PREPARE - Climate risk acceptability
Findings from a series of deliberative workshops and online survey

Part of the PREPARE Programme of research on preparedness, adaptation and risk
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Executive summary

This report is part of the PREPARE programme of research on preparedness, adaptation1 and risk in relation to climate change, carried out on behalf of the Department for Environment, Food and Rural Affairs (Defra). It presents the findings from two research activities conducted by Ipsos MORI - an online survey and a series of deliberative workshops.

Its aim is to inform the Government’s National Adaptation Plan and to understand the public mandate for action on climate change adaptation.

Research methodology

The online survey was conducted among a nationally representative sample of 2,007 adults across the UK. The interviews were carried out between 30 January and 5 February 2013.

Fourteen deliberative workshops were held during March 2013 in a range of locations that were chosen to reflect different types of communities and areas facing different climate challenges in the UK. In total, 147 local residents each attended a day-long deliberative workshop moderated by Ipsos MORI researchers.

The materials for these workshops were created in collaboration with Leeds University, Ricardo-AEA, HR Wallingford and Defra. Both the online survey and the workshops were designed following a review of climate change adaptation literature by Leeds University.

This Executive Summary presents the headline findings from the report.

Public support for preparing for climate change

To what extent is climate change viewed as important and adaptation as necessary?

- There is public support for the UK to invest in preparations to adapt to climate change. Public uncertainty over the existence or the causes of climate change does not negate this support.
- Most of those who took part in the survey and workshops were concerned about climate change (63%) and believed it to be affecting the UK (64%). While not everyone believes in anthropogenic climate change (31% attributed it to mainly or entirely human factors and 49% in part to natural causes and to human activity), this does not reduce their support for adaptation.
- While climate change is not as immediately concerning as other key issues such as the economy, unemployment, the NHS or immigration, the workshops showed that when given information about the likely impacts for the UK, public concern about the long-term risk increases.
- Most feel that climate change poses risks to the UK (61%) but a few also recognise that it presents opportunities (23%). There are mixed opinions about this, with 23% agreeing “there are benefits to people in the UK from climate change” and 26% disagreeing. However, the largest proportion neither agrees nor disagrees (42%).
- Most (68%) agree that we can avoid the worst impacts of climate change by planning well for them, although they understand there is uncertainty about what those impacts might be (60%). Nearly all workshop participants believed that the UK should take a precautionary approach and agreed it was better to plan for something that does not happen, than fail to plan for something that does. It was accepted that decisions on appropriate preparations can only be made on the evidence available, and that this may not always be accurate or complete.

1 Where used in this report, the term ‘adaptation’ refers to the adjustment in natural or human systems (e.g. urban areas) in response to actual or expected climatic stimuli or their effects. It moderates the potential negative consequences of climate change, or exploits beneficial opportunities from climate change.
Those convinced that climate change is affecting the UK are more likely to agree that the worst impacts can be avoided through planning (74% compared to 61% who are not convinced that the UK is currently being affected). That said, a significant proportion of those who are not convinced climate change, is affecting the UK or who think that the causes of climate change are natural, also agree that the worst impacts could be avoided (61% and 58% respectively).

How is responsibility for climate change adaptation viewed and who would be best placed to act?

- National government has the most responsibility for dealing with the changing climate according to the public (65%) and this view is held regardless of the causes of climate change.
- When survey respondents were asked to select up to three key responsible agents, the role of central government (85%) was followed by contributions from individuals (61%), local authorities (60%) and businesses (59%).
- Some workshop participants suggested that national government investment in climate change should be integrated into the plans of all government departments due to the perceived linkages between sectors.
- Individuals are expected to take responsibility for where they live, to take steps to protect their own homes and property and to make appropriate behavioural changes depending on the weather e.g. carrying water in hot weather. In the survey, half of those questioned (46%) agreed that “protecting my home from a flood is my responsibility” compared with 19% who disagreed.
- Around three-quarters (77%) of the respondents agreed that “individuals and organisations who contribute to climate change should take on the responsibility of dealing with its consequences”.

Public attitudes towards climate impacts

Which impacts are a priority to prepare for and why?

- The majority of participants felt that in their lifetimes they had experienced long-term changes in the UK weather (80%) and over two-thirds (69%) agreed that the UK would experience more extreme weather events by 2050.
- Poor harvests, flooding and water shortages were identified as priorities to prepare for (90%, 85% and 83% of survey respondents were concerned about each of these impacts respectively).
- These impacts are felt to be already affecting the UK – flooding and heavy rainfall in particular are thought to have become more frequent (83% and 76% respectively). The workshops showed that people largely relied on these perceptions of current extreme events to inform their opinions about how likely, and how severe, such events would be in the future.
- Heat waves and hot summers are generally not considered a realistic threat. They are thought to be no more common than they used to be, nor any more severe, and are unlikely to become more common by 2050. For this reason, preparing for these events was a lower priority among participants in both the survey and workshops.
- While coastal erosion is considered a serious threat with a significant impact, there is generally a fatalistic attitude towards what can be done about it. It is felt to be a lower priority than impacts for which people perceive there could be better preparation.

The timing of this research should be taken into account when reviewing and interpreting the results on attitudes to climate impacts. The literature review conducted at the start of this study identified prior research which strongly suggested that very recent weather experiences (especially those that were dramatic in nature) tended to be ‘over-weighted’ when it came to perceptions of future risk. It is likely that recent weather events may have affected the opinions of the research participants. This research was conducted between the end of January and the middle of March 2013 when there was a period of cold wintry weather, but prior to the very cold and snowy conditions of late March. The UK last
Public attitudes towards preparedness

What views do the public have on different adaptation actions?

- During the workshops, participants were shown a number of different adaptations that could be undertaken in the UK to cope with the impacts of climate change. From this list, improved irrigation systems and reservoirs were selected as important preparations by many, due to the impact on human health and the ability to maintain a domestic food supply.
- Some workshop participants felt investment should be made in new crops and breeds of animal to help UK agriculture evolve to adapt to a new climate. There was a unanimous dismissal of greater reliance on food imports, however, as this would detract from participants’ aspirations for the UK to have greater food security.
- Flood defences were prioritised by most as flooding is seen as a current and ongoing problem.
- Improved planning for companies to deal with extreme events was also prioritised, mainly due to the financial impact of non-preparation. It was also felt that this would help spread the responsibility and cost of making adaptations beyond government. For similar reasons, information campaigns were seen as an important element of any adaptation plan, as individuals and communities are considered important agents in adaptation.
- Some preparations were selected because they were considered to have benefits for both mitigation and adaptation, for example greening urban spaces and planting trees to create new woodlands.

Public principles for prioritising climate preparations

What levels of risk posed by climate change are acceptable to the public and why?

- The following critical factors were found to underpin the public’s assessment of preparation priorities:
  - The likelihood of the event happening in the UK within the next two decades.
  - The suddenness or unexpectedness of the impact.
  - The impact on people such as i) the severity of the impact (i.e. whether it causes death, loss of property, disruption to travel etc.); ii) the number affected; and iii) the vulnerability of the people worst affected (i.e. whether it would particularly affect older, low income or disabled people).
  - The financial impact (either positive or negative) on businesses and the wider economy.
  - The knock-on effects and wider consequences of the event.
  - The extent to which large-scale investment and effort are perceived to be needed to adapt to deal with the impact.
- These factors were used by workshop participants to assess what level of risk was acceptable to them. The assessment of each factor was based primarily on people’s own perceptions rather than on the information provided. Overall, the workshops revealed that people find it difficult to conceptualise risk and find it challenging to weigh up the uncertainty over when and where events may happen.
- While a few workshop participants felt the greatest priority was to prepare for events that were likely to happen within the next five years, most felt it was wise to prepare for likely events within the next two decades. Many felt it was not appropriate to prepare for climate events that are expected to have significant impacts for the UK. 

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2 It should be noted that simple information was provided about each adaptation action, but no information was presented on their costs.
over a longer timeframe (i.e. more than 20 years) as they felt many factors could change within this time period e.g. understanding of the risk and ability to respond.

- The acceptability of climate risks is more linked to the type of impact than to the frequency with which it might occur. For example, concern about severe flooding among survey respondents was of a similar magnitude whether it happened every year or every 25 years.

- Survey respondents were less concerned about increasingly frequent severe heat waves than about flooding. Risks associated with warmer temperatures were also more acceptable to the workshop participants. This is linked to their lack of belief that the UK will experience significantly warmer temperatures and that, if it does, this will have considerable negative consequences for people, businesses and the natural environment.

- Preventing deaths is seen as critical. Around 59% of survey respondents ranked it as the most important principle on which any adaptation decisions should be based. Workshop participants also considered the number of people affected and the economic impacts on individuals and small businesses.

- Concern about the impact on people was put ahead of protecting large businesses and significantly ahead of protecting the natural environment. While workshop participants often spontaneously raised concerns about loss of wildlife as a result of climate change (and indeed around eight in ten survey respondents were concerned by it), they did not prioritise protecting it when trade-offs were made.

Which areas and groups of people are priorities to protect from climate change?

- Overall, workshop participants supported protection being directed to the areas of the country most at risk. For example, those living in areas perceived to be fairly wet (e.g. the Lake District, Monmouth and Belfast) acknowledged that investment in protection against drought and water shortages would, and should, be targeted at the south east rather than in areas of low water stress.

- Workshop participants were asked to discuss the relative importance of protecting towns and cities, countryside and rural areas, and coastal areas. They were given information on the likely impacts in these different types of area but also made their own judgements on which areas were most at risk using the critical factors discussed above.

- Cities were considered vital to protect as they are home to large populations and are economic centres and hubs of infrastructure.

- Rural farming areas were also identified as a priority to protect in order to prevent rising food prices and increased imports.

- Coastal areas were generally seen as the least important of the three areas to protect. This was due to a perception that they are home to smaller and sparser populations, have lower economic importance than cities or rural areas and face threats which are more gradual (i.e. coastal erosion) and perceived to be more difficult for which to prepare.

- The public’s overriding priority is to protect people from changes to the UK’s climate, particularly vulnerable citizens, and also the young and economically active. In particular, small business owners and those involved in agriculture were prioritised due to their economic and social importance.

- People who choose to live or work in at-risk areas (e.g. on floodplains) are generally expected to bear more responsibility for dealing with the impacts themselves Two in three (65%) of the survey respondents agreed it was fair that people faced different levels of risk because of where they choose to live.

Figure 1 draws together the findings of the online survey and deliberative workshops, summarising the key aspects of risk preparation that the UK public find acceptable and unacceptable. It should be noted that specific adaptation actions were not the focus of this research. Rather the aim was to understand how people perceive risk and public attitudes
towards the principles on which any adaptation decisions should be made. This summary is based on Ipsos MORI’s interpretation of the data collected. It should be noted that these do not necessarily represent the views of all research participants, but they do reflect the broad themes of opinion expressed.

**Figure 1: Summary of public perceptions of acceptable and unacceptable risk preparation**

**Acceptable**
- To invest in adaptations now based on best evidence available, even if this means preparations are made for events which never happen
- To invest most in preparations for:
  - flooding
  - water shortages
  - protecting urban areas
  - protecting productive agricultural land
- To accept that not everywhere and not everyone can be, or should be, protected equally – and to therefore focus less investment on preparations for*:
  - sparsely populated coastal areas
  - areas of natural environmental importance
  - people who have chosen to live in at-risk areas
  - warmer temperatures and heat waves

*While not risking significant loss of life or business or agricultural productivity

**Unacceptable**
- To allow significant loss of:
  - human life
  - productivity for small businesses
  - productive agricultural land
- To invest substantially to prepare for:
  - events that may not happen within next 20 years
  - consequences related to warmer climate
- To allow the UK to face severe consequences from:
  - flooding
  - water shortages
  - failed harvests leading to higher food prices
- To not exploit the opportunities created by changes in the climate e.g. tourism or new crops
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1 Introduction

This chapter presents the aims and objectives of this study and provides key details on the methodologies used.

1.1 Background to this research

The climate is changing and will continue to change throughout this century. The 2009 UK Climate Projections\(^3\) show increases expected in summer and winter temperatures, increases in winter rainfall, decreases in summer rainfall (although small increases are also possible) more days of heavy rainfall, and rising sea levels. Adaptation is needed to manage current risks from extreme weather, and to prepare for additional pressures from the changing climate in future.

The Climate Change Act 2008 made the UK the first country in the world to have a legally binding long-term framework to cut greenhouse gas emissions and to build the UK’s ability to adapt to climate change. With regard to adaptation, the Act requires:

- A UK-wide climate change risk assessment (CCRA) that must take place every five years;
- A national adaptation programme (NAP) which must be put in place and reviewed every five years, setting out the Government’s objectives, proposals and policies for responding to the risks identified in the CCRA;
- Adaptation Reporting Powers (not applicable in Northern Ireland) which enable the Secretary of State to direct “reporting authorities” to prepare climate change adaptation reports.
- In addition, the Adaptation Sub-Committee of the Committee on Climate Change, an independent expert body, was set up as required under the Climate Change Act 2008. Its role is to advise on the preparation of the UK CCRA, to report to Parliament on the UK Government’s progress in the implementation of the NAP and to provide advice to the Devolved Governments, as required.

In the first round of reporting under the Adaptation Reporting Power (completed in 2011) over 100 organisations, primarily from the energy, transport and water sectors provided reports to Defra. This provided a clearer picture of climate risks, adaptation actions and awareness at organisational level in a limited number of sectors.

The Government published the UK Climate Change Risk Assessment (CCRA) in 2012, the first assessment of its kind for the UK and the first in the five-year cycle. This assessed (and where possible, monetised) the main risks and opportunities in the UK from climate change.

The Government will publish a National Adaptation Programme (NAP) responding to risks identified in the CCRA to describe the respective roles of Government, private sector and others in meeting these challenges.

