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Review of Environmental Attitudes and Behaviour Questions in the Understanding Society Survey

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Non-technical summary

Understanding environmental choices and behaviour is becoming an increasingly important topic for research. Understanding Society has included questions on environmental attitudes and actions from Wave 1 of the survey and allows researchers to look at environmental choices as part of a wider socio-economic picture.

Thirteen years after the first environmental behaviour module was fielded, ISER would welcome an assessment of how useful Understanding Society is for environmental behaviour and climate change research, and how it could better enable research on the topic.

This Working Paper reviews the environmental content in the survey and sets out a proposal for a new module on environmental attitudes.

Acknowledgement: Understanding Society is an initiative funded by the Economic and Social Research Council and various Government Departments, with scientific leadership by the Institute for Social and Economic Research, University of Essex, and survey delivery by Nat Cen Social Research and Kantar Public. The research data are distributed by the UK Data Service.

I am grateful to Kat Steenties, Christina Demski and Lorraine Whitmarsh for comments on an earlier version of this Working Paper.

Review of environmental attitudes and behaviour questions in Understanding Society (08 April 2022)

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Understanding Society Environmental Behaviour Topic Champion

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Acknowledgement

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Background

Understanding Society, also known as the UK Household Longitudinal Study (UKHLS), is a major household panel study funded by the ESRC and various Government Departments to provide high-quality longitudinal data on people living in the UK, and their circumstances attitudes, behaviour, and experiences. The survey is conducted with all household members annually, with data for each wave being collected over a 24-months period. The study collects data on a wide range of topics, such as family life, consumption and expenditure, education and employment, civic participation, and health and wellbeing, with the aim to better understand social and economic change within the UK. It consists of approximately 40,000 households comprising around 100,000 individuals, and is designed to represent all areas, age groups, and socio-economic backgrounds in the UK. The sample is large enough to have around 10,000 people for each 10-year birth cohort from the 1940s onwards. Understanding Society is led by the Institute for Social and Economic Research (ISER) at the University of Essex with fieldwork conducted by Kantar Public and NatCen.

Since its inception in 2009, Understanding Society has carried different questions relevant to environmental behaviour, including dedicated environmental attitudes, environmental behaviour, and transport modules, as well as questions on household consumption and energy use. Fifty-nine publications have been identified that are on the topic of 'Environmental Sociology' (accessed 07 March 2022).

Aim of the Review

Thirteen years after the first environmental behaviour module was fielded, ISER has issued a review of how useful Understanding Society is for environmental behaviour and climate change research, and could better enable research on the topic. The review predominantly focuses on the *environmental attitudes* and *environmental behaviour* modules, but also includes an assessment of relevant questions in the transport, commuting, household, employee and nutrition modules. In particular, it seeks to identify and assess questions that are relevant to (household) energy use, travel, diet and material consumption

The review is to inform the design of the Wave 15 of Understanding Society, which is scheduled for 2023-2024; and should not lead to an increase in the number of questions. Ideally, the length of the environmental attitudes and behaviour modules would be reduced so that they potentially could be included more frequently. The review needs to be completed by early summer 2022 in time for it to inform the design of Wave 15.

Suggested Approach

The suggested approach to the review is to (a) identify all current modules and questions that are potentially important to environmental behaviour and climate change research, and (b) develop a framework to assess the quality and coverage of the current modules. This will then help determine how the environmental behaviour and environmental attitudes modules (and potentially other modules and questions) could be changed to enable research on the topic.

Current Modules and Questions

The main modules under review are the *environmental attitudes* and *environmental behaviour* modules, which were fielded in Waves 1, 4, 10 and 13 (see Table 1)

Environmental attitudes and behaviour

The environmental attitudes module consists of 14 questions. The module includes questions on climate change (e.g., "I don't believe my behaviour and everyday lifestyle contribute to climate change" and "The so-called 'environmental crisis' facing humanity has been greatly exaggerated") and on respondents' environmental lifestyle (e.g., "My behaviour

and everyday lifestyle contribute to climate change" and "which of these would you say best describes your current lifestyle". The self-completion module is fielded at the same time as the environmental behaviour module (Waves 1, 4, 10 and 13). Many of the climate-change related questions are phrased negatively (see examples above). Thomas and colleagues reported that the environmental lifestyle items could not be combined into a coherent scale due to low internal consistency (Thomas et al., 2016, 2018).

The environmental behaviour module consists of 11 environmental habits that were derived from Defra's pro-environmental behaviour framework (Defra, 2008). The module covers a number of behavioural domains, including energy-relevant behaviours at home (e.g., leaving TV on standby, switch off lights in rooms that aren't being used, and put more clothes on when feeling cold), waste-relevant purchasing behaviours (e.g., decide not to buy something because it has too much packaging, buy recycled paper products, and take your own shopping bags when shopping), and transport-relevant behaviours (e.g., use public transport walk or cycle short distances and car share with others). It also includes a single item on water use (i.e., keep tap running while brushing teeth). The behaviours cannot be combined into an internally consistent scale (Thomas et al., 2018), but research has shown that that behaviours cluster into three dimensions relating to behaviour at home, transport behaviour, and purchasing behaviour (Lynn, 2014).

