/2020-05/bbc-scotland-tables-may-27-2020.pdf>

<sup>36</sup> Webster, R., 2020. *Communicating climate change during the coronavirus crisis – what the evidence says.* [online] Available at: <https://climateoutreach.org/communicating-climate-change-during-the-coronavirus-crisis-evidence>

## 7 Annex B – Interventions tested in phase 4 interview and focus groups

### 7.1 Transport interventions

1. Taxes on forms of transport that have higher carbon emissions, such as SUVs or for frequent fliers
2. **Financial incentives for using forms of transport that have lower carbon emissions.** For example, Norway has provided financial incentives to buyers of electric cars by exempting them from purchase tax and VAT, and has also provided other benefits for electric vehicle drivers such as free parking in some public parking spaces, no road tolls, free access to ferries connecting national roads and the use of bus lanes.
3. **Restrictions on where and how cars can be used – for example through no-car zones or low-traffic neighbourhoods.** Low-traffic neighbourhoods are schemes where motor vehicle traffic in residential streets is greatly reduced. Traffic is reduced by using barriers, which can include putting up bollards or planters, or can be camera-operated. Residents and businesses still have access to the neighbourhood by motor vehicle using different routes, but through-traffic is greatly reduced.
4. **Charging road users – for example through road tolls and congestion charges.** These include schemes where drivers pay to enter a defined area, such as London's Congestion Charge and Ultra Low Emission Zone. There are also distance-based schemes that charge drivers per mile driven; these are common on motorways in France and on the M6 toll road in England. There are also variable schemes such as Singapore's Electronic Road Pricing system, where the charges that drivers pay vary for different roads and time periods depending on congestion and local traffic conditions.

### 7.2 Consumption interventions

1. **Encouraging the development of infrastructure for reusing and repairing goods.** For example, setting up resource libraries where tools and other equipment can be loaned to encourage reuse and repair and also avoid individual households buying their own tools.
2. **Developing quality standards for second hand goods.** For example, the Revolve standard is a quality standard for second-hand stores in Scotland and is awarded to stores that meet high standards in safety, cleanliness and service so that shoppers have extra reassurance.
3. Improved labelling on products so that consumers are better able to choose low-carbon products and that it is clear to people how repairable products are. For example, France has a new requirement for companies making certain electronic devices, including smartphones and laptops, to tell consumers how repairable their products are. Manufacturers must give their products a score (the 'repairability index') based on a range of criteria, including how easy it is to take the product apart and the availability of spare parts and technical manuals.
4. **Charges or bans for single use products.** For example, introducing a minimum charge for bags for life to encourage greater reuse.

### 7.3 Diet interventions

1. **Encourage people to eat locally produced food.** For example, Edinburgh Council has developed its first food growing strategy, called Growing Locally, which aims to

encourage people to get more involved in local food production to help reduce the city's carbon emissions and support its recovery from COVID-19.

2. **Develop national dietary guidelines to offer advice on how to eat more healthily and also in a more climate-friendly way.** For example, Denmark's new official dietary guidelines encourage Danes to eat more legumes such as beans, chickpeas and lentils, eat more vegetables and fruits and eat less meat.
3. Introduce carbon taxes on food products that have a greater negative impact on the environment, such as meat and cheese.
4. **Communicate with people to encourage them to reduce their food waste.** For example, the Scottish Government is committed to reducing food waste and has a target of reducing Scotland's food waste by one third by the year 2025. As part of this work it is delivering a programme of communications to raise people's awareness of food waste as a problem, engage people in activities that address the problem and create 'champions' for the cause of reducing food waste.

## 8 Annex C – CAST survey data

The tables below provide the relevant data from the Scottish sample of the survey carried out by the Centre for Climate Change and Social Transformations (CAST) in parallel with this study, which explored how COVID-19 affected net zero behaviours and climate attitudes.

The survey was carried out in three waves: May 2020, October 2020 and June 2021. In the first wave (May 2020), respondents were asked about what some of the behaviours were like prior to COVID-19/lockdown and then what their behaviour was currently like. In the second and third waves, respondents were asked about their current behaviour. More detail on the full UK-wide survey is available from the CAST website<sup>37</sup>.

Q. Which of these applies to you?	Pre-lockdown*	May 2020	Oct 2020	June 2021
I am currently working entirely from home	22	42	38	43
I am working entirely from a workplace away from my home	n/a	13	25	25
I am not currently working or am on furlough	n/a	43	31	26
I am working partly from home and partly from a workplace away from my home	n/a	3	6	27
<i>Base</i>	<i>119</i>	<i>119</i>	<i>123</i>	<i>102</i>
<i>*This was asked slightly differently in relation to the pre-lockdown period, but the proportion of those working entirely from (captured in a different question) is shown here for comparison</i>				

Q. In which of these ways did you/do you currently travel to work?	Pre-lockdown	May 2020	Oct 2020	June 2021
Car/motorbike	48	10	25	24
Foot	22	7	3	4
Bike	3	1	2	1
Train	13	-	1	1
Bus	18	2	2	7
<i>Base</i>	<i>119</i>	<i>119</i>	<i>123</i>	<i>102</i>