This report, focussing on public views on climate change risk and adaptation, is one part of a wider programme of research for Defra that will assist in the development of the NAP. The other strands of the wider programme are:

- Barriers and enablers to organisational and sectoral adaptive capacity - quantitative study: a quantitative telephone survey with over 2,000 organisations in

\(^3\) [http://ukclimateprojections.defra.gov.uk/](http://ukclimateprojections.defra.gov.uk/)
the private, public and third sectors to determine the extent of their action on climate change adaptation, and the barriers they face in adapting to climate change.

- **Barriers and enablers to organisational and sectoral adaptive capacity - qualitative study**: follow up qualitative telephone interviews with over 70 organisations from the above survey to provide a deeper understanding of what adaptation actions are being taken and barriers to more advanced actions.

- **The contribution and role of local and household level adaptation in overall UK adaptation**: a desk-based systematic evidence review to identify a range of individual and household level actions that contribute most to overall UK resilience and potential enablers of further household actions.

- **Understanding the equity and distributional impacts of climate risks and adaptation options**: a desk based review to provide support to Defra in further developing the evidence base relating to the equity and distributional impacts of climate risks and adaptation options, including summarising, and where possible quantifying, the differential risks and opportunities for these groups.

### 1.2 Aims for this research

The aim of this project is to help the Government understand the public mandate for action on climate change adaptation by answering the following questions:

- To what extent is climate change viewed as important and adaptation as necessary?
- What impacts are a priority to prepare for and why?
- Which areas and groups of people are a priority to protect from climate change?
- What levels of risk posed by climate are acceptable to the public and why?
- What views do the public have on different adaptation actions?
- How is responsibility for climate change adaptation viewed and who would be best-placed to act?

A literature review was conducted prior to this research by academics at Leeds University, focussing on public perceptions of climate risk and adaptation measures in the UK which highlighted recommendations for future research, including:

- Exploring the extent to which attitudes, awareness and beliefs regarding climate change influence perceptions of the risks posed by individual climate change impacts and the adaptation actions that might be taken in response; and
- Investigating whether emotion and attribution of responsibility affect perception of risk and willingness to undertake or accept preparation measures.

This report aims to provide an evidence base for these questions. While this research explores the concept of agency and willingness for individuals to take adaptation actions, the primary focus is on national level policy decisions to feed into the NAP, rather than household or individual level adaptive measures.

### 1.3 Research methodology

This research used a mixed method approach, combining an online quantitative survey with 14 qualitative deliberative workshops. The survey provides representative findings of public views and attitudes towards climate change, the impacts that are a priority to prepare for and perceptions of responsibility. The qualitative workshops provide an in-depth understanding of why these views are held and the underlying factors determining priorities and levels of risk.
acceptability. Using both qualitative and quantitative methods thus provides a more rounded approach.

Before the main phases of the research began, two discussion groups were held (in York and London) to determine the language used by the public when describing risk and to help understand what impacts people associate with changes in the climate. These groups also helped to determine how risks are grouped by the public, and piloted exercises encouraging participants to make trade-offs between risks. They fed into the design of the online survey and workshop materials, but the findings from these initial group discussions are not directly reported on here.

1.3.1 Quantitative Online survey

Results are based on 2,007 responses to an online survey carried out between 30th January and 5th February 2013 with people aged 16+ living in the UK. All respondents were panellists on the Ipsos MORI online panel (IIS) which consists of a pre-recruited group of individuals or households who have agreed to take part in online market and social research surveys. Panellists are rewarded with points for every survey they complete which can be redeemed for a variety of vouchers. For further information on IIS please see the appendices.

Before the main fieldwork began, the questionnaire was piloted internally with Ipsos MORI staff, before being tested using a ‘live pilot’. For the live pilot, the survey link was sent to panellists to achieve a test sample of 100 individuals so that the data collected could be checked and to ensure that the survey was clear and understood by respondents. The initial 100 responses are included in the final sample of 2,007 as the pilot only resulted in one very minor change to the survey.

Quotas were set on age, gender, region, and working status and the final data was also weighted to these quotas. The quotas and weighting have been set to achieve a nationally-representative sample. Detailed information on the quotas and weighting is included in the appendices.

The survey aims to understand the relative importance of climate change in the context of other issues, attitudes to climate change, experience of climate change and impacts which are a priority to adapt to.

1.3.2 Qualitative Deliberative research

Fourteen day-long deliberative workshops were held in locations across the United Kingdom. 12 participants were recruited for each workshop, although actual attendance varied, with a total of 148 participants across all 14 workshops. Participants were paid an incentive of £80 as a thank you for their time.

Workshop locations were selected to provide a geographical spread across the UK, and the groups varied according to age group, social grade and exposure to particular climate risks, which were considered to be important factors that might influence perceptions of climate change and climate risk. Potential participants were excluded if they worked for an environmental charity or pressure group, any government department, the Environment Agency or Met Office, or if they worked in Environmental journalism/media or environmental science.

Figure 2 shows the location and demographic characteristics of each group as well as the number of people who attended. The first group, held in London, was a pilot for the later events. It was used to test the exercises and discussion guide to make sure they were suitable and kept respondents engaged. As a result of the pilot workshop, minor edits were made to the exercises used during the day but the broad structure remained the same. The results from the pilot event are therefore also included in this report.
When recruited for the workshops, participants were not told that the events would be about climate change or environmental issues. The subject matter was explained as being about "issues affecting the local area and the wider world" in order to avoid prejudicing participants' views. After discussing life in their local area, and participants' views on the important current and future issues facing the UK, the remainder of the day focused on climate change and its impacts.

The workshop exercises explored attitudes towards climate change, perceptions of its effects, which impacts are priorities to prepare for and the reasons underpinning this. The exercises also explored views on the different types of area that should be prioritised, and
the balance of desired allocation of resources to preparing for impacts affecting people, businesses and the environment. Participants were also asked to choose from a set of possible broad climate change adaptation preparations the ones they would enact, and to consider how the “adaptation plan” they had in effect made would affect different types of people. Additional exercises examined how uncertainty in climate change impacts affects participants’ decisions, and considered the importance of climate change adaptation in the context of other issues such as the economy, unemployment and the NHS.

Throughout this report, text boxes explaining the qualitative exercises are included where relevant as “Method Notes”, contextualising the findings with the deliberative methods that were used. A copy of the discussion guide is included in the appendices. Where necessary, these method notes are also used to explain the details behind some of the quantitative survey questions.

1.3.3 Follow-up depth interviews

Following the online survey and deliberative workshops 15 in-depth qualitative interviews were conducted by telephone between March 22nd and April 2nd 2013. These interviews were conducted with respondents to the online survey who had given their permission to be re-contacted. The interviews each lasted between 25 and 35 minutes and were conducted by academics from Leeds University. Respondents were selected based on their answers to the quantitative survey.

The purpose of the interviews was to follow up on responses given in the online survey to understand the attitudes and values which underpinned them. The interviews were also used as a further sense check on the findings from the deliberative workshops.

1.4 Interpreting the findings, limitations and caveats

1.4.1 Interpreting qualitative data

This report combines the findings from the quantitative survey, the qualitative workshops and the follow-up depth interviews. To ensure clarity of which stage of research the findings were taken from, and to highlight differences in findings between the approaches where they exist, results are reported on by referring to “workshop participants”, “survey respondents” or “follow-up interview participants”.

It is important to note that qualitative research approaches (including deliberative methods) are used to shed light on why people hold particular views, rather than how many people hold those views. The research is intended to be illustrative rather than statistically reliable and, as such, does not permit conclusions to be drawn about the extent to which something is happening. Where possible we have stated how common a particular view was amongst participants, but as this is qualitative research, these proportions should be considered indicative, rather than exact or a reflection of the population at large. However, where appropriate and possible, the report also uses the quantitative survey to support or challenge the qualitative findings.

Throughout this report, verbatim comments from the workshops and interviews have been included to illustrate particular viewpoints. Where this is the case, it is important to remember that the views expressed do not always represent the views of all participants. In general, however, verbatim comments have been included to illustrate where there was a particular strength of feeling about a particular topic.

Throughout this report different terms are used to talk about climate risk. The research set out to understand public views and perceptions of risk posed by climate change. However, to do this it was important that research participants were allowed to express their views using
their own language rather than by imposing terminology on them. No definitions of risk were provided to participants of the research, and workshop participants tended to talk about the ‘impacts’ of climate change or its consequences, rather than use the term climate risk. This report therefore reflects the language used by participants but also uses the terminology (i.e. climate risk) more commonly used in this field. Both terms – risks and impacts – are used to reflect the ‘voice’ of participants while doing so in the context of the broader research aims.

1.4.2 Statistical Reliability of quantitative survey

Because a sample, rather than the entire population of the UK population, was interviewed the percentage results are subject to sampling tolerances. This means that we cannot be certain that the figures obtained are exactly those we would have if everybody in the UK had been interviewed (the ‘true’ values). We can, however, predict the variation between the sample results and the ‘true’ values from knowledge of the size of the samples on which the results are based and the number of times that a particular answer is given. For further information on statistical reliability and the confidence intervals for this survey please see the appendices.

1.4.3 Timing of this research

The timing of this research should be considered when reviewing and interpreting the results. The literature review conducted at the start of this study identified prior research which strongly suggests that very recent experiences (especially those that are dramatic in nature) tend to be ‘over-weighted’ when it comes to perceptions of future risk. It is likely, therefore, that recent weather may have affected the opinions of the research participants.

This research was conducted between the end of January and the middle of March 2013. This was a period of cold wintry weather but the fieldwork was completed prior to the very cold and snowy conditions of late March.

The UK last experienced widespread heavy flooding in December 2012, while the last warm summer was 2006 and the last severe heat wave was in 2003.
2 Public support for preparing for climate change

This chapter explores whether there is public belief in, and concern about, climate change in the UK. It also discusses whether there is support for investment in preparations to adapt to live with the consequences of climate change. Finally the chapter discusses where the public think responsibility lies for making these preparations.

Summary of key findings

- Most of the public were concerned about climate change (63%) and believed it to be affecting the UK (64%). Many attributed it partly to natural processes and partly to human activity (49%).
- There was public support for the UK to invest in preparations to adapt to climate change, irrespective of what the causes of climate change were perceived to be.
- Climate change was not as immediately concerning as other key issues such as the economy, unemployment, the NHS and immigration. The workshops showed, however, that when given information about the likely impacts most of the public were more likely to consider climate change a significant risk for the future.
- Most (68%) agreed we can avoid the worst impacts of climate change by planning well for them, although they understood it is uncertain what the impacts will be (60%). When considering the possible impacts of a changing climate over the next 20 years, nearly all workshop participants agreed it is better to plan for something that does not happen than fail to plan for something that does.
- National government has the most responsibility for dealing with the changing climate according to the public (65%). Although, individuals, local government and business were also considered to have a key role to play.

2.1 Belief in and concern for climate change

Most survey respondents were convinced that climate change is currently affecting the planet (67%) and the UK (64%). This also matches the balance of opinion among workshop participants. Many had witnessed an increase in the frequency of extreme weather in the UK (for instance heavier rainfall, heavier snowfall, flooding) which they considered evidence of climate change.

“The seasons seem to be getting mixed up and the weather. It’s the summer but it will rain for three weeks, or it’s October and it’s boiling hot.”
Workshop participant, aged 18-25, social grade ABC1, London

“There seems to be snow every winter here now.”
Workshop participant, aged 26-50, social grade C1C2, Belfast

Some workshop participants conflated climate change with ozone depletion and pollution however – a confusion which was also noted in the literature review.
Chapter 3 considers the public’s perceptions of the changing frequency of specific extreme weather events in more detail.

Although there was general acceptance of climate change, around one in three survey respondents were not convinced that climate change is currently affecting the planet or the UK (29% and 32% respectively – see Figure 3). Some workshop participants said they were confused about whether climate change was happening or not and referenced contradictory information in the media.

“Most people here will remember after World War Two we were told we were heading to the next ice age.”
Workshop participant, aged 50+, social grade ABC1, Monmouth

The climate sceptics tended to be older participants who recalled extreme weather in past decades and disputed the increased frequency or severity of these events now. This was also reflected in the survey, where half of respondents aged 65+ were not convinced climate change is affecting the UK (50%) compared with a third (32%) of all survey respondents.

**Figure 3: Belief in climate change**

<table>
<thead>
<tr>
<th></th>
<th>The planet</th>
<th>The UK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Totally convinced (%)</td>
<td>24</td>
<td>21</td>
</tr>
<tr>
<td>Fairly convinced (%)</td>
<td>43</td>
<td>43</td>
</tr>
<tr>
<td>Not very convinced (%)</td>
<td>22</td>
<td>23</td>
</tr>
<tr>
<td>Not at all convinced (%)</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Don't know (%)</td>
<td>3</td>
<td>31</td>
</tr>
<tr>
<td>No opinion (%)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Totally/fairly convinced</strong></td>
<td><strong>67%</strong></td>
<td><strong>64%</strong></td>
</tr>
</tbody>
</table>

While there was general agreement that climate change is occurring, there was less consensus in both the survey and the workshops as to its causes (see Figure 4). Most survey respondents believed it to be partly a result of natural processes and partly human activity (49%), with a further one in eleven (9%) believing it is mainly caused by natural processes and four per cent that it is entirely natural. This leaves three in ten who thought it is mainly (25%) or entirely (6%) caused by human activity. Despite a significant minority saying they were not convinced that climate change is happening (see Figure 3), when asked about the causes, only 3% said they think there is no such thing as climate change (see Figure 4).
The workshop and follow-up interview discussions revealed similarly widespread beliefs that climate change is at least in part caused by natural cycles. A few workshop participants referred to solar flares as a possible cause of climate change, and some felt natural occurrences such as volcanic eruptions had a greater impact than people. Some did not accept that claims of human impact could be made on evidence collected “since records began” as they felt the last 130 years was too short a period in Earth’s history on which to draw conclusions. Many referred to previous extreme hot or cold periods as evidence that the climate would always vary.