The module further contains questions on how many miles a person has driven, as well as the number of (UK/EU/Overseas) flights they have taken over the past 12 months (Wave 10).

In addition to the 11 habits in the environmental behaviour module, **the household questionnaire** contains six questions on whether they "have or are seriously considering" the installation of solar panels (Solar1), solar water heating (Solar2), wind turbines (Solar3); and buying energy on a Green Tariff (Etariff), and how often they recycle glass (Recglass), paper (Recpaper) and plastic (Recplastic) The solar and green tariff questions were fielded in Waves 1, 4 and 10, and the recycling questions were fielded in Wave 10 (questions about separating items for recycling (Rubrec) and frequency of using paper, plastic bag and garden waste recycling points/facilities were fielded in Waves 1 and 4).

Travel behaviours

Other relevant modules focus on transport and commuting behaviours, respectively. The transport behaviour module was fielded in Waves 4, 6, 8, 10, 12, 14. The commuting behaviour module was fielded in Waves 2, 4, 6, 8, 10, and 14.These modules are currently not under review but are included in the assessment (see Table 1).

The transport behaviour module includes questions on frequency of car travel, bus travel, underground/light rail travel (Wave 14 only), cycling, and walking (Wave 14 only); as well as on the need of a car or van for respondents' current lifestyle and whether respondents would cycle more if there were more dedicated cycle paths (Wave 14).

The commuting behaviour module contains four questions on: distance to work, satisfaction with commute, availability of workplace parking, and payment for workplace parking. Earlier versions of the modules included questions on experienced difficulties travelling to and from work. Relevant commuting-related questions are asked as part of the **employee module**: one on how respondents usually get to their place of work (Jsworktrav, Worktrav, Wktrv and Wktrvfar) and one on work location (JBPL). The question "How often do you work at/from home?" (Wkhome) was fielded in Waves 2, 12 and 14. The commuting behaviour module also included several questions on the willingness to travel by train, bus, bike and walking (e.g., combike, comwalk etc.). However, these questions were only fielded in Wave 2 and will therefore be ignored. The **household questionnaire** contains a number of other travel-related

questions, such as the age of car/van (Carage) and type of fuel used (Carfuel). The Ensize variable was fielded in Waves 1, 4, 7, 8 and 13

Questions relevant to household energy use

There are several questions relevant for household energy use, mainly in the **household questionnaire** (see Table 1) This includes questions on consumer durables within the household (Cduse), which include white goods such as fridge freezer, washing machine, tumble drier and dish washer. It further includes questions on micro-generation and green energy tariffs (see above), as well as questions on dwelling type, number of bedrooms, tenure, household size, presence of central heating, fuel type (Fuelhave) and amount spent on gas and electricity etc., (e.g., Xpduely, Xpelecy, Xpgasy, Xpoily, and Xpsfly). The latter questions are fielded every wave of the USS.

Questions relevant to diet

The **nutrition module** asks a range of questions about breakfast, usual type of dairy and bread consumption, and frequency and amount of fruit and vegetable consumption (see Table 1). This module was fielded in Waves 2, 5, 7, 9, 11 and 13. The household questionnaire further includes question on amount of money spent on food and groceries and on food from supermarket specifically (Xpfood, Xpfood1_G3) and amount spend on meals, snacks and non-alcoholic drinks purchased outside the home (household_w11.xpfdout_g3). No other diet-related questions have been identified.

Questions relevant to material consumption

Questions relevant to **material consumption** are spread across different parts and modules of the survey. There are very detailed questions on all adult's income, which are used to construct measures of household income (e.g., Fihhmnnet3_dv). Other miscellaneous but relevant questions are about membership of an environmental organisations (Orgmt, Orgat). The questions were fielded in Waves 6, 6, 9, and 12. There may be other modules and questions that are relevant to environmental psychologists/social scientists, including the local neighbourhood and neighbourhood belonging modules; but these will not be reviewed here.

Existing Research using Understanding Society

The review of the use of environmental behaviour and attitudes questions in existing research completed at a later stage.

Evaluation Framework

The conceptual model

The review of the environmental attitudes and behaviour modules is based on the assumption that the modules are most useful for environmental behaviour and climate change research if they fit with existing (conceptual) frameworks and cover a wide range climate-relevant constructs and (behavioural) domains.

The review uses Stern's Value-Beliefs-Norm (VBN) model (Stern, 2000) as a general guide to assess the modules, with the understanding that number of items are insufficient to cover all model constructs in detail. The VBN is the most widely used model in the literature and was specifically developed with pro-environmental behaviour in mind (Whitmarsh et al., 2021). It holds that human values and worldviews, together with environmentally-relevant beliefs and (personal) norms drive environmentally-relevant behaviours and consumption (see Figure 1).

Stern (2000) further distinguishes between intent-oriented (behaviour motivated to do good for the environment) and impact-oriented (behaviour defined by its impact on the environment) behaviours, as well as between private-sphere (individual-level consumer action) and public-sphere (e.g. environmental activism and policy support) behaviours.