<sup>37</sup> <https://cast.ac.uk/wp-content/uploads/2020/08/CAST-Briefing-04-Covid-low-carbon-choices-1.pdf>

Q. Roughly how many times per month did you/do you....	Pre-lockdown	May 2020	Oct 2020	June 2021
	% saying 'at least one per month'			
Eat organic, locally grown or in season food	71	68	77	81
Encourage other people to save energy	45	44	47	41
Buy products with less packaging	76	65	78	78
Recycle household waste (e.g. glass)	94	89	95	91
Avoid waste food (e.g. using leftovers)	93	97	96	97
Buy second hand items	65	35	65	67
Borrow or rent items (e.g. tools, toys)	23	12	18	19
Repurpose something for a different use, instead of throwing it away	73	67	76	78
Buy disposable items (e.g. coffee cups, plastic bottles, cans, face masks, wipes)	71	55	74	74
<i>Base</i>	119	119	123	102

Q. Roughly how much of your food did you/do you get from...	Pre-lockdown	May 2020	Oct 2020	June 2021
	% saying they get at least some of their food from this source			
A large supermarket/ superstore in person	91	72	79	87
A local chain supermarket or convenience store (e.g. Tesco Metro, Spar) in person	72	51	59	51
An independent store in person	50	26	38	30
Online shopping from a supermarket	27	34	40	33
Online shopping from a farm/veg box provider	4	7	7	5
Online shopping from another provider	5	6	9	9
<i>Base</i>	119	119	123	102

Q. Of the food you bought/buy, how much of it is thrown away (including inedible food, e.g. bones, egg shells, food past its 'sell by'?)	Pre-lockdown	May 2020	Oct 2020	June 2021
None	4	14	9	10
1-10%	70	76	72	76
11-20%	20	8	17	11
21-30%	6	2	2	2
More than 30%	-	-	-	1
<i>Base</i>	<i>119</i>	<i>119</i>	<i>123</i>	<i>102</i>

Q. How many days in a typical week did/do you...eat red meat?	Pre-lockdown	May 2020	Oct 2020	June 2021
Never	14	20	14	16
Less than one a week	-	-	23	23
1-2 days per week	57	56	42	43
3-4 days per week	24	22	19	14
5-6 days per week	5	2	2	5
Every day	-	-	1	-
<i>Base</i>	<i>119</i>	<i>119</i>	<i>123</i>	<i>102</i>

Q. How many days in a typical week did/do you...eat white meat?	Pre-lockdown	May 2020	Oct 2020	June 2021
Never	9	9	10	11
Less than one a week	-	-	5	10
1-2 days per week	40	45	37	40
3-4 days per week	36	29	37	30
5-6 days per week	13	17	10	7
Every day	1	1	2	2
<i>Base</i>	<i>119</i>	<i>119</i>	<i>123</i>	<i>102</i>

Q. How much did you/do you spend per month on clothing and footwear?	Pre-lockdown	May 2020	Oct 2020	June 2021
£0	8	62	31	25
£1-50	72	34	59	63
£51-100	14	3	10	11
£101-150	5	2	-	2
<i>Base</i>	<i>119</i>	<i>119</i>	<i>123</i>	<i>102</i>

Q. When the coronavirus restrictions are completely removed, do you intend to work from home...?	May 2020	Oct 2020	June 2021
A lot less than before COVID-19	7	6	8
A little less than before COVID-19	1	3	1
About the same as before COVID-19	64	57	50
A little more than before COVID-19	8	8	12
A lot more than before COVID-19	20	26	29
<i>Base</i>	<i>119</i>	<i>123</i>	<i>102</i>

Q. When the coronavirus restrictions are completely removed, do you intend to drive for commuting or work purposes...?	May 2020	Oct 2020	June 2021
A lot less than before COVID-19	n/a	6	10
A little less than before COVID-19	n/a	10	11
About the same as before COVID-19	n/a	76	67
A little more than before COVID-19	n/a	7	8
A lot more than before COVID-19	n/a	2	5
<i>Base</i>	<i>119</i>	<i>123</i>	<i>102</i>

When the coronavirus restrictions are completely removed, do you intend to use public transport...?	May 2020	Oct 2020	June 2021
A lot less than before COVID-19	29	15	20
A little less than before COVID-19	26	24	20
About the same as before COVID-19	41	54	51
A little more than before COVID-19	3	7	6
A lot more than before COVID-19	2	1	4
<i>Base</i>	119	123	102

When the coronavirus restrictions are completely removed, do you intend to cycle for commuting or work purposes...?	May 2020	Oct 2020	June 2021
A lot less than before COVID-19	n/a	9	9
A little less than before COVID-19	n/a	1	4
About the same as before COVID-19	n/a	82	77
A little more than before COVID-19	n/a	7	11
A lot more than before COVID-19	n/a	2	1
<i>Base</i>	119	123	102

When the coronavirus restrictions are completely removed, do you intend to fly for holiday or leisure purposes...?	May 2020	Oct 2020	June 2021
A lot less than before COVID-19	32	11	20
A little less than before COVID-19	18	24	30
About the same as before COVID-19	43	50	42
A little more than before COVID-19	7	13	4
A lot more than before COVID-19	1	3	4
<i>Base</i>	119	123	102

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