“Climate change has been going on for thousands and thousands of years, long before man was on the planet. Deserts used to be full of trees; trees have now turned to deserts, where there is land there used to be sea, and where there is sea there used to be land. This has gone on for thousands of years.”
Workshop participant aged 50+, social grade C2DE, Birmingham

When asked how concerned they were about climate change, one in five survey respondents said they were very concerned (19%) and around twice as many (43%) fairly concerned (63% overall). Levels of concern about the prospect of climate change varied considerably based on views of its causes; nine in ten (88%) survey respondents who feel climate change is manmade (mainly or entirely) were concerned, compared to just one in six (16%) of those who believe it is natural.

The emotions most commonly chosen to describe how they felt when they thought or heard about climate change were ‘worried’ (43%), ‘pessimistic’ (24%), ‘sad’ (23%), indifferent (21%) and ‘angry’ (18%). A significant proportion also said they felt ‘interested’ (34%). A wide range of emotions were expressed in the workshops, from despair at the loss of wildlife occurring as a result of changing climates, and therefore habitats, to uncertainty as a result of conflicting information and personal experiences of changing weather patterns. Overall, however, the workshop participants were concerned about climate change and believed there was a need to take action to deal with it.
2.2 Overall public belief in need for UK to prepare for climate change

This research found there is public support for the UK to invest in preparations to deal with a changing climate.

Most survey respondents felt the impacts of climate change pose risks to the UK (61%) but a few recognised they also pose opportunities. However, there was much greater divergence of opinion about the possible benefits; around one quarter (23%) agreed “there are benefits to people in the UK from climate change,” compared with 26% who disagreed. The largest proportion (42%) neither agreed nor disagreed suggesting that many were unsure. In some respects, those who believe climate change is a natural phenomenon (either entirely or predominantly so) held more optimistic views about its impacts; survey respondents were twice as likely to agree there might be benefits if they thought climate change is natural (39%) rather than man-made (18%).

The majority (68%) of survey respondents agreed that “we can avoid the worst impacts of climate change by planning well for them”, while only 9% disagreed (see Figure 5) Those convinced that climate change is affecting the UK were more likely to agree preparations would be effective (74% compared to 61% who were not convinced the UK is being affected).

That said, significant proportions of those who were not convinced climate change is affecting the UK or who thought the causes are natural, also agreed the worse impacts can be avoided (61% and 58% respectively).

Figure 5: Avoiding worst impacts of climate change through planning

| Q18. Please indicate the extent to which you agree or disagree with the following statements? |
|-----------------------------------------------|-----------------|-----------------|-----------------|
| Strongly agree (%) | Tend to agree (%) | Neither agree nor disagree (%) | Don’t know (%) |
| We can avoid the worst impacts of climate change by planning well for them | 19 | 49 | 21 | 7 | 2 |

Base: 2,007 people aged 16+ in the UK

While there was broad agreement that we can avoid the worst impacts by planning well for them, there was less consensus among survey respondents about the UK’s capacity to cope with the impacts of climate change. Three in ten agreed with this statement (30%) while the same proportion (31%) disagreed. A further third (33%) neither agreed nor disagreed, highlighting the uncertainty around views of UK resilience. Again, those who think climate change is natural tended to be more optimistic; they were much more likely to be confident the UK can cope (54%) than those who think climate change is man-made (19%).

A few workshop and depth interview participants commented on the need for the UK to prepare to deal with changing weather conditions as they felt current systems and infrastructure were already struggling to cope.
“There seems to be a hell of a lot more erratic weather, which the country doesn’t seem able to adapt to at all. The transport infrastructure doesn’t seem up to it, the railway network doesn’t seem up to it, that’s probably the first thing, just infrastructure generally.”

Follow-up depth interview participant, aged 35, North West region

The workshops revealed that inaction was unacceptable to most people. Once prompted with information about the distinction between mitigation and adaptation, workshop participants generally understood this concept. It was accepted that the UK would still be affected by changes to the climate even if significant mitigation was taken. However, it must be noted that these conclusions were reached once workshop participants had been presented with information on the possible range and scale of impacts from climate change. For instance, workshop participants were presented with information on the possible scale of water shortages by 2050 if no preparations were made. There was a consensus that this scale of impact for the UK was unacceptable and that preparations had to be taken.

“We can’t afford to hedge our bets on running out of water. We can take a chance on other things, but we can’t be running out of water. You’ve got to prepare in advance for that – end of story!”

Workshop participant aged 50+, social grade ABC1, Great Yarmouth

While there was predominant acceptance that the impacts could and should be minimised, the survey showed that the public overall understand that the impacts of climate change are uncertain. Three out of five (60%) agreed it is “uncertain what the effects will be”.

During the workshops, participants were told that the UK could not be prepared for every possible impact of climate change and that not all areas of the country could receive the same level of protection to the various risks. This was generally accepted and workshop participants were willing to discuss preparation priorities on this basis. Participants were also told that the precise impacts of climate change were difficult to predict. This was understood by participants and there was acknowledgement that decisions on which preparations to take could only be made on the evidence available (i.e. predictions on when, where, and how severely impacts might be felt). Participants accepted this meant that some preparations may be taken for events which do not transpire – this was felt to be more acceptable than not preparing at all.
2.3 Public attitudes towards responsibility for preparing for climate change

Many workshop and follow-up depth interview participants, as also found in the literature review, assumed Government would be at the centre of climate change preparations in the UK. The survey showed many across the public felt it was ultimately Government’s responsibility; 65% felt that national government should have the most responsibility for taking action on adaptation, far more than individuals (12%), business (11%) or local authorities (3%).

“The government [is responsible]. We have things we should do but the government works on a bigger scale. They have the money to do it.”
Workshop participant aged 18-25, Bristol

“Central Government I think have got to be the first port of call. They’re the ones who’ve got far more experts on tap and they’re the ones who, theoretically, have been liaising with European partners and the UN, and all the other bodies around the globe to come up with wonderful solutions. So I think, clearly, they have got to be the lead in it.”
Follow-up depth interview participant, male, aged 35, North West region

A few workshop participants spontaneously suggested – and many agreed - that national government investment in climate change should be spread, and integrated, into the plans of all government departments due to the linkages between issues. For instance, these participants felt climate change adaptations, and the investment for them, needed to be integrated into transport plans, health policies on disease prevention and respiratory illnesses, sustainable housing, and building a green economy.

When survey respondents were asked to select up to three key agents for acting on climate change preparations, the central role of government (85%) was followed by contributions from individuals (61%), local authorities (60%), and business (59%) – see Figure 6.
Most workshop participants also felt there was shared responsibility for preparing for climate change, although they sometimes needed prompting to think of any other groups or organisations beyond government. In particular, many workshop and follow-up depth interview participants suggested local government needed to play a significant role in deciding on, and local delivery or facilitation of, appropriate preparations due to their understanding of local issues.

“Overall the government is responsible but up to local authorities to put plans into place.”
Workshop participant aged 25-50, social grade C1C2, Brighton

“Your local authority knows their little patch far better so they’re the ones who should be working probably with people like the Environment Agency and things like that,”
Follow-up depth interview participant, male, aged 35, North West region

Attitudes towards who should have most responsibility for leading adaptation were largely consistent, regardless of views of the causes of climate change. The online survey findings show that whether climate change is seen as man-made, natural or a mix of the two, the government remains the key driving force in the eyes of the public.

Where there was a difference, however, is the extent to which different individuals, communities and organisations are deemed to have any form of role (whether leading or not). As illustrated by Figure 6a believers in anthropogenic climate change tended to be more likely to see a role for every type of individual or group presented, perhaps highlighting their higher recognition of the problem faced by climate change.
The preparations which workshop participants felt were appropriate for flooding illustrated the shared responsibility and agency that was welcomed for dealing with climate change in the UK overall. Central Government was considered responsible for the following:

- investment in flood defences around critical buildings and infrastructure e.g. hospitals, schools, large areas of densely populated domestic housing, key economic centres, valuable agricultural land;
- legislation to prevent new building on floodplains; and
- as the most appropriate source for an education campaign to educate people not to buy on a floodplain.

Private businesses in the building sector were also felt to be responsible for minimising building on floodplains, as were local planning authorities overseeing planning applications.

Individuals were also considered to have a role to play – for instance taking responsibility for where they choose to live, to prepare their homes if at-risk e.g. with sandbags or other alterations. Individuals were also expected to help others within their communities who were less able to prepare their homes themselves.

### 2.3.1 Individual responsibility for dealing with climate change

As already noted, alongside national and local government, there was also a belief among most workshop participants that individuals and their households should play a role – particularly if able-bodied and financially stable. For example, individuals were expected to take responsibility for where they lived, to protect their own homes and property and to make appropriate behavioural changes depending on the weather. Individuals were particularly held accountable for making preparations which would help deal with sudden and immediate impacts, such as flooding. Impacts perceived to be long-term and gradual, such as coastal erosion, were felt to need collaborative working between different parties.
Examples raised in the workshops, and also those used in the survey, demonstrated how responsibility was felt to be shared in the case of flood preparations. Just under half the public (46%) agreed that “protecting my home from a flood is my responsibility”, more than the percentage who disagreed (19%) – see Figure 7. A slightly higher proportion (54%) felt this was the government’s responsibility with 15% disagreeing.

“Everyone [should be responsible] from the government down to me. Individually we can do a bit like look after your own property, like these door things, they probably only costs a few pounds.”

Workshop participants, aged 50+, social grade ABC1, Manchester

Those who believe in anthropogenic climate change were less likely to see this as an issue of personal responsibility, and more inclined to expect Government protection; net agreement\(^4\) that it falls to the individual was higher among survey respondents who think climate change is natural (42%) than those who think it is man-made (17%).

Survey respondents living in areas at risk of flood were no more inclined than those not at risk to agree that the government is responsible for protecting people who are vulnerable to flooding. However, this is largely down to low awareness of the risk they face (a slight majority of these individuals were not aware of the fact they are at risk - further discussed in chapter 3.2.1). Those who believe their property is at risk (regardless of whether it is or not) tended to support greater Government protection (62% vs. 53% who feel they are not at risk). This suggests that those who personally feel threatened by a climate risk are more likely to believe the government should protect citizens from it.

Workshop participants also felt that individual responsibility extended beyond protecting yourself and your household. Nearly all felt it was inevitable, and most felt it was fair, that individuals would contribute to the preparation effort through higher taxes which would finance climate change preparations in the areas, and on the people, most at need. Chapter

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\(^4\) Net agreement is a useful attitudinal measure that incorporates both positive and negative responses. It indicates the % that agree with a statement minus the % that disagree.
5 discusses the principles by which investment in preparations should be spread in more detail.

“Taxpayers can fund protection for other taxpayers, and that is good. People helping others “
Workshop participant, aged 50+, social grade ABC1, Monmouth

2.3.2 Role of community in dealing with climate change

Although the central focus tended to be on Government leadership, local communities were often identified as important adaptation agents. Two in five (41%) survey respondents felt that local communities should have some responsibility for dealing with climate change. This view was particularly expressed by workshop participants in areas that felt they already had a strong sense of community, for instance in Kendal and Monmouth.

“I think we have to start small, start in our own community rather than say it’s all government and policies.”
Workshop participant, aged 25-50, Kendal

The survey showed that the public both expect and anticipated communities to help. Around half agreed that “the people in my community would help out if extreme weather caused problems locally” (53%) and that “the elderly and vulnerable would be looked after by our local community if there was severe weather” (48%) – see Figure 8. Some workshop participants pointed to examples of support like this currently being given. For instance, helping older residents clear driveways of snow or ensuring they had sufficient food and water if cut off.

**Figure 8: Community role in preparing for climate change**

| Q18. Please indicate the extent to which you agree or disagree with the following statements? |
|---|---|---|---|---|
| The people in my community would help out if extreme weather caused problems locally | Strongly agree (%) | Tend to agree (%) | Neither agree nor disagree (%) | Strongly disagree (%) | Don't know (%) |
| | 12 | 42 | 27 | 11 | 4 | 6 |

| The elderly and vulnerable would be looked after by our local community if there was severe weather | Strongly agree (%) | Tend to agree (%) | Neither agree nor disagree (%) | Strongly disagree (%) | Don't know (%) |
| | 12 | 36 | 25 | 17 | 4 | 5 |

Base: 2,007 people aged 16+ in the UK

2.3.3 Role of business in dealing with climate change

Businesses were also viewed as having a critical role in planning for and developing resilience. Figure 6 shows that three in five (59%) expected business to play some role in helping the UK prepare for climate change. The workshops revealed that ‘business’ in this sense was commonly associated with large national or international corporations rather than
SMEs. Participants mentioned the responsibility of private companies most often in relation to preparing for water shortages and droughts, as indeed the literature review also did. A significant reason for this attribution of responsibility among the workshop participants was a perception that leaks and mis-management of water supplies are a serious threat, in addition to the UK’s changing climate. Private businesses were also felt to have responsibility to help protect residents of homes that had been built on flood plains, and also for not building new property in at-risk areas.

Small or locally owned businesses were considered one of the priorities to protect from climate change. However, they were less frequently associated with taking responsibility for helping the UK as a whole to adapt. The preparations which businesses would be expected to take are discussed further in Chapter 4.

Around three quarters (77%) of the public agreed that “individuals and organisations who contribute to climate change should take on the responsibility of dealing with its consequences.” This was particularly the case among those who believed climate change to be man-made, of which 87% agreed, compared with 60% of those who think climate change is natural. There was limited discussion on this topic in the workshops, although some participants felt that big businesses, who pollute more, should be more responsible for adaptation.