The model often includes the New Environmental Paradigm (NEP) as a measure of an environmental worldview reflecting general environmental concern (Poortinga et al., 2004) in combination with climate change beliefs and concern and feelings of personal responsibility (Bouman et al., 2020; Poortinga et al., 2004; Stern, 2000). The model can be expanded with measures of 'environmental identity', which has been identified as one of the most important factors in environmentally significant behaviour (Poortinga et al., 2012; van der Werff et al., 2013; Whitmarsh & O'Neill, 2010), and of 'efficacy beliefs', which is an essential component of Protection Motivation Theory (Bandura, 1977; Maddux & Rogers, 1983; Rainear & Christensen, 2017).

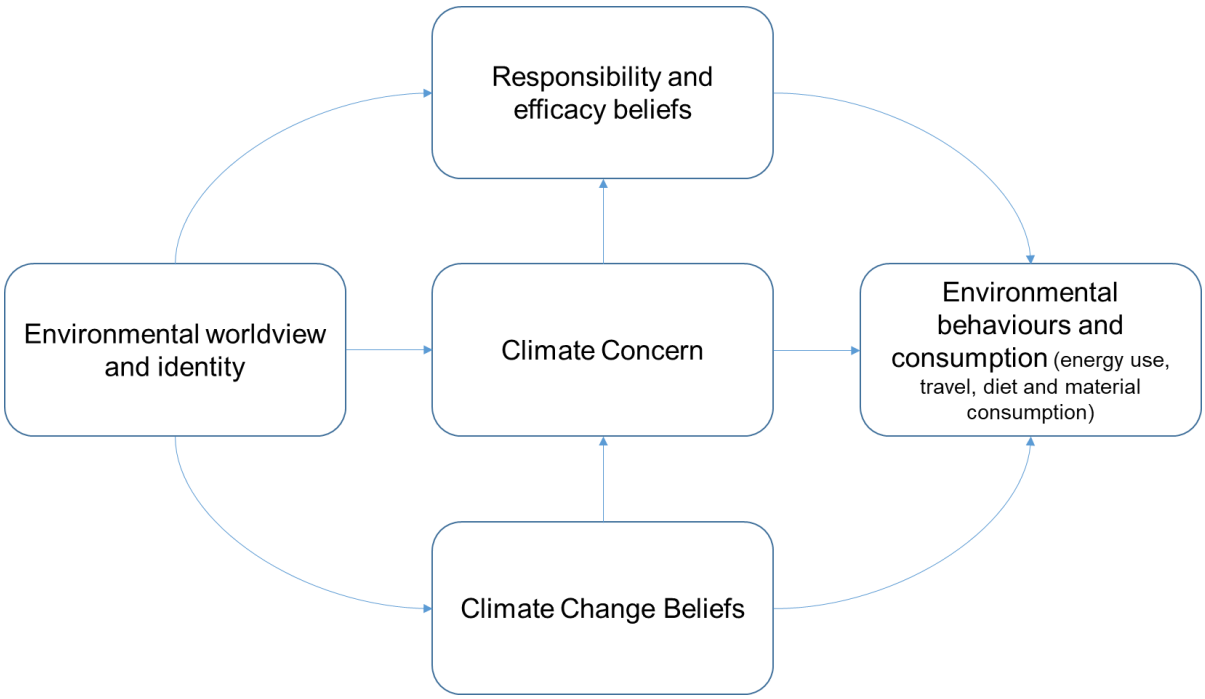

Figure 1: Conceptual model

Given that climate change is a collective problem that can only be solved through collective action, beliefs about the individual and collective effectiveness are critically important for the willingness to engage in pro-environmental behaviour (Hanss & Böhm, 2010; Koletsou & Mancy, 2011; Lubell, 2002). Research indicates that believing in a group's collective ability to achieve desired outcomes relates to public support for policies aimed at reducing carbon emissions (Bostrom et al., 1994), public-sphere actions such as voting and protesting (Doherty & Webler, 2016), and energy-saving behaviours (Gregersen et al., 2021).

Within the proposed framework (see Figure 1), environmental worldviews and identity shape climate-relevant beliefs and concerns, while responsibility and efficacy beliefs bridge the gap between concern and action. This is based on the assumption that general and specific environmental concern will only translate into action if individuals feel responsible and able to act to address the threat (Bouman et al., 2020; Gregersen et al., 2021).

Environmental behaviour and carbon emissions

A further consideration is that the environmental behaviour literature has typically focused on relatively low-impact behaviours rather than on more transformative behaviours that lead to

discernible carbon reductions (Nielsen et al., 2021; Whitmarsh et al., 2021). Typical 'intent-oriented' behaviours that are performed out of a motivation to do good for the environment do not necessarily have the greatest impact on the environment (Dietz et al., 2009). In order to meaningfully contribute to climate mitigation, focus should be on actions that substantially reduce annual personal emissions (Ivanova et al., 2020; Wynes et al., 2018) and/or on overall carbon footprint (Druckman & Jackson, 2016). That is, a more detailed analysis of the composition and drivers of carbon emissions attributable to household consumption could provide a better understanding of where possible reductions can be made (Druckman & Jackson, 2016).Analyses show that the majority of an average carbon footprint arises from the domains of housing, travel, and diet (ibid), as well as material consumption (European Environment Agency, 2005). These areas provide significant potential for carbon-emission reductions but have so far proven resistant to change.