“I think business has to take responsibility for its actions. They have to think of other ways of working.”
Workshop participant, aged 25-50, Kendal

2.4 Climate change in the context of other issues

While this research has found that public support exists for preparing for climate change, it is important to consider where climate change sits alongside other issues believed to be facing the UK. In both the survey and workshops, when asked to name (unprompted) the main issues facing the UK today, climate change or protecting the environment were mentioned very rarely (by 5% and 6% respectively in the survey) – see Figure 9. The economy (54%), unemployment (49%), the NHS (31%) and race relations and immigration (30%) were considered the most important issues (findings supported by Ipsos MORI’s most recent Issues Index5). This suggests that climate change is not among the public’s more immediate priorities.

Workshop participants were more likely to spontaneously raise environmental issues (and a few to specifically name climate change) as an issue for the future.

“I think climate change in the future. It’s already happening. It’s going to get worse. Like in the South West some parts are dropping off, crumbling away. I don’t see this being addressed yet.”
Workshop participant, aged 25-50, Kendal

However, by and large, future priorities for both survey respondents and workshop participants were seen as the same as current ones. It was evident in the workshops that people find it very difficult to envisage how issues might become important in the future, if they were not considered to be important currently.

This was reflected in the survey, where the economy (46%), unemployment (39%), race relations /immigration (31%) and the NHS (30%) were again considered to be the most important issues. Around one in ten named climate change (11%) and protecting the

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environment (9%), indicating that whilst these issues were considered more important for the future than they were today they were still not among the public’s leading priorities.

Figure 9: Most important issues facing the UK today and in the future

The workshops also showed that it is challenging for people to consider a long-term future. In general, participants were naturally assuming a timeframe of around five years when they discussed ‘future’ issues. When prompted, they made distinctions between issues they felt were of greatest concern in the near-term (for instance the economy and unemployment) and those they felt could be of concern in the long term. It was during a discussion of the latter that climate change was more commonly mentioned, if at all. An example of a list of issues created in one of the workshops is shown in Figure 10.
By the end of the workshops, participants felt climate change was more important to them than they had considered it to be at the beginning of the day.

“Coming here today I think that spending on climate is important but if I hadn’t come here and I’d heard that there was millions going on climate spending then I would think, “What about the NHS?” “What about spending on things we need now?”

Workshop participant, aged 50+, social grade C2DE, Birmingham

While most workshop participants agreed that Government should invest in making climate change preparations, some felt it was not as important as investment in the other key UK issues shown in Figure 10. Survey respondents were not asked to re-evaluate the importance of climate change in the context of other issues after they had been presented with information on adaptation (because of the limited time available to provide detailed information about adaptation).

The rest of this report goes on to discuss the public’s perceptions of specific changes that could affect the UK as a result of a changing climate and whether these should be prioritised as key issues to deal with.
3 Public attitudes towards specific climate impacts

This section explores the public's experience of weather in terms of perceptions of change, experience of extreme weather events, and expectations for the future. The final sections of this chapter look at attitudes towards a range of 19 possible impacts of a changing climate. These impacts were derived, in consultation with Defra, by broadly grouping together risks presented in the Climate Change Risk Assessment (CCRA) 2012. The CCRA was structured around 100 climate impacts in 11 sectors. The 19 impacts discussed in this chapter were designed to cover a broad range of the CCRA impacts and all of the 11 sectors.

Summary of key findings

- Most of the public felt they had seen long-term changes in the weather the UK experiences during their lifetimes (80%).
- Flooding, heavy rain and coastal erosion, along with milder and colder winters were all felt to have become more frequent, and more than half felt flooding, heavy rain and coastal erosion had become more severe, and were likely to become more so by 2050. Heat waves and hot summers were believed to be no more common than they used to be, nor any more severe, and were felt unlikely to become more common by 2050.
- Over two thirds of the public (69%) felt that the UK will witness more extreme weather events by 2050.
- Of the extreme weather experienced by the public, heat waves causing mild sleep disruption was the most common (47%) but few had experienced heat waves that impacted on their travel (12%) or health (14%). Flooding to homes was less commonly experienced but was identified as the most disruptive weather event to daily life.
- Of the 19 possible climate impacts presented to survey respondents, the most concerning were: poor harvests pushing up food prices (90% were fairly/very concerned); more homes being flooded (85%); and water shortages caused by droughts (83%). Findings from the workshops broadly matched the ranking of these impacts, with floods and possible threats to the nation's food supply being seen as the most important to prepare for.
- A key factor in whether climate events were seen as important to prepare for was whether they are already considered to be happening: flooding in particular was seen as of great importance for this reason, and many cited rises in food prices due to recent bad weather prior to, and during, the fieldwork period. Heat waves were generally not considered a realistic threat.
- Water shortages were considered very important to prepare for because of the impact on human health.
- Tourism was seen as the most positive impact and it was considered important that the UK take advantage of its potential benefits.
- Coastal erosion was considered a serious threat with a significant impact, but there was generally a fatalistic attitude towards what can be done about it.
**Method note:**

Online survey respondents were shown the list of 19 impacts and asked about their perception of the likelihood of this impact occurring in the UK by 2050. They were also asked how concerned they would be if this consequence of climate change did happen. Online survey respondents only saw a shorter list of 10 of the 19 impacts. These were randomly selected to ensure that all impacts and all combination of impacts were seen roughly an equal number of times across the survey sample. This approach was taken so as not to overburden respondents with too many impacts.

Qualitative workshop participants were also asked about their opinions on the likelihood of these events occurring but instead of asking about their concern over such events happening they were asked about the ‘impact’ they felt they would have. Given the length of the workshops (6 hours) participants had time to consider and respond to all 19 impacts.

**The 19 impacts were as follows:**

1. Low lying coastal areas being permanently flooded or eroded by rising sea levels
2. Some types of wildlife are lost or decline in number because they cannot relocate to where the climate remains suitable for them
3. Air pollution gets worse from hotter weather, which particularly affects people with poor health or breathing problems
4. Increased demand for energy for cooling (e.g. air conditioning) due to warmer climate
5. Lower demand for energy due to warmer winters
6. Poor harvests, due to extreme weather, pushing up food prices
7. New crops previously grown abroad become more common in the UK due to warmer climate
8. More tourists choosing to visit the UK because of a warmer climate
9. A reduction in marine wildlife from changes in temperature
10. More people’s health suffering in extreme heat, particularly the elderly, due to more frequent heat waves
11. Fewer vulnerable people dying in the cold as cold winters get increasingly rare
12. Disruption to trains, roads, and public transport due to more frequent heat waves
13. Cities and large towns, which trap heat, becoming unbearably hot due to heat waves
14. More homes being flooded as a result of heavy rainfall
15. Public services, like roads, power stations, schools and hospitals being disrupted as a result of heavy rainfall
16. Droughts causing serious water shortages due to changes in rainfall patterns
17. New pest and diseases, previously only thriving in warmer climates, become common in the UK
18. More people permanently move to the UK because of changes in the climate of their own country
19. More people living in the UK take their holidays in the UK rather than going on holiday abroad, due to a warmer climate

**3.1 Personal experience of changes in the weather**

Many survey respondents and workshop participants believed that over the course of their lives they had seen changes in the weather the UK experiences. As Figure 11 illustrates, four in five (80%) survey respondents agreed they had personally experienced such a change. Two in five (42%) said they had definitely seen changes, but over a third (37%) were less certain and said they probably had.

There was a sizeable minority (17%), however, that said they either probably or definitely had not seen any changes. This was also reflected in the qualitative workshops where the idea that the UK had witnessed a change in long-term weather patterns was not universally accepted.
It should be noted that though four fifths (80%) said they had witnessed changes to long-term weather, views of the cause(s) of these changes, or whether they are viewed as part of wider ‘climate change’ are less consistent. As already discussed in Chapter 2, a smaller proportion - two thirds (64%) - agreed that climate change is currently affecting the UK.

Figure 12 shows that the public feel that heavy rainfall and flooding are more frequent now than they used to be, with around fourth fifths who said this (76% and 83% respectively). Coastal erosion was also felt to have become more common by over half (55%) and just under half (45%) felt milder winters had become more common.

Conversely, heat waves and hot summers were generally perceived to have become less frequent than in the past (48% and 60% respectively). Only a small minority said they had become more frequent (16% and 11%). These findings are supported by the views of workshop participants, many of whom felt that we are experiencing fewer hot summers and that flooding is much more widespread and common than it used to be.

“I think we’re less convinced we’re going to get really warm, but we see flooding as a big disaster”
Workshop participant aged 25-50, Kendal

As has been highlighted in Chapter 2, there was a general view that the weather is becoming more erratic, less distinguished by seasons and more prone to extremes.

“The shift in weather patterns globally to greater extremes of weather...rather than having more mediocre weather we go from bitter winters through to really hot summers, or from extreme calm periods and then massive storms, that sort of thing, and then drought, a bit like we had last year, you know, we had so many more days of drought than we did of rain, but people seem to have forgotten that.”
Follow-up depth interview participant, aged 21, North West region
Opinion was more divided, however, on cold winters, snow and dry periods without rain; the proportion who said they had become more frequent is roughly equal to that who said they had become less frequent.

**Figure 12: Frequency of weather events**

<table>
<thead>
<tr>
<th>Q5. During your life in the UK do you feel the following have become more or less frequent in the UK, or stayed about the same?</th>
</tr>
</thead>
<tbody>
<tr>
<td>- A lot more frequent (%)</td>
</tr>
<tr>
<td>- A little more frequent (%)</td>
</tr>
<tr>
<td>- About the same (%)</td>
</tr>
<tr>
<td>- A little less frequent (%)</td>
</tr>
<tr>
<td>- A lot less frequent (%)</td>
</tr>
<tr>
<td>- Don’t know</td>
</tr>
<tr>
<td>- Definitely not seen changes in the weather</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Event</th>
<th>A lot more frequent</th>
<th>A little more frequent</th>
<th>About the same</th>
<th>A little less frequent</th>
<th>A lot less frequent</th>
<th>Don’t know</th>
<th>Definitely not seen changes in the weather</th>
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<tbody>
<tr>
<td>Flooding</td>
<td>45</td>
<td>38</td>
<td>9</td>
<td>16</td>
<td>31</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Periods of heavy rainfall</td>
<td>34</td>
<td>42</td>
<td>16</td>
<td>1</td>
<td>31</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Coastal erosion</td>
<td>17</td>
<td>38</td>
<td>26</td>
<td>1</td>
<td>15</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Mild winters</td>
<td>10</td>
<td>35</td>
<td>31</td>
<td>13</td>
<td>31</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>Cold winters</td>
<td>8</td>
<td>23</td>
<td>34</td>
<td>23</td>
<td>6</td>
<td>31</td>
<td>1</td>
</tr>
<tr>
<td>Snow</td>
<td>9</td>
<td>22</td>
<td>33</td>
<td>23</td>
<td>8</td>
<td>31</td>
<td>1</td>
</tr>
<tr>
<td>Dry periods with rain</td>
<td>6</td>
<td>25</td>
<td>33</td>
<td>19</td>
<td>10</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Heatwaves</td>
<td>3</td>
<td>14</td>
<td>28</td>
<td>29</td>
<td>19</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Hot summers</td>
<td>2</td>
<td>9</td>
<td>22</td>
<td>36</td>
<td>24</td>
<td>31</td>
<td>1</td>
</tr>
</tbody>
</table>

Base: 2,007 people aged 16+ in the UK

3.2 Personal experience of impacts of extreme weather

The literature review cited the importance of prior experience of climate hazards as a possible driver of risk perception. For this reason, survey respondents were asked about their previous exposure to specific climate events. When asked whether they had experienced a number of impacts from extreme weather events (see Figure 13), two in five (39%) said that they had experienced heat waves that were disruptive to sleep, while nearly half (47%) said they or someone they knew had been affected. Far fewer reported direct experience of heat waves that were disruptive to travel or work (7%) or that significantly affected health (6%).

Almost half (44%) said they or someone close to them had experienced water restrictions or shortages due to low rainfall and two in five (37%) said they or someone close to them had been affected by flooding in their local area. Far fewer had experienced flooding to their home (5%) or know someone who had been flooded (12%).
Workshop participants also tended to report experiences of flooding and while none referred to flooding of their own homes directly, many could cite cases of flooding in their local area. Many also referenced media coverage of local and national flood events which were widespread prior to and during the fieldwork period.

“This year was a prime example...please don't send any more rain all in the space of six months. I mean there's been the most horrendous flooding hasn't there.”

Workshop participant aged 50+, social grade ABC1, Great Yarmouth

There were far fewer mentions of water shortages, or heat waves impacting on people’s lives. However, some participants were affected by hosepipe bans in 2012 and also referred to water shortages from longer ago, such as the widespread use of standpipes in 1976.

For those survey respondents who said they or someone close to them had experienced a specific extreme weather event they were asked the level of disruption this event had on their lives (see Figure 14). While survey respondents were least likely to have experienced flooding in their home, compared to other extreme weather events, it caused the greatest level of disruption to those it had affected. Over four in five (85%) of those that cited flood damage to their homes said that it had caused at least some disruption to their lives. Almost two thirds (63%) of those that had experienced flooding in their local area said that it had disrupted their lives to some extent, and around four in five of those experiencing heat waves impacting on health (84%), or travel/working (78%) said that it was disruptive.

While heat waves disrupting sleep patterns was the event most likely to have affected survey respondents, it disrupted the lives of those it affected to a lesser degree than the other events discussed above. Two in three (67%) of those that had experienced this said that it was a disruptive event, but only one in ten (10%) said that it caused significant disruption.

Water restrictions was the second most pervasive climate impact (mentioned by 48% of survey respondents) but, as shown in Figure 14, only half of those affected (51%) felt it had impacted their daily lives and only six per cent said it impacted on them to a great extent.
3.2.1 Awareness of flood risk

The literature review conducted in the early stages of this research highlighted that the relationship between the perception of specific climate hazards and adaptation warrants further investigation. Flooding is a specific climate hazard that allows for a comparison between both perceived risk and actual recorded levels of risk.

Survey respondents were asked whether they believe their property is at risk of flooding to ascertain if there is any link between perception of risk and views towards adaptation. Perceived flood risk was analysed against actual flood risk as recorded in the National Flood Risk Assessment (NAFRA) database. Figure 15 shows that 11% of survey respondents are living in areas at risk of flooding, and more than half of these people (55%) do not believe they are at risk. In contrast, 40% realise they either definitely or probably are. This level of awareness matches other research conducted by the Environment Agency which showed that 54% were not aware of the flood risk they face.

Nine in ten (89%) respondents are not at risk, yet around one in seven of these believe they are. Therefore, whilst around three quarters (77%) of the public are correct in their perception of flood risk, one fifth (19%) are not, with twice as many perceiving risk where there is none than vice versa.

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*NAFRA indicates the degree of flood risk at a property level. It was identified using respondent postcode. Details of the Nafr database can be found here [http://www.environment-agency.gov.uk/research/library/publications/108660.aspx](http://www.environment-agency.gov.uk/research/library/publications/108660.aspx)*
Figure 15: Comparing actual and perceived flood risk

<table>
<thead>
<tr>
<th>At risk (NAFRA)</th>
<th>Not at risk (NAFRA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Believe they are at risk</td>
<td>4%</td>
</tr>
<tr>
<td>Do not believe they are at risk</td>
<td>6%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>1%</td>
</tr>
</tbody>
</table>

The Nafra database also shows the extent of flood risk faced by households. Among those who are at moderate or significant risk, over half (53%) do not believe that they are at risk of flooding at all, more than believe that they are (44%). Only one in twenty (5%) of those at this risk level think they are definitely at risk. In the remaining chapters of this report, it is noted where there are differences in views between those who are, or perceive they are, at risk of flooding and those who do not. This is to understand if this awareness or perception affects attitudes towards risk and adaptation.

3.3 Perceptions of the challenge presented by climate impacts

In addition to experience of extreme weather and changes in long-term weather patterns, survey respondents were asked how serious a problem they felt specific weather events currently were in the UK (see Figure 16). In line with personal experience, the three climate events that were of greatest concern were flooding (90% said it was a very or fairly serious problem), heavy rainfall (78%) and coastal erosion (69%). Participants in the workshops also thought flooding was a serious problem, but tended not to see coastal erosion as so serious spontaneously.

“If you get flooding well then you can't farm can you? I mean crops are destroyed”
Workshop participant aged 50+, social grade ABC1, Great Yarmouth

While mild winters were thought to have become more frequent by around half (45%) of all survey respondents only around one in six (16%) felt this was currently a problem for the UK.

Similarly, while two in five survey respondents (39%) had directly experienced disrupted sleep due to heat waves, less than a quarter (23%) felt heat waves were currently a serious problem for the UK. This finding also emerged in the workshops with many questioning whether the UK really suffers from heat waves.

“They keep talking about these heat waves and they never seem to materialise”
Workshop participant, aged 25-50, C1C2, London

In line with heat waves, hot summers and mild winters were also seen as largely unproblematic (18% and 16% respectively). Cold winters and snow, however, were seen to be a problem by around one in three (34% and 33% respectively).
3.4 Attitudes towards specific future climate risks and impacts

This section presents in more detail specific attitudes and concern associated with the 19 possible impacts of climate change referenced at the start of this chapter. The following part of this report groups these impacts into overarching themes.

Method note:
One of the exercises in the deliberative workshops was to map a range of climate impacts onto a grid which considered the likelihood of each event happening in future and the scale of the impact if the event did happen.

These 19 impacts were also shown to the online survey respondents, who were asked how likely they felt it would be that these impacts would happen in the UK by 2050, and how concerned they would be if they did happen. However, so as not to over-burden survey respondents, they were only shown a randomly selected list of 10 climate impacts each rather than the full list of 19. Across the survey all combinations of impacts were shown.

There was broad agreement among survey respondents (69% agreed) that it was inevitable that the likely impacts of climate change, such as flooding and droughts, will become more likely by 2050. Agreement was particularly strong among those who think climate change is man-made (79%) whereas less than half (45%) of those who think it is natural agreed with this.

However, as illustrated by Figure 17, when specific weather events are considered, there is considerable variation in views of their future frequency. Flooding and heavy rain in particular are widely expected to become more common (81% and 75% respectively say it is likely), while around seven in ten feel it is likely that coastal erosion and extreme weather will become more common (72% and 69% respectively).
Around half say that dry periods without rain, snow and cold winters (48%, 49% and 45% respectively) will become more common by 2050. Heat waves (33%) and hot summers (29%) are least likely to be expected to become more common than they are today. However, just under half (46%) do expect the UK to have a warmer climate than it currently does.

**Figure 17: Likelihood of increased frequency of climate impacts in the UK**

Q11. How likely, if at all, do you personally think it is that the following will have become more common in the UK by 2050?

<table>
<thead>
<tr>
<th>Event</th>
<th>Very likely (%)</th>
<th>Likely (%)</th>
<th>About as likely as not (%)</th>
<th>Unlikely (%)</th>
<th>Virtually certain (%)</th>
<th>Exceptionally unlikely (%)</th>
<th>Don’t know (%)</th>
<th>Very unlikely (%)</th>
<th>Exceptionally unlikely (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flooding</td>
<td>26</td>
<td>29</td>
<td>26</td>
<td>13</td>
<td>24</td>
<td>81</td>
<td>214</td>
<td>75</td>
<td>49</td>
</tr>
<tr>
<td>Periods of heavy rainfall</td>
<td>19</td>
<td>29</td>
<td>27</td>
<td>18</td>
<td>24</td>
<td>72</td>
<td>213</td>
<td>69</td>
<td>49</td>
</tr>
<tr>
<td>Coastal erosion (where...)</td>
<td>20</td>
<td>24</td>
<td>28</td>
<td>17</td>
<td>21</td>
<td>49</td>
<td>24</td>
<td>69</td>
<td>49</td>
</tr>
<tr>
<td>Extreme weather</td>
<td>19</td>
<td>24</td>
<td>26</td>
<td>20</td>
<td>4</td>
<td>69</td>
<td>24</td>
<td>69</td>
<td>49</td>
</tr>
<tr>
<td>Snow</td>
<td>8</td>
<td>16</td>
<td>25</td>
<td>35</td>
<td>9</td>
<td>49</td>
<td>25</td>
<td>49</td>
<td>49</td>
</tr>
<tr>
<td>Dry periods without rain</td>
<td>7</td>
<td>15</td>
<td>27</td>
<td>30</td>
<td>11</td>
<td>49</td>
<td>15</td>
<td>49</td>
<td>49</td>
</tr>
<tr>
<td>Cold winters</td>
<td>7</td>
<td>15</td>
<td>23</td>
<td>36</td>
<td>11</td>
<td>49</td>
<td>15</td>
<td>49</td>
<td>49</td>
</tr>
<tr>
<td>Mild winters</td>
<td>4</td>
<td>11</td>
<td>25</td>
<td>40</td>
<td>10</td>
<td>49</td>
<td>15</td>
<td>49</td>
<td>49</td>
</tr>
<tr>
<td>Heatwaves</td>
<td>4</td>
<td>10</td>
<td>19</td>
<td>35</td>
<td>18</td>
<td>33</td>
<td>26</td>
<td>33</td>
<td>33</td>
</tr>
<tr>
<td>Hot summers</td>
<td>3</td>
<td>8</td>
<td>18</td>
<td>37</td>
<td>20</td>
<td>29</td>
<td>25</td>
<td>29</td>
<td>29</td>
</tr>
</tbody>
</table>

Concern about these possible climate events happening in future broadly reflects views about perceptions of how likely these events are to happen. As can be seen in Figure 18, concern was highest in relation to an increase in flooding, extreme weather, periods of heavy rainfall and coastal erosion (80%, 74%, 71% and 70% respectively say they would be concerned if these became a reality by 2050).

Over half (58%) said they would be concerned by increased periods of low rainfall. Just under half would be concerned at the UK having colder winters (46%) or more snow (48%). Concern is lower, however, about the prospect of a warmer climate (29%) or warmer summers (30%), although slightly more would be concerned about extreme heat in the form of heat waves (42%).
Supporting this, many specific impacts of climate change (and generally all apart from some relating to increased temperatures) are seen to be likely to occur by 2050, as illustrated by Figure 19.
Figure 19: Likelihood of specific climate impacts

Q13. From your own perspective, to what extent do you agree or disagree that each of the following will be likely to happen in the UK by 2050?

<table>
<thead>
<tr>
<th>Impact</th>
<th>Strongly agree (%)</th>
<th>Tend to agree (%)</th>
<th>Neither agree nor disagree (%)</th>
<th>Tend to disagree (%)</th>
<th>Strongly disagree (%)</th>
<th>Don't know (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>More homes being flooded as a result of heavy rainfall</td>
<td>34</td>
<td>47</td>
<td>13</td>
<td>13</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Poor harvests, due to extreme weather, pushing up food prices</td>
<td>29</td>
<td>48</td>
<td>18</td>
<td>18</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Low lying coasts being permanently flooded or eroded by rising sea levels</td>
<td>23</td>
<td>50</td>
<td>19</td>
<td>19</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>Some types of wildlife are lost or decline in number because they cannot relocate to where the climate...</td>
<td>25</td>
<td>47</td>
<td>19</td>
<td>19</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>New pests and diseases</td>
<td>17</td>
<td>48</td>
<td>22</td>
<td>22</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>Public services like roads, power stations, schools and hospitals being disrupted as a result of heavy rainfall</td>
<td>20</td>
<td>43</td>
<td>23</td>
<td>23</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>Air pollution getting worse from hotter weather</td>
<td>19</td>
<td>42</td>
<td>26</td>
<td>26</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>Droughts causing serious water shortages due to changes in rainfall patterns</td>
<td>16</td>
<td>44</td>
<td>23</td>
<td>23</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>New crops previously grown abroad become more common in the UK due to a warmer climate</td>
<td>9</td>
<td>48</td>
<td>26</td>
<td>26</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>A reduction in marine wildlife from changes in sea temperature</td>
<td>17</td>
<td>40</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>More people’s health suffering in extreme heat</td>
<td>14</td>
<td>39</td>
<td>28</td>
<td>28</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Increased demand for energy for cooling</td>
<td>13</td>
<td>37</td>
<td>29</td>
<td>29</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>Cities and large towns, which trap heat, becoming unbearably hot due to heat waves</td>
<td>12</td>
<td>30</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Fewer vulnerable people dying in the cold due to milder winters</td>
<td>5</td>
<td>29</td>
<td>38</td>
<td>38</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>More people living in the UK take their holidays in the UK rather than going on holiday abroad</td>
<td>7</td>
<td>27</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Disruption to trains, and public transport due to more frequent heat waves</td>
<td>9</td>
<td>24</td>
<td>34</td>
<td>34</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>Lower demand for energy due to warmer winters</td>
<td>5</td>
<td>25</td>
<td>31</td>
<td>31</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td>More people permanently move to the UK because of changes in the climate of their own country</td>
<td>7</td>
<td>20</td>
<td>34</td>
<td>34</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>More tourists choosing to visit the UK because of a warmer climate</td>
<td>5</td>
<td>20</td>
<td>39</td>
<td>39</td>
<td>39</td>
<td></td>
</tr>
</tbody>
</table>

Base: All who were presented with this climate change impact (minimum of 1,040)

Figure 20 presents survey responses about the likelihood of these impacts of climate change occurring by 2050, as well as concern about each of them if they did happen. The chart presents the average (mean) scores for each of the 19 impacts on both likelihood and concern to illustrate the relationship between them. It is important to note therefore, that this presents the relative concern and likelihood measures. The remainder of this chapter presents the detailed views of these specific impacts.

For reference, charts illustrating the full responses on concern about each impact have been included in the appendices.
3.4.1 Flooding

Flooding was identified as one of the impacts of climate change that is most important to prepare for during the workshops. Of the 19 impacts shown, those relating to flooding (increased flooding of homes and public services being disrupted) were viewed consistently as being both very likely to occur in future and as having a significant impact.

“Flooding... It’s increasing all the time, houses being destroyed, it’s happening now.”
Workshop participant aged 25-50, Kendal

This was evident from the consistent positioning of flooding-related impacts in the top right quadrant of the grid which shows impacts the public felt were both likely to happen and would have a large impact if they did occur. This can be seen from Figure 21 which shows an aggregated representation of the grids produced during the workshops. It shows the positioning of the impact “More homes being flooded as a result of heavy rainfall”.

Figure 20: Quantitative scatter chart: Concern over impacts plotted against likelihood

Q13: From your own perspective, to what extent do you agree or disagree that each of the following will be likely to happen in the UK by 2050?
Q14: How concerned would you be, if at all, if the following did happen in the UK?
The grid in Figure 22 below shows the positioning in all the workshops of the impact, “Public services, like roads, power stations, schools and hospitals being disrupted as a result of heavy rainfall”. While this was also commonly identified as a likely and severe impact, it was not as consistently rated as the impact about homes being affected. This reflected higher levels of concern about individuals’ property and possessions over shared public services.

As can be seen in Figure 20, wider public opinion also reflected these findings; in the online survey, “more homes being flooded as a result of heavy rainfall” was thought to be the likeliest impact (of those presented) to happen by 2050 (82% tended to or strongly agreed

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7 N.B. The number of plots on each chart is not necessarily the same for each impact. This is because not all of the 19 impacts were discussed by every subgroup.
that it will), and would cause the second greatest level of concern if it did happen (85% would be very or fairly concerned). Disruption to public services caused by heavy rainfall was also considered likely by the majority (64%) and would be of much concern if it did occur (82%). The impact on public services was of particular concern to those exposed to tidal flooding (80% net concern, compared with 66% overall), indicating that people in coastal areas feel particularly vulnerable to this consequence.