Consumption-based approaches, such as those used by carbon foot print calculators, can help make people's contribution to climate change more visible (Kokoni & Skea, 2014; Salo et al., 2019). Methodologies used vary widely in detail and scope, but tend to include household energy use, travel (including air travel), and diet as the main input categories (Mulrow et al., 2019). Carbon footprints can be calculated by asking questions about housing and heating type, appliances used ('white goods') and self-reported behaviours (energy use), types of transport used and miles travelled (travel), and types of food eaten and their frequency (mostly focused on meat consumption) (diet) that then can be combined with emission factors, i.e., how much CO2e is created per unit of activity (Nässén et al., 2015).

Assessment and recommendations

The environmental attitudes module consists of a range of seemingly disconnected questions on people's environmental lifestyles, beliefs about the effectiveness of behaviour/lifestyle changes, environmental concern and attitudes to/beliefs about climate change. It is not clear what 'constructs' the questions aim to measure and/or how they were developed, and they cannot be combined in a coherent way. Some of the items are 'inefficient' in the way they are used (e.g., Scopecl30 & Scopecl200).

Recommendation:

- **Completely re-design the module and replace the items with questions that are more direct measures of clear and widely-used constructs according to the proposed framework (see Figure 1 and Table 2).**

The environmental behaviour module consists of 11 environmental habits that were developed as part of Defra's pro-environmental behaviour framework (Defra, 2008). The 11 habits are typical 'intent-oriented' behaviours (i.e. behaviours that are motivated to do good for the environment) and do not have a large environmental impact. Furthermore, the questions do not have good psycho-metric properties and make use of an imprecise response scale. However, the behaviours reflect wide range of 'intent-oriented curtailment behaviours across different behavioural domains (household energy, waste, eco-products personal transport and water) that show engagement with the environment. These are therefore useful for environmental behaviour research on a wide range of topics.

The recycling behaviours in the **household questionnaire** (Recglass, Recpaper, Recplastic, Rubrec) reflect the most common and quintessential 'intent-oriented' environmental behaviour.

Recommendation:

- **Keep the module as it is.**

- **Equivalise the scale for the recycling behaviours.**

The transport and commuting modules consist of a range of questions on the frequency of different travel modes, distance to work, usual mode of transport taken for commuting, and frequency of homeworking (Wkhome). In combination with the questions on miles driven by car (carmiles) and number of UK, European and overseas flights (Nflyin, Nflyeu, Nflyos) in the **household questionnaire** this provides a comprehensive assessment of travel-related behaviours, which can be used to calculate overall travel-related carbon emissions.

Recommendation:

- **The transport and commuting modules are fit for purpose to be used in environmental behaviour research, both in terms of travel as an environmental behaviour and calculating overall travel-related carbon emissions.**

The household questionnaire contains a number of questions that are relevant for household energy use, including questions on housing type and size, heating/fuel type, amount spent on gas and electricity, and white goods in the home, as well as on micro-generation and green energy tariffs. All these questions are appropriate to calculate overall household energy-related carbon emissions (Nässén et al., 2015).

Recommendation:

- **The household questionnaire is fit for purpose to be used in environmental behaviour research, in particular in terms of calculating overall energy-related carbon emissions (but less so for specific energy-relevant behaviours)**

The nutrition module consists of a number of questions on breakfast, dairy, bread and fruit and vegetable consumption. The household questionnaire further includes questions on amount of money spent on food, groceries, and meals, snacks and non-alcoholic drinks outside the home. While the module can be used to calculate some diet-related carbon emissions, it is far from complete. The module contains no questions on meat and dairy consumption, which are the most important sources of diet-related carbon emissions (Poore J. & Nemecek T., 2018). Ideally, the module would ask a battery of questions on white, red and processed meat, fish and meat-replacements, as well as cheese, milk and butter consumption. However, given the space constraints of the USS this has to be done with a limited number of items. The suggestion is to add two questions on meat and dairy consumption.

Recommendation:

- **Add questions on meat and dairy consumption to be able to calculate diet-related carbon emissions (see Table 3).**

Understanding Society contains virtually no questions that can be used to calculate carbon emissions from **material consumption**. It is beyond the scope of this review to consider the measurement of consumption and the **household questionnaire**.

Recommendation

- **Consider the topic at a later stage.**

Table 1: Existing modules and questions relevant to environmental behaviour and climate change research

Module/Area	CODE	Concept	Question	Answer options	Comments/Advice
ENVIRONMENTAL BEHAVIOURS MODULE					
Environmental behaviours	**Envhabit1 – Envhavbit11**	Environmental behaviours/habits	Could you tell me how often you personally do each of the following things? Leave your TV on standby for the night Switch off lights in rooms that aren't being used Keep the tap running while you brush your teeth Put more clothes on when you feel cold rather than putting the heating on or turning it up Decide not to buy something because you feel it has too much packaging Buy recycled paper products such as toilet paper or tissues Take your own shopping bag when shopping Use public transport (e.g., bus, train) rather than travel by car Walk or cycle for short journeys less than 2 or 3 miles . Car share with others who need to make a similar journey . Take fewer flights when possible	Never Not very often Quite often Very often Always Don't know Not applicable	The questions do not have good psycho-metric properties and make use of an imprecise response scale. Furthermore, the questions focus on typical low-impact behaviours The module however contains a wide range of 'curtailment' behaviours across different behavioural domains (household energy, waste, eco-products personal transport and water), and as such is useful to environmental behaviour research on a wide range of topics. Advice is to keep the module as it is.