Flooding was of particular concern as the public perceived it to have a large impact - including the destruction of homes, businesses and property, as well as causing disruption to those not directly affected, for example via its effect on public services and infrastructure.

Flooding was also considered a priority to prepare for as it was perceived to be very likely to become more frequent and more severe. While the reasons behind these views were not directly probed, many participants in the workshops and follow-up depth interviews gave examples of how flooding is being exacerbated, or made more likely, by development on flood plains and paving over open spaces. It was less clear whether participants had this expectation because of an inherent belief that it would be caused by changes in the climate.

Flooding is seen as highly likely and of great concern, so the public would allocate significant resources to prepare for it – the factors underpinning the prioritisations made by workshop participants are discussed in section 5.

Views among workshop participants diverged on what in particular should be protected from flooding. When prompted to choose between them, many participants favoured private homes, while others prioritised agricultural land. As already discussed, flooding of homes is viewed as a disruptive event for the majority (85%) of those who had experienced it, and many workshop participants referred to examples of flooding in their local area or that they had seen in the national media. These influences may help explain why some were inclined to protect homes over land. This was also justified to the extent that it was easier to protect individual homes rather than large swathes of farmland, which would perhaps require extensive investment. Fewer were concerned by the impact of flooding on other types of business.

Workshop participants generally only considered fluvial flooding when they discussed it as a priority to prepare for. While there was recognition that low lying coastal areas were likely to face an increased flood risk, there was a lack of belief that preparations could be taken to reduce the impact of this. This may be because participants confused preventing or reversing the flooding (many expressed the view that "you cannot stop the sea"); with adapting to its effects. Perceptions of coastal risks are discussed in more detail later in this chapter.

3.4.1 Food supply

Preparations to protect the UK's home-grown food supply (and export market) was also identified as a key priority by both workshop participants and survey respondents. Extreme weather was seen as being likely to become more common in future (by 69% of survey respondents) and this was expected to have consequences for crops and harvests. There was general agreement that this would have knock-on impacts on food prices, and many cited recent examples of where they have already seen this happening in their local area.

Bread is getting more expensive because of poor harvests [and there was a] problem with apple crops last year.

Workshop participant aged 25-50, social grade C1C2, Brighton

As a result, concern levels among online respondents were highest for this impact over all others that were presented; nine out of ten (90%) said they would be concerned if extreme weather led to poor harvests and an increase in food prices. Some workshop participants spontaneously raised this as a concern, and themselves linked it to a rise in food prices,
whereas others became concerned about this after being told that this was one possible impact of climate change for the UK.

Figure 23 below shows that workshop participants were consistently concerned about the impact that extreme weather might have on harvests and food prices. This was also an impact they felt was likely to occur.

**Figure 23: Aggregated qualitative grid: Concern plotted against likelihood for poor harvests, due to extreme weather, pushing up food prices**

To guard against the impacts on UK agriculture, workshop participants wanted to protect the farming practices and crops and animal breeds that the UK currently depends on e.g. by investing in irrigation. However, there was also some support for diversification into new types of crop and animal breeds to make the most of these opportunities. This is covered in further detail in Chapter 4 of this report.

The high level of concern revealed about this issue during the workshops appeared to be based in part on an inflated perception of how much of the UK’s food is produced domestically, or potentially could be. Many believed that the UK should aim to be almost entirely self-sufficient in this respect, and there was a general desire for Britain to be less reliant on other places around the world for its food supply – it is not clear, however, that these individuals would be willing to live with any restrictions in choice that this may entail.

### 3.4.2 Water shortages

Around half (49%) of survey respondents believed that dry periods without rain will become more common in future, and over half (58%) would be concerned if this did become a reality. Droughts causing serious water shortages were considered to be likely to happen by 2050 by three in five (60%) survey respondents and concern about this prospect was high with over four in five (83%) saying they would be very or fairly concerned by it.

Concern around water shortages linked together with concerns over food supply, in that it was identified as problematic by some workshop participants because of the perceived negative impact it would have on farming and the food chain.
“If you have a farm one of the big problems is water supply to the farm, and you need a lot of water if you've got cattle and all the rest of it.”
Workshop participant aged 50+, social grade ABC1, Edinburgh

It was also considered important because of the impact it would have on human health. These knock-on effects led many workshop participants to place water shortages as an impact of high likelihood and high concern as shown in Figure 24.

**Figure 24: Aggregated qualitative grid: Concern plotted against likelihood for droughts causing serious water shortages due to changes in rainfall patterns**

These concerns were only heightened when participants of the qualitative workshops were presented with the possible scale of water shortages in future. Many participants were surprised at the potential scale of water shortages, with as many as 59 million being affected (if no action is taken at all). Concern, however, was dependent on the severity of the water shortage; some said they would only be seriously concerned if the water supply in people’s homes ran dry, and most felt this would be unlikely to happen. Hosepipe bans, while a nuisance, were generally not considered to be a particular challenge.

“It certainly looks like water shortages should be very high priority as it looks like it could affect almost anyone.”
Workshop participant aged 50+, social grade ABC1, Manchester

As has been found in previous research on water efficiency, the language used to describe water shortages can have a significant impact on how it is perceived. Some workshop participants expressed doubt that the UK would ever suffer from a “drought” as this term felt more suitable to sub-Saharan Africa or other arid locations.

### 3.4.3 Hotter temperatures, including heat waves

Around a third (32%) of survey respondents believed that disruption to public services from heat waves is likely to happen, and two thirds (66%) would be concerned if this impact did
occur. Increased air pollution due to warmer temperatures was felt likely by three in five (60%) with four in five (80%) saying they would be concerned by this.

A misconception made by some workshop participants was that a warmer climate just meant increased periods of sunshine and that a changing climate was no bad thing if it resulted in this. Indeed this reflected findings in the literature review which suggested that some hazards, such as heat waves, were not always seen as negative.

“When you were young you heard about global warming and deep down you were like, great!”
Workshop participant, aged 25-50, social grade C1C2, Belfast

There was a general perception in the workshops that hot summers have become less common – as already discussed in this chapter this is supported by the survey results where only one in nine (11%) felt hot summers had become more frequent and one in six (16%) thought heat waves had become more common. These views therefore made it difficult for workshop participants to view hotter temperatures as a credible risk to the UK. Further, a perception that many countries already deal regularly with temperatures far in excess of those currently experienced in the UK meant that there was a view that it was easier to adapt to this impact than others, through learning from best practice examples from around the world.

“There are places that are hot now that aren’t collapsing in the heat, so we need to look at what they do.”
Workshop participant aged 50+, social grade ABC1, Manchester

During the workshops people also tended to associate a heat wave as being a few degrees warmer (for instance, perhaps 30 instead of 25 degrees) and therefore not of much consequence. Taking a global perspective, many participants pointed out that people in developed nations across the world deal with these levels of heat (Dubai and southern Europe were mentioned). However, participants did not tend to take into account the fact that these areas spend more on hot weather infrastructure; so did not calculate this as an impact the UK might have to deal with.

Figure 25 lists all of the temperature related impacts that were seen by workshop and survey respondents. It shows that two thirds (67%) of survey respondents were concerned that more people might migrate to the UK if the climate in their own countries changed. This highlights how impacts seen to increase pressure on resources, which an increased population may cause, are seen as problematic. However this finding may be influenced by general concerns over immigration which we know is consistently cited as one of the top three issues facing the UK today.9

Around two thirds were also concerned about disruption to public transport from heat waves (65%); cities becoming unbearable places to live and work because of the heat (63%) and increased demand for energy due to a greater need for air conditioning (59%). Survey respondents were less concerned about a possible reduced need for energy due to warmer winters (12%). Figure 25 shows how survey respondents were generally unconcerned by positive impacts, such as lower demand for energy and fewer people dying in the winter due to warmer winters; more tourists coming to the UK and the ability to grow more crops because of a warmer climate. However the workshops showed that while it was considered important to take advantage of any positive impacts, there was less of a sense of how to adapt or prepare for the positive impacts. As already discussed, there was a high degree of scepticism that the UK would ever experience these heat related impacts.

9 Economist/Ipsos MORI March 2013 Issues Index (http://tinyurl.com/dx2kctb)
Figure 25: Level of concern for a range of heat related climate impacts

Q14. How concerned would you be, if at all, if the following did happen in the UK?

<table>
<thead>
<tr>
<th>Impact</th>
<th>Very concerned (%)</th>
<th>Fairly concerned (%)</th>
<th>Not very concerned (%)</th>
<th>Not at all concerned (%)</th>
<th>Don’t know (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>More people permanently move to the UK because of changes in the climate of their own country</td>
<td>29</td>
<td>39</td>
<td>21</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Disruption to trains, roads, and public transport due to more frequent heat waves</td>
<td>21</td>
<td>45</td>
<td>26</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Cities and large towns, which trap heat, becoming unbearably hot due to heat waves</td>
<td>23</td>
<td>40</td>
<td>28</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Increased demand for energy for cooling</td>
<td>18</td>
<td>41</td>
<td>31</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>New crops previously grown abroad become more common in the UK due to a warmer climate</td>
<td>7</td>
<td>18</td>
<td>44</td>
<td>28</td>
<td>3</td>
</tr>
<tr>
<td>Fewer vulnerable people dying in the cold due to milder winters</td>
<td>7</td>
<td>15</td>
<td>33</td>
<td>39</td>
<td>6</td>
</tr>
<tr>
<td>More tourists choosing to visit the UK because of a warmer climate</td>
<td>4</td>
<td>11</td>
<td>45</td>
<td>37</td>
<td>3</td>
</tr>
<tr>
<td>Lower demand for energy due to warmer winters</td>
<td>4</td>
<td>9</td>
<td>40</td>
<td>44</td>
<td>4</td>
</tr>
<tr>
<td>More people living in the UK take their holidays in the UK</td>
<td>4</td>
<td>9</td>
<td>41</td>
<td>44</td>
<td>2</td>
</tr>
</tbody>
</table>

Base: 1,064 All who were presented with this climate change impact

Figure 26 shows three of the heat-related impacts plotted by workshop participants. The wide dispersion of the dots shows there was no consensus among participants about the likelihood or impact of the consequences of hotter temperatures in the UK.
Figure 26: Aggregated qualitative grid: Concern plotted against likelihood for impacts related to hotter temperatures

3.4.4 Coastal inundation/erosion

Seven out of ten (73%) survey respondents felt that coastal areas becoming permanently flooded due to rising sea levels was something that is likely to happen by 2050. Moreover four in five (80%) said they would be concerned by this if it did happen. In fact this was an impact of climate change that was thought of as being one of the most concerning and likely events to happen, as the enlarged Figure 27 shows.

Figure 27: Enlarged chart showing impacts, concern versus likelihood (quantitative data)

As illustrated by Figure 28, the workshop participants often tended to plot this impact in a similar position. There was a sense that not only was it bad for coastal communities and natural habitats but would also have acute knock on affects which would impact upon the whole of the UK.
“Most of the major cities are on the coast – half of London would be wiped out if there were sea level rises.”

Workshop participant, aged 25-50, social grade C1C2, Belfast

Figure 28: Aggregated qualitative grid: Concern plotted against likelihood for low lying coastal areas becoming permanently flooded or eroded by rising sea levels

However, unlike many of the other impacts discussed in this chapter, there was a degree of fatalism when discussing this. A common finding, as discussed above, was that participants could not imagine any adaptation being significant enough to avoid or prevent the effects of erosion or inundation.

“There’s been erosion for years – what makes them think they can stop it? You’re just throwing good money after bad. I don’t think they’ll ever control the seas.”

Workshop participant aged 50+, social grade ABC1, Great Yarmouth

There was a sense of a lack of control over coastal impacts, and therefore a lack of desire to prepare for them over other impacts. This has been found to be the case in other adaptation research, such as in the United States where a recent poll found that “[P]eople are least supportive of policies that try to hold back Mother Nature”.10 The literature review also showed that there was a lower perceived sense of agency when it came to sea-level rises.

The online survey also shows that while respondents were concerned about coastal areas being lost due to coastal erosion/inundation, there is some evidence to suggest that respondents’ desire to protect these areas diminishes when they consider the potential costs. Over half (53%) agreed that people should move away from coastal communities vulnerable to erosion rather than spend millions of pounds trying to protect them. This is discussed in further detail in chapter 5.

3.4.5 Natural habitats and wildlife

Species that are lost or have to relocate due to changes in the climate was thought to be an impact that was highly concerning (80%) and likely to happen by 2050 (72%) by the majority of survey respondents.

A majority (77%) also expressed concern at a possible reduction in marine wildlife and over half (57%) felt this was likely. Figure 27 shows the relative importance of these impacts versus others that were presented. Similarly four fifths (81%) of survey respondents were concerned that new pests and diseases could become more common in the UK due to a changing climate, and two thirds (66%) felt this was likely. This impact was selected as important to prepare due to its perceived impact on health and food supplies, and therefore the health of the nation.

The workshop and follow-up depth interview participants’ concern at these impacts was more variable, however. Some agreed that such events could have a significant impact and were quite likely to occur, although this was by no means unanimous, as illustrated by Figure 29.

Figure 29: Aggregated qualitative grid: Concern over loss of wildlife

When identified as a realistic risk, this was often supported by references to loss or decline of some species that has already been seen.