					It is more important to be able to track changes in these indicator/headline behaviours over time than to update the specific environmental behaviours and/or scale.
ENVIRONMENTAL ATTITUDES MODULE					
Environmental lifestyle	**Scenv_Ftst**	Feeling about current lifestyle	Which of these best describes how you feel about your current lifestyle and the environment?	I'm happy with what I do at the moment I'd like to do a bit more to help the environment I'd like to do a lot more to help the environment	The environmental attitudes module consists of a range of seemingly disconnected questions on

	Scenv_Crlf	Current lifestyle environmentally friendly	Which of these would you say best describes your current lifestyle	don't really do anything that is environmentally-friendly I do one or two things that are environmentally-friendly I do quite a few things that are environmentally-friendly I'm environmentally-friendly in most things I do I'm environmentally-friendly in everything I do	people's environmental lifestyles, beliefs about the effectiveness of behaviour/lifestyle changes, environmental concern and attitudes to/beliefs about climate change. It is not clear what 'constructs' the questions aim to measure, and they cannot be combined in a coherent way (see e.g., Thomas et al., 2018). Some of the items are 'inefficient' in measuring constructs (e.g., Scopecl30 & Scopecl200). The advice here is to completely re-design the module and replace the items with questions that are more direct measures of clear and widely-used
	Scenv_Grn	Being green is an alternative lifestyle	Do you agree or disagree that being green is an alternative lifestyle, it's not for the majority?	Agree strongly Agree Disagree Disagree strongly	
	Scenv_pmep	Pay more for environmentally friendly products	I would be prepared to pay more for environmentally-friendly products.	Strongly agree Tend to agree Neither agree nor disagree Tend to disagree Strongly disagree	
	Scenv_Bccc	Behaviour contributes to climate change	For the next set of statements, please tell me whether you Strongly Agree, Tend to Agree, Neither Agree nor Disagree, Tend to Disagree or Strongly Disagree with each statement that I read. My behaviour and everyday lifestyle contribute to climate change	Strongly agree Tend to agree Neither agree nor disagree Tend to disagree Strongly disagree	

Beliefs about changes	**Scenv_Fitl.**	Changes to help environment need to fit with lifestyle	Any changes I make to help the environment need to fit in with my lifestyle	Strongly agree Tend to agree Neither agree nor disagree Tend to disagree Strongly disagree	constructs in environmental behaviour research.
	Scenv_Noot	Not worth making changes if others don't	It's not worth me doing things to help the environment if others don't do the same.	Strongly agree Tend to agree Neither agree nor disagree Tend to disagree Strongly disagree	
	Cenv_Canc	Not worth UK making changes	It's not worth the UK trying to combat climate change, because other countries will just cancel out what we do.	Strongly agree Tend to agree Neither agree nor disagree Tend to disagree Strongly disagree	
Environmental concern	**Scenv_Meds**	Soon experience major environmental disaster	If things continue on their current course, we will soon experience a major environmental disaster	Strongly agree Tend to agree Neither agree nor disagree Tend to disagree Strongly disagree	
	Scenv_Crex	Environmental crisis has been exaggerated	The so-called 'environmental crisis' facing humanity has been greatly exaggerated	Strongly agree Tend to agree Neither agree nor disagree Tend to disagree Strongly disagree	
Climate-relevant beliefs	**Scenv_Tlat**	Climate change is beyond control	Climate change is beyond control - it's too late to do anything about it.	Strongly agree Tend to agree Neither agree nor disagree Tend to disagree Strongly disagree	
	Scenv_Nowo	Climate change too far in future to worry	The effects of climate change are too far in the future to really worry me.	Strongly agree Tend to agree Neither agree nor disagree Tend to disagree	

				Strongly disagree	
	Scopecl30	Affected by climate change next 30 years	Please select whether, on the whole, you personally believe or do not believe each of the following statements. People in the UK will be affected by climate change in the next 30 years	Yes, I do believe this No, I do not believe this	
	Scopecl200	Affected by climate change next 200 years	Affected by climate change next 200 years	People in the UK will be affected by climate change in the next 200 years.	
HOUSEHOLD QUESTIONNAIRE					
Recycling behaviour	**Recglass** **Recpaper** **Recplastic**	Recycle glass paper and plastic	Does your household recycle glass bottles and jars/paper and cardboard/plastic, rather than putting them into your general rubbish?	Always recycle Usually recycle Sometimes recycle Never recycle	Keep as is (or, as a minor adjustment, use the same response scale as Envhabit1 – Envhavbit11)
	Rubrec	Separate items for recycling	Do you separate your rubbish into items that can be recycled through your normal rubbish collection always, usually, sometimes or never?	Always Usually Sometimes Never Spontaneous: No recycling though normal rubbish collection	
Module/Area	**CODE**	**Concept**	**Question**	**Answer options**	**Advice**
TRANSPORT BEHAVIOUR MODULE					
Transport behaviour	**Trcarfq** **Trbusfq** **Trtrnfq** **Trtubefq** **Trbikefq** **Walkfreq**	Frequency of travel	• How frequently do you travel by private car or van - whether as a driver or passenger? • How frequently do you use an ordinary bus? Please count a single trip as one journey and each return trip as two.	At least once a day 5 or more times a week, but not every day 3 or 4 times a week Once or twice a week Less than that but more than twice a month	The transport and commuting modules are fit for purpose to be used in environmental behaviour research, both in terms of

			• How frequently do you use a train, not including underground, tram or light rail? • How frequently do you use the underground, tram or light rail these days? This excludes other train journeys. • How frequently do you use a bicycle? • How frequently do you walk anywhere for 20 minutes or more without stopping? Please count each single trip as one journey and each return trip as two	Once or twice a month Less than that but more than twice a year Once or twice a year Less than that or never	travel as an environmental behaviour and calculating travel-related carbon emissions
Transport attitudes	**Needcar**	Lifestyle means need car or van	How much do you agree or disagree with the following statements? • My current lifestyle means I need to own a car or van	Strongly agree Tend to agree Neither agree nor disagree Tend to disagree Strongly disagree	
	Cyclepath	Cycle if more dedicated paths	I would cycle (more) if there were more dedicated cycle paths	Strongly agree Tend to agree Neither agree nor disagree Tend to disagree Strongly disagree	
Module/Area	**CODE**	**Concept**	**Question**	**Answer options**	**Advice**
COMMUTING BEHAVIOUR MODULE					
	Workdis	Distance from work	About how far, in miles, do you live from your usual place of work in your main job as a/an …	[write in in miles]	
EMPLOYEE MODULE					
	Jsworktrav **Worktrav** **Wktrv**	Usual mode of transport taken to place of work	And how do you usually get to your place of work?	Drive myself by car or van Get a lift with someone from household	

				Get a lift with someone outside the Household Motorcycle/moped/scooter Taxi/minicab Bus/coach Train Underground/Metro/Tram/Light railway Cycle Walk Other	
	Wktrvfar	Main mode of transport to work	Which do you use for the furthest part of your journey to work?	Drive myself by car or van Get a lift with someone from household Get a lift with someone outside the Household Motorcycle/moped/scooter Taxi/minicab Bus/coach Train Underground/Metro/Tram/Light railway Cycle Walk Other	
	Jbpl	Work location	Do you work mainly...	At home At your employer's premises Driving or travelling around Or at one or more other places?	
	Wkhome	Willingness to work from home (frequency of working from home)	How often do you work at/from home?	Never 1-4 days a month 1 day a week 2 days a week 3 days a week 4 days a week	

				Always	
HOUSEHOLD QUESTIONNAIRE					
	Pncars	Number of cars in the households	How many cars or vans in total does your household own or have continuous use of?		
	Carage	Age of car/van	What is the approximate age of the car/van?	[in years?]	
	Carfuel	Type of fuel car/van uses	What fuel does the engine use?	[text]	
	Ensize **Ensze**	Engine size	What is the engine size of your car/van?	Up to 700cc (0.7l) 701 to 1000cc (0.7 to 1 litre) 1001 to 1300cc (1.0 to 1.3 litres) 1301 to 1400cc (1.3 to 1.4 litres) 1401 to 1500cc (1.4 to 1.5 litres) 1501 to 1800cc (1.5 to 1.8 litres) 1801 to 2000cc (1.8 to 2.0 litres) 2001 to 2500cc (2.1 to 2.5 litres) 2501 to 3000cc (2.5 to 3.0 litres) 3001 and over (over 3 litres)	
	Carsrv	Mobility services	Are you a member of any of the following services?	Formal car sharing scheme Car club (e.g., streetcar, zip car, city car etc.) Neither	
	Carmiles	Miles driven last 12 months	About how many miles would you say you personally have driven in the last twelve months? If you drive more than one car owned by or available to your household please		

			give the mileage for the car you drive most often.		
	Flyes	Flights in UK, Europe or outside Europe	Did you take any flights within the UK, to other European countries or to countries outside Europe in the last twelve months for leisure, holidays or visiting friends or family? Please do not include air travel for work or business purposes.	Yes, within the UK Yes, other European countries Yes, countries outside Europe No flights taken	
	Nflyin **Nflyeu** **Nflyos**	Number of flights in UK, Europe and outside Europe	How many flights within the UK/ to other European countries/ countries outside Europe did you take in the last twelve months?	[write in number]	
Module/Area	**CODE**	**Concept**	**Question**	**Answer options**	**Advice**
HOUSEHOLD QUESTIONNAIRE	**Cduse**	Possession of consumer durables	Could you please tell me which of the following items you have in your (part of the) accommodation? Just tell me the numbers that apply.	Television set DVD/Blu-ray player deep freeze or fridge freezer washing machine Tumble dryer dish washer microwave oven landline telephone mobile telephone	The household questionnaire is fit for purpose to be used in environmental behaviour research, in particular in terms of calculating overall energy-related carbon emissions.
	Fuelhave	Type of domestic fuel	Which types of domestic fuel do you have in your accommodation? (electricity / gas / oil / other fuel / none)	Electricity Gas, including Calor gas Oil Other fuel, incl solid fuel	
	Xpduely **Xpelecy** **Xpgasy** **Xpoily** **Xpsfly**	Expenditure on fuel	In the last year, since (last interview), how much has your household spent on electricity / gas / oil / solid fuel / gas and electricity/other?	Amount in £	
	Hsbeds	Number of bedrooms	How many bedrooms are there here excluding any bedrooms you may let or sublet?	Enter number	