*I chose [the image of] flowers because it reminds me that the harvests that have been washed away. There are not as many of these wild flowers nowadays.*

Workshop participant, aged 25-50, social grade C1C2, Belfast

“Climate impact is significant to wildlife in the garden. I have four bird feeding stations. In the past few years, bird numbers have gone up in the garden but insects such as bees and butterflies have gone down. Not many on my Buddliea. Not many insects in my log pile either. I haven’t seen any frogs yet. Normally the pond is full of them by now. I think I heard just one calling a couple of weeks ago. I’m worried about that. I haven’t seen hedgehogs for three years. The year before last we lost a lot of baby birds. I have to put mealworms out because they can’t find food.”

Follow-up depth interview participant, female, aged 59, Yorkshire (paraphrased)

However, as the workshop events progressed, these inherent concerns were often sidelined and few argued that these impacts should be prepared for over other impacts. This was
firstly because some felt that any reductions in certain species would be offset by increases in others and that there would be a natural rebalancing of the eco-system.

Secondly, impacts that were felt to have a more tangible affect on people were seen to be more important than impacts on wildlife or nature. Some participants were distressed at having to make ‘choices’ but ultimately the vast majority prioritised impacts on people.

3.5 Prioritisation of climate risk impacts

Given what this research has uncovered about public views of the likelihood and concern about the possible impacts of climate change occurring, it is important to understand which of these impacts people would prioritise to prepare for and adapt to. The final section of this chapter summarises public views of how different types of climate risk should be prioritised.

**Method note:**
The quantitative survey presented respondents with the list of 19 impacts summarised from the CCRA and asked them to imagine they were running the country and needed to decide what the priorities should be in relation to preparing for climate change and coping with the impacts of it. Respondents allocated tokens to indicate which areas they would select for investment/action. It was made clear that these tokens represented the budget that local and national government would have to deal with the impacts of a changing climate, including minimising the negative impacts or taking advantage of any opportunities it presents. Respondents were allowed to use the tokens however they preferred, allocating them to as few or as many different impacts as they wished. Respondents were also allowed to allocate more than one token to dealing with a specific impact if they preferred.

Figure 30 presents public views on which climate impacts should receive most attention in any adaptation plan. These findings reflect public views about how concerned they would be if these events do occur in future, with a very similar order of prioritisation.

Of the 19 specific climate impacts presented to survey respondents, combating poor harvests, and an associated increase in food prices, is allocated the most resources (11% of all tokens are allocated to this impact11), followed by protecting public services (10%) and homes (9%) against flooding and then water shortages (9%).

In contrast, taking advantage of the benefits of climate change, such as people holidaying in the UK (1%), and reduced energy demand through a warmer climate (1%), is seen as requiring less focus. This broadly matches views expressed by workshop participants who largely believed that the focus should be on minimising the negative consequences of climate change. Workshop participants recognised the benefits to the UK of climate change, but only tended to prioritise them once prompted with this information.

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11 It should be noted that this data is based on each respondent only seeing 10 of the 19 impacts. Therefore only around 1,050 saw each impact. However, each impact was seen by a roughly equal number of people and these findings provide a useful indication of the order in which the public prioritise different types of climate risk.
Figure 30: Prioritisation of climate impacts – with 10 tokens

Please consider the following potential consequences to the UK that might happen as a result of changes to the climate. We would like you to imagine you are running the country and need to decide what the priorities should be in relation to preparing for climate change and coping with the impacts of climate change. You have 15 tokens to allocate to the things that you feel should be prioritised as areas for investment/action.

- Poor harvests, due to extreme weather, pushing up food prices
- Public services like roads, power stations, schools and hospitals being disrupted as a result of heavy rainfall
- Droughts causing serious water shortages due to changes in rainfall patterns
- More homes being flooded as a result of heavy rainfall
- Air pollution gets worse from hotter weather, which particularly affects people with poor health or breathing problems
- New pests and diseases, previously only thriving in warmer climates, become common in the UK
- More people’s health suffering in extreme heat, particularly the elderly, due to more frequent heat waves
- Low lying coasts being permanently flooded or eroded by rising sea levels
- Disruption to trains, roads, and public transport due to more frequent heat waves
- Some types of wildlife are lost or decline in number because they cannot relocate to where the climate remains suitable for them
- A reduction in marine wildlife from changes in sea temperature
- Increased demand for energy for cooling (e.g. air conditioning) due to a warmer climate
- More people permanently move to the UK because of changes in the climate of their own country
- Cities and large towns, which trap heat, becoming unbearably hot due to heat waves
- New crops previously grown abroad become more common in the UK due to a warmer climate
- Fewer vulnerable people dying in the cold due to milder winters
- More tourists choosing to visit the UK because of a warmer climate
- More people living in the UK taking their holidays in the UK rather than going on holiday abroad, due to a warmer UK climate
- Lower demand for energy due to warmer winters

% of total tokens allocated

Base: 2,007 adults aged 16+

When only given 5 tokens to allocate (Figure 31) across the climate risks, the public prioritise in a similar way.
Figure 31: Prioritisation of climate impacts – with 5 tokens

Please consider the following potential consequences to the UK that might happen as a result of changes to the climate. We would like you to imagine you are running the country and need to decide what the priorities should be in relation to preparing for climate change and coping with the impacts of climate change. You have 15 tokens to allocate to the things that you feel should be prioritised as areas for investment/action.

Base: 2,007 adults aged 16+

- Poor harvests, due to extreme weather, pushing up food prices: 15
- Public services like roads, power stations, schools and hospitals being disrupted as a result of heavy rainfall: 12
- Droughts causing serious water shortages due to changes in rainfall patterns: 11
- More homes being flooded as a result of heavy rainfall: 10
- New pests and diseases, previously only thriving in warmer climates, become common in the UK: 8
- More people’s health suffering in extreme heat, particularly the elderly, due to more frequent heat waves: 8
- Air pollution gets worse from hotter weather, which particularly affects people with poor health or breathing problems: 8
- Low lying coasts being permanently flooded or eroded by rising sea levels: 5
- Some types of wildlife are lost or decline in number because they cannot relocate to where the climate remains suitable for them: 5
- Disruption to trains, roads, and public transport due to more frequent heat waves: 5
- A reduction in marine wildlife from changes in sea temperature: 3
- More people permanently move to the UK because of changes in the climate of their own country: 3
- Increased demand for energy for cooling (e.g. air conditioning) due to a warmer climate: 2
- New crops previously grown abroad become more common in the UK due to a warmer climate: 2
- Cities and large towns, which trap heat, becoming unbearably hot due to heat waves: 1
- Fewer vulnerable people dying in the cold due to milder winters: 0
- Lower demand for energy due to warmer winters: 0
- More people living in the UK take their holidays in the UK rather than going on holiday abroad, due to a warmer UK climate: 0
- More tourists choosing to visit the UK because of a warmer climate: 0

The results generally show that the public tend to spread resources across a number of different impacts and indicate that the UK public advocate spreading the risk of climate change as much as possible.

Of all people who allocated tokens (or ‘budget’) to impacts, the average number of impacts selected was 6 (out of 10 they were presented with). Just two per cent allocated their entire ‘budget’ to one impact, and almost half (44%) allocated it to 7 or more of the 10 impacts they could choose from (Figure 32).
Figure 32: Allocation of resource to different climate impacts

<table>
<thead>
<tr>
<th>Number of different impacts that tokens were allocated to</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>6%</td>
</tr>
<tr>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td>2</td>
<td>2%</td>
</tr>
<tr>
<td>3</td>
<td>7%</td>
</tr>
<tr>
<td>4</td>
<td>9%</td>
</tr>
<tr>
<td>5</td>
<td>14%</td>
</tr>
<tr>
<td>6</td>
<td>16%</td>
</tr>
<tr>
<td>7</td>
<td>18%</td>
</tr>
<tr>
<td>8</td>
<td>13%</td>
</tr>
<tr>
<td>9</td>
<td>6%</td>
</tr>
<tr>
<td>10</td>
<td>7%</td>
</tr>
<tr>
<td>Mean</td>
<td>6</td>
</tr>
</tbody>
</table>
4 Public attitudes towards preparations needed in UK

This chapter presents findings from the deliberative workshops on public preference of a number of different preparations that could be made to adapt to climate change in the UK.

Summary of key findings

- During the workshops participants were shown a number of different broad adaptations that could be taken in the UK to cope with the impacts of climate change. From this list, improved irrigation systems and reservoirs were selected as important preparations by many due to the impact on human health and the ability to maintain a food supply.
- Some workshop participants felt investment should be made in new crops and breeds of animal so as to help UK agriculture evolve to adapt to a new climate. There was a unanimous dismissal of greater reliance on food imports however, as this would detract from participants’ aspiration for the UK to have greater food security.
- Flood defences are prioritised by most as it is seen as a current and ongoing problem.
- Improved planning for companies to deal with extreme events are commonly prioritised, predominantly due to the financial impact not preparing would have. This was also felt to help spread the responsibility, and cost, of making adaptations beyond government.
- For similar reasons, information campaigns were seen as an important element of any adaptation plan as individuals and communities were considered an important agent in adaptation.
- Some preparations are selected because they are considered to have benefits for both mitigation and adaptation (greening urban spaces and planting trees to create new woodlands).
- Greater reliance on food imports (which is generally considered to be undesirable) and widespread installation of domestic air conditioning are not considered priorities.
- When considering individual level adaptation actions that could be taken, many are not seen to be personally relevant. Taking out insurance against extreme weather is the most commonly undertaken preparation (done by 28%).

Method note:

Workshop participants were shown a list of possible preparations which could be made in the UK. This list was compiled by Ricardo-AEA and was designed to contain preparations of various scales and associated costs which would help different sectors prepare. Participants were asked to select the five they felt would be the most beneficial to employ. Once participants had selected the five actions they would prioritise, they were asked to minimise their selection so it only included two ‘high-cost’ actions. This was not covered in the online survey.

The full list of preparations were (* indicates high cost preparation):

1. Information campaign to encourage individuals to change their behaviours e.g. drinking water in hot weather, using less water around the home
2. Basic information system through local news and radio stations to raise awareness of risk and encourage people to get prepared
3. Basic flood defences built in front of existing buildings to minimise damage, although buildings could still be knocked down with heavy flooding
4. Greater reliance on food produce from around the world
5. Greater planning by companies to deal with extreme events e.g. back-up systems, insurance, remote working options for staff, moving valuable equipment to other areas of building less at risk of flood damage
6. Individuals installing air conditioning units in their homes
7. Changes to design of urban areas to help reduce temperatures e.g. green roofs, increased tree cover in parks and streets*
8. Investment in improved irrigation systems, local reservoirs, cooled facilities for livestock and crops*
9. Planting trees to create new woodlands and extend existing woodlands and extensive pest control*
10. Investment in new crops and breeds of animals capable of coping with greater temperature ranges*
11. Incorporating flood defence measures into design of new buildings and retrofitting existing buildings with extensive flood defence measures*
12. Advanced information system involving working with local groups and charities to reach out to most vulnerable groups*

4.1 Prioritisation of preparations against climate risk

When making decisions about the most important preparations to make for adapting to climate change, the public tend to base these decisions on two key factors:

- How effective they expect the measures would be in protecting the UK against widespread loss (whether this is loss of life, financial impact, impact to biodiversity or others12); and
- Making selections to include a range of beneficiaries, including individuals, business, local and national government. Many participants attempt to ‘hedge their bet’ by spreading the benefit of their decision across different sectors. This reflects that people try to aim for a holistic approach and believe climate change adaptation is important across all sectors and all aspects of life. This also ties in with views on responsibility for taking actions, as discussed in chapter 1.

“We have a choice that will help everyone – one for cities, one for companies, one for wildlife, and one for charities.”
Workshop participant aged 18-25, Bristol

“We thought other things were more important like getting local communities and businesses and government to get involved, to spread the responsibility.”
Workshop participant aged 25-50, Kendal

While people generally selected a mix of preparations to focus on, there were two preparations that were most commonly selected as the preferred ways to adapt to climate change. These were ‘incorporating flood defence measures into the design of new buildings and retrofitting existing buildings with extensive flood defence measures’ and ‘investment in improved irrigation systems, local reservoirs and cooled facilities for livestock and crops’. These actions were seen as the most credible actions and were selected at every workshop location.

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12 These factors are discussed in more detail in chapter 5
Incorporating flood defence measures into the design of new buildings and retrofitting existing buildings with extensive flood defence measures

Planning for flooding is prioritised as an important preparation to be made as it is perceived to be an existing and ongoing threat to the UK. Some also referred to ways in which they have already seen adaptation in action and could therefore imagine ways in which these approaches could be continued or extended.

“There is flooding in Kendal. We’ve built defences to protect homes. If we didn’t have a flood defence scheme it would be a lot worse. But this isn’t new, this flooding has always happened.”
Workshop participant aged 25-50, Kendal

Participants said they thought it was important to incorporate flood defences into the design of buildings and retrofit old ones, as it was felt to have a significant impact on a considerable number of people. Flooding was seen as having impacts for households, as well as business and wider infrastructure. Because of this, preparing for it now was thought to be a sound investment that would save money in the long run.

“If every house in Tewkesbury, say, had a flood defence door then it would save huge amounts of money.”
Workshop participant aged 50+, social grade ABC1, Manchester

Some participants also believed that flood defences would not be developed without government input and selected it as a preferred preparation for this reason. This highlights the degree to which many people expect adaptation to be led by national government.

Investment in improved irrigation systems, local reservoirs, and cooled facilities for livestock and crops

Improved irrigation and local reservoirs were considered extremely important as they were thought to have a significant impact on human health as well as the ability to maintain a food supply – two of the principles on which many made decisions about preparations and adaptation (underlying principles behind these decisions are discussed further in chapter five). Sustaining a reliable and affordable food supply was viewed as a critical part of any adaptation plan.