	Hsrooms	Number of other rooms	How many other rooms do you have in your accommodation, excluding kitchens and bathrooms?	Enter number	
	Hsownd	Household tenure	Does your household own this accommodation outright, is it being bought with a mortgage, is it rented, or does it come rent-free?	Owned outright Owned/being bought on mortgage Shared ownership Rented Rent free Other	
	Heatch	Central heating	Do you have any form of central heating, including any electric storage heaters, in your (part of the) accommodation?	Yes No	
	Solar1 **Solar2** **Solar3**	Installation of renewables	Have you installed or are you seriously considering any of the following… solar panels for electricity / solar water heating / a wind turbine to generate electricity?	Yes - fitted Yes - seriously considering No - neither Considered in the past and rejected	
	Etariff	Green tariff	Does your household buy, or is your household seriously considering buying its electricity on a Green Tariff? By Green Tariff we mean a payment scheme where your electricity supplier provides electricity from renewable sources such as wind power to the National Grid for the amount you use	Yes - already buy Yes - seriously considering No - neither Considered in the past and rejected	
	Dwltype	Dwelling type	Is this property...	A house or bungalow A purpose built flat or maisonette A converted flat or maisonette	
	Hhsize	Household size	Derived variable	Calculated in the survey script by summing the	

				number of individuals per household from the household grid	
Module/Area	**CODE**	**Concept**	**Question**	**Answer options**	**Advice**
NUTRITION MODULE	**Breakfst**	Days eats breakfast	the next few questions are about your eating habits. How many days a week do you usually eat breakfast?	[write in number]	Add questions on meat and dairy consumption.
	Usdairy	Usual type of dairy consumption		Whole milk Semi-skimmed milk Soya milk Any other sort of milk Spontaneous: Don't use milk	
	Usbread	Type of bread eats most frequently	What type of bread do you eat most frequently?	White Wholemeal Granary or wholegrain Other brown Both brown and white Spontaneous: don't eat bread Other type of bread	
	Wkfruit	Days each week eat fruit	Including tinned, frozen, dried and fresh fruit, on how many days in a usual week do you eat fruit?	Never 1-3 days 4-6 days Every day	
	Fruitamt	Amount of fruit eaten per day	On the days when you eat fruit, how many portions (e.g., an apple, an orange, some grapes) do you eat?	[write in]	
HOUSEHOLD QUESTIONNAIRE	**Xpfood1_g3**	Amount spent on food from supermarket	About how much has your household spent in total on food and groceries in the last four weeks from a supermarket or other food shop or market? Please do not include alcohol but do include non-food items such as paper	Amount in £	

			products, home cleaning supplies and pet foods.		
	Xpfdout_G3	Amount spent on meals snacks and drinks purchased outside home	How much have you and other members of your household spent in total on meals, snacks and non-alcoholic drinks purchased outside the home in the last four weeks? Please include items bought from takeaways, restaurants, sandwich shops, work or school canteens but do not include alcohol.	Amount in £	
Module/Area	**CODE**	**Concept**	**Question**	**Answer options**	**Advice**
	Prfitb	Total personal income	Would you please look at this card and give me the number for the group in which you would place [NAME]'s total personal income from all sources before tax and other deductions?	[write in]	
	Fihhmnnet1_dv +	Total household net income	Monthly total household net income - no deductions.	In £	
	Fihhmnnet3_dv	Total household net income	Total household net income - individual/household deductions	In £	
	Orgmt3	Environmental group	I am going to read a list of types of organisations. For each, tell me whether you are a member of an organisation of that type	Mentioned Not mentioned	
	Orgat3	Environmental group	Whether you are a member or not, do you join in the activities of any of these organisations on a regular basis?	Mentioned Not mentioned	