“Irrigation is something we all need – you need crops and you need water – it’s something we all need to live.”
Workshop participant aged 50+, social grade ABC1, Great Yarmouth

While public views are mixed on whether water shortages will become more common in future, concern about this impact is nonetheless high. Reservoirs were thought to be important for maintaining a constant water supply for both agricultural and domestic use. Combined with this, water is also seen as an important resource that should not be wasted or used inefficiently.

“You’re using what you have, gathering it as a valuable commodity and not wasting it. It’s important for crops and livestock so we need to make better use of it.”
Workshop participant aged 50+, social grade ABC1, Manchester
Participants expected the UK ought to be able to manage its water supply, given that we are surrounded by sea and in a temperate zone. Some also believed we should easily be able to re-use flood water, and de-salinise sea water (although it should be noted that these were not widely held views).

“All this flood water we have runs into the sea. We have so much water it’s incredible that we have droughts. It’s a temperate climate, we get a lot of rain so we should be able to save it.”
Workshop participant aged 50+, social grade ABC1, Manchester

**Investment in new crops and breeds of animals capable of coping with greater temperature ranges**

Preparations that protect agriculture or allow it to adapt more successfully to climate change are prioritised because a reliable and inexpensive supply of crops is seen as critical. Investing in new crops or breeds of animals that are capable of withstanding greater temperature ranges was often chosen as an action that the UK should pursue. It is generally not seen as a new approach, but instead continuing a long-used agricultural method of breeding animals and developing crops to suit the weather conditions and consumer demand of the time.

“We have already bred animals and developed crops to suit conditions that we have. Investment in new breeds is the same as what we’ve done already”.  
Workshop participant aged 25-50, social grade C1C2, Brighton

Supporting this view, some participants also stated a preference for modifying existing staple UK crops, rather than investing in what are perceived to be new crops that have not previously been grown (or at least on a large scale) in the UK. For instance, when prompted with the example of growing blueberries in the UK, this was seen as less important than benefitting from increased yields of existing crops such as wheat.

“Blueberry farming and wine – these are the least of our priorities if it hits the fan. Blueberries and wine are frivolities.”
Workshop participant aged 50+, social grade C2DE, London

While selected as a preferred preparation by many participants, some questioned whether it would be appropriate or sensible to invest in something for which they felt its efficacy might be uncertain or unpredictable. Some thought that this preparation might not work if UK weather becomes even more unpredictable with greater extremes, while others questioned whether climate would change significantly enough.

“Investment in new crops and breeds of animals coping with greater temperature ranges. I don’t think that’s necessary, it’s not going to change that much, the temperature. Do we need to bring in new breeds of animals?”
Workshop participant aged 50+, social grade ABC1, Edinburgh

In relation to the importance that people attach to a secure UK food supply, a greater reliance on food imports was not selected by anyone at any location. As noted in chapter three, this was largely seen as an unpalatable prospect and one that should be avoided if at all possible. Increasingly relying on food produce from other parts of the world was often associated with more expensive food prices and a decline in UK-based agriculture and associated employment. It should be noted that the fieldwork took place while the horsemeat contamination of the UK food supply was being reported in the media. However, while mentioned by some participants in passing, this did not unduly impact on the discussion.
Greater planning by companies to deal with extreme events e.g. back-up systems, insurance, remote working options for staff, moving valuable equipment to other areas of building less at risk of flood damage

Business planning for extreme weather events was selected as an important action at every workshop location (although not by every mini-group at each location), predominantly due to the financial impact and opportunity cost of not preparing for it. This was also felt to help spread the responsibility, and cost, of making adaptations beyond government.

It should be noted that, by this stage of the workshop, participants had been provided with examples of the scale of impact that might be felt at different locations (rural, urban and coastal) and on different groups, including people, business and the natural environment. This included information on the possible financial impact that extreme weather and climate change might have on UK businesses.

Some participants even felt that preparations of this nature should be legislated for, to ensure that businesses would be covered for these risks.

“I think you need to legislate for it, they won’t do it voluntarily. Say ‘flood protection’ – it’s like having fire escapes in case of a fire, you might never need it but if you prepare for it then you’re protected”.
Workshop participant aged 50+, social grade C2DE, Birmingham

However, when probed on whether this should apply to all businesses, some believed that it should depend on the size of business (weighted towards larger ones that would be more able to respond to and comply with this legislation), rather than all businesses being subjected to it. Some reservations were also raised about the prospect of public money going towards protecting businesses. Where these concerns were raised, it was felt that pressure should instead be put on insurance companies to ensure businesses are suitably protected against these events.

Changes to design of urban areas to help reduce temperatures e.g. green roofs, increased tree cover in parks and streets

As well as different forms of adaptation being selected to involve a wide range of agents, specific preparations were selected on the basis that they would have benefits for both climate change mitigation and adaptation. In particular, the greening of urban spaces and planting trees to create new woodlands were selected for this reason.

Re-designing urban areas to better cope with the impacts of climate change was generally received positively as it was felt to increase the UK’s “green credentials”, but at limited additional cost. Many of those who selected it believed it would help to combat climate change as well as adapt to its impacts. It was also seen as a preparation that has wider benefits to the community.

“It helps to provide a reduction in temperature but it also deals with CO2, and it provides a nicer environment to live in which can improve peoples’ mental health so you get a lot of hits with that strategy.”
Workshop participant aged 50+, social grade ABC1, Manchester

As with other types of preparation, re-design of urban areas is also viewed positively as it is something that is not new and already happens. It is therefore considered as an acceptable approach as it is extending an already adopted approach.
Planting trees to create new woodlands and extend existing woodlands and extensive pest control

The creation of woodlands, or extending existing ones, is also named as a preferred adaptation in many cases because it is seen as a part of mitigation as well as adaptation policy. It is also viewed as a multi-strand approach, helping to address flooding, air quality and overall sustainability.

“Trees are basis of all eco-systems, so much goodness that comes from them, and may also slow down changes in climate.”
Workshop participant aged 25-50, social grade C1C2, Brighton

“Increased tree cover and irrigation; they’re addressing the real issues. We want to do something about that temperature graph and prevent global warming. It helps in the local area and also globally with emissions.”
Workshop participant aged 50+, social grade ABC1, Great Yarmouth

When selected, many participants also talk of the benefit of this being a ‘natural’ solution which is seen as an advantage that some other forms of adaptation may not bring.

Information campaigns

Information campaigns are seen as an important element of an adaptation plan as individuals and communities are both considered important agents in the UK’s ability to adapt to climate change. This reflects the fact that although primary responsibility is generally seen to rest with national government, most other levels of society are viewed as having an important role. It was also felt that it would help provide a holistic adaptation approach that involved people at a household and community level.

Information campaigns were generally seen as being relatively cost-effective forms of preparation, as well as something that would target a wide spectrum of society, regardless of location.

“We picked ones that encouraged everyone to do their own thing – if everyone is doing their bit then everyone will be able to help.”
Workshop participant aged 18-25, Bristol

Information campaigns divided opinion more than other preparations as they were generally seen as a quick, inexpensive win or as a waste of money on something that would have limited effect. The main criticism levelled against information campaigns were that they would merely be stating the obvious and would not realistically change behaviour, while others questioned the suitability of such an approach.

“No that’s common sense; government shouldn’t be wasting money on it.”
Workshop participant aged 50+, social grade C2DE, Birmingham

“I don’t think government should interfere with people’s behaviour in the first place.”
Workshop participant aged 50+, social grade ABC1, Great Yarmouth

The acceptability of increasing and utilising information on adaptation was increased when associated with, or facilitated by, local groups and charities. These organisations were felt to be well-placed to help deliver these campaigns and reach those most in need of help. Some also saw it as an opportunity to work with and build on campaigns that are already in place.
“Well, they’re [Help the Aged campaigns] doing it anyway, you’ve only got to add on a bit about hot weather.”
Workshop participant aged 50+, social grade C2DE, Birmingham

The fact that many select this preparation could be linked to the wider perception that accurate and unequivocal information on climate change is lacking.

**Individuals installing air conditioning units in their homes**

Installing domestic air conditioning was not selected by anyone at any location and was widely seen as unnecessary and a less important way to adapt to climate change. Many did not feel heat waves were a credible threat nor one which warranted widespread investment for something they felt might not happen very often.

“I thought ‘installing air conditioning units’ is a bit silly, I don’t think it’s that important.”
Workshop participant aged 50+, social grade C2DE, Birmingham

Some workshop participants argued that, if it was to be part of an adaptation plan, any such approach should be implemented through legislation whereby all new developments would be required to have air conditioning installed. However, many disagreed with this and the use of air conditioning was felt to be excessive given UK weather. As discussed earlier in this chapter, heat waves were generally not considered to pose a significant threat to the UK – now or in future. Generally there was a perception that they could be dealt with relatively easily and without formal adaptation policy.

“Install air conditioning in the home...just open the windows!”
Workshop participant aged 25-50, Kendal

4.2 Acceptability and relevance of household-level adaptations

A question was included within the online survey about relevance of, and willingness to undertake, a number of different individual level adaptation actions. This was to help understand public views of the types of ways and options to adapt to changing risk but at the individual or household level.

Other than speaking to the local authority about what they are doing to help, the single most common response to all adaptations listed is that the action is not seen to be relevant. Over half (58%) do not believe that installing flood protection is relevant to them. As would be expected, people who believe (either definitely or probably) that they are at risk of flooding are less likely to say it is not relevant to them. However, even among this group, one in six (18%) do not believe it is relevant and two in five (40%) have not thought about installing flood protection, highlighting that many do not actively consider preparation actions even for those impacts they are (or at least feel they are) at higher risk of.

Other actions are also believed to be irrelevant by significant proportions; just under half (45%) say removing impermeable surfaces from driveways or gardens is not applicable for them, and installing air conditioning, landscaping gardens to provide more shade, and taking out insurance against extreme weather are all said to be personally irrelevant by around three in ten.

Of the actions presented, taking out insurance against flooding and extreme weather is the one most likely to have been undertaken (28% say they have). Ensuring protection through
insurance is no more common among those who perceive themselves to be at risk of flooding, but take-up is higher among owner-occupiers (35%). The second most commonly undertaken action is planting trees to increase shade in the garden (20% have done so), although it is not clear the extent to which these actions were motivated by adapting to climate change.

Figure 33 shows that only one in ten or fewer say they have removed impermeable driveway/garden surfaces (10%), asked the local authority what adaptation action they are doing (5%), installed air conditioning (3%) or installed flood protection (1%). Reflecting the overall perception that heat waves do not present a realistic threat to the UK, one in five (20%) say they are unwilling to install air conditioning, and a further one in four (23%) have not considered it.

**Figure 33: Engagement with and relevance of adaptation actions**

During the follow-up depth interviews participants were also asked about their willingness to take actions personally to prepare for a changing climate. Most felt they did not need to prepare at an individual level. Three main reasons for this emerged during these interviews:

- Many were fatalistic as they felt individuals, and communities, had lived through various changes to the climate in the past and that this offered proof that lives and jobs would continue in spite of any climatic shifts;
- Some were unwilling to prepare for events that may or may not happen and would prefer to react as and when necessary e.g. buying necessary items or changing travel plans once a heat wave started;
- Some felt they were unable to prepare as they did not have enough information to decide whether they needed to, and what to do.

When follow-up depth interview participants were asked what preparations could be taken by individuals the most common responses were related to living greener lifestyles. For instance, recycling, driving less, insulating homes and buying electric vehicles. This reveals confusion between mitigative and adaptive actions. However, although this confusion may
exist, the deliberative workshops showed that once this distinction is explained it can be well understood by the public.
5 Public principles for prioritising climate change preparations

This chapter draws together the public’s broad principles for prioritising climate change preparations in the UK. It considers the implications of these for investment in preparations in different parts of the UK and for different groups in the population. This helps reveal the public's level of risk acceptability.

Summary of key findings

- The public’s priority was to protect people from changes to the UK’s climate – particularly vulnerable citizens, but also the young and economically active according to workshop participants.
- Preventing deaths was critical (59% of survey respondents ranked it as the most important principle), while workshop participants also considered the number affected, and the economic impacts for individuals and small businesses.
- These factors were put ahead of protecting large businesses and significantly ahead of protecting the natural environment.
- Cities were the most crucial areas of the UK to protect, ahead of rural communities or coastal areas. Rural farming areas were also a priority to prevent rising food prices and increased imports.
- People who choose to live or work in at-risk areas (e.g. on floodplains) should bear more responsibility for dealing with the impacts themselves.

5.1 Critical factors underpinning an assessment of preparation priorities

Method note:
During the workshops the factors underpinning participants’ decisions about the priorities for preparing for climate change were revealed. They were also discussed explicitly with participants.

The online survey also explored the principles by which respondents would make decisions on how to prepare for a changing climate.

Considering together the principles revealed through the survey and workshops, the critical factors underpinning the public’s assessment of preparation priorities were as follows. They are listed in broad order of importance taking both stages of the research into account:

- the likelihood of the event happening in the UK within the next two decades;
- the suddenness or unexpectedness of the impact;
- the impact on people – i) the severity of the impact (i.e. whether it caused death, loss of property, disruption to travel etc.); ii) the number affected; iii) the vulnerability of the people worst affected (i.e. whether it would particularly affect older, low income or disabled people);
• the financial impact (either positive or negative) on businesses and the wider economy;
• the knock-on effects and wider consequences of the event; and
• the extent to which large-scale investment and effort was perceived to be needed to adapt to deal with the impact.

The workshops found these factors were largely informed by participants' own perceptions. In spite of information being given to them about the likelihood and severity of an impact, most still relied on their own assessments to judge their priorities.

This list of critical factors can be mapped against the attitudes of survey respondents and workshop participants towards the different impacts of a changing climate in the UK (as discussed in Chapter 3). This has been done in Figure 34 below. This is based on Ipsos MORI's interpretation of this data. It illustrates why flooding was considered key