Table 2: Proposed new module on environmental attitudes

Module/Area	CODE	Concept	Question	Answer options	Advice
ENVIRONMENTAL ATTITUDES MODULE					
Environmental identity	**NEW** (replace Scenv_Crlf)	Environmental identity	I think of myself as an environmentally friendly consumer (or: 'I think of myself as someone who is very concerned with environmental issues)	Strongly agree Tend to agree Neither agree nor disagree Tend to disagree Strongly disagree	**NEW**, source: (Whitmarsh & O'Neill, 2010)
	NEW (replace Scenv_Grn**)**	Environmental identity	I would be embarrassed to be seen as having an environmentally friendly lifestyle	Strongly agree Tend to agree Neither agree nor disagree Tend to disagree Strongly disagree	**NEW**, source: (Whitmarsh & O'Neill, 2010)
Environmental worldview	**Scenv_Meds**	Soon experience major environmental disaster	If things continue on their current course, we will soon experience a major environmental disaster	Strongly agree Tend to agree Neither agree nor disagree Tend to disagree Strongly disagree	**ADD** a third question from the New Environmental Paradigm (Dunlap et al., 2000) to measure the 'Eco-crisis' factor of the scale (Dyr & Prusik, 2020). This can be used as a measure of general environmental concern.
	Scenv_Crex	Environmental crisis has been exaggerated	The so-called 'environmental crisis' facing humanity has been greatly exaggerated.	Strongly agree Tend to agree Neither agree nor disagree Tend to disagree Strongly disagree	
	NEW (NEW)	Humans are seriously abusing the environment	Humans are seriously abusing the environment	Strongly agree Tend to agree Neither agree nor disagree Tend to disagree Strongly disagree	
Responsibility beliefs	**NEW** (eplace Scenv_Bccc)	Personal responsibility	To what extent do you feel a personal responsibility to try to prevent climate change from worsening?	11-point end-labelled scale (0 – Not at all - 10 – A great deal)	**NEW**, source: (European Social Survey, 2016)

Efficacy beliefs	**NEW** (NEW)	Personal efficacy	To what extent do you feel that your own personal actions can help prevent climate change from worsening?	11-point end-labelled scale (0 – Not at all - 10 – A great deal)	**NEW**, source: (European Social Survey, 2016)
	NEW (replace Scenv_Noot)	Collective efficacy	To what extent do you feel that people together can help prevent climate change from worsening?	11-point end-labelled scale (0 – Not at all - 10 – A great deal)	**NEW**, adapted from (van Zomeren et al., 2010)
Climate beliefs	**NEW** (replace Scenv_Tlat)	Climate change causes	Thinking about the causes of climate change, which, if any, of the following best describes your opinion?/ Do you think that climate change is caused by natural processes, human activity, or both?	Entirely by human activity Mainly by human activity About equally by human activity and natural processes Mainly by natural processes Entirely by natural processes I don't think climate change is happening/ There is no such thing as climate change	**NEW**, adapted from: (European Social Survey, 2016)
	NEW (replace Scopecl30)	Perceived impacts	Overall, how positive or negative do you think the effects of climate change will be?	Entirely negative More negative than positive Neither positive nor negative More positive than negative Entirely positive	**NEW**, source: (Steentjes et al., 2017)
	NEW (replace Scopecl200)	Psychological distance (temporal)	When, if at all, do you think the UK will start feeling the effects of climate change?	We are already feeling the effects In the next 10 years In the next 25 years In the next 50 years In the next 100 years Beyond the next 100 years Never	**NEW**, source: (Spence et al., 2012)
Climate concern	**NEW** (replace Scenv_Nowo)	Climate change worry	How worried, if at all, are you about climate change?	Not at all worried Not very worried somewhat worried Very worried Extremely worried	**NEW**, source: (European Social Survey, 2016)

				Don't know	
Willingness to change/pay	**NEW** (NEW)	Willingness to change lifestyle	How willing or unwilling are you to change your own lifestyle to help prevent climate change from worsening	Very willing Fairly willing Neither willing nor unwilling Fairly unwilling Very unwilling	**NEW**
	ADAPTED (Scenv_pmep)	Willingness to pay	How willing or unwilling are you to pay more for environmentally-friendly products	Very willing Fairly willing Neither willing nor unwilling Fairly unwilling Very unwilling	**ADAPTED** from USS.
REMOVE	**REMOVE** (Scenv_Ftst)	~~Feeling about current lifestyle~~	~~Which of these best describes how you feel about your current lifestyle and the environment?~~	~~I'm happy with what I do at the moment~~ ~~I'd like to do a bit more to help the environment~~ ~~I'd like to do a lot more to help the environment~~	**REMOVE**
	REMOVE (Scenv_FitI)	Changes to help environment need to fit with lifestyle	Any changes I make to help the environment need to fit in with my lifestyle	Strongly agree Tend to agree Neither agree nor disagree Tend to disagree Strongly disagree	**REMOVE**
	REMOVE (Cenv_Canc)	Not worth UK making changes	It's not worth the UK trying to combat climate change, because other countries will just cancel out what we do.	Strongly agree Tend to agree Neither agree nor disagree Tend to disagree Strongly disagree	**REMOVE**

Table 3: Proposed questions on meat and dairy (cheese) consumption

Module/Area	CODE	Concept	Question	Answer options	
Diet	**Consmeat**	Red meat consumption	How often do you eat meat or meat products	Two or more times a day Once a day 4-6 times a week 2-3 times a week Once a week 1-3 times per month Less often or never	Adapted from Health Survey for England/ Health Survey for Scotland
	Conscheese	Cheese consumption	How often do you eat cheese or cheese products?	Two or more times a day Once a day4-6 times a week 2-3 times a week Once a week 1-3 times per month Less often or never	Adapted from Health Survey for England/ Health Survey for Scotland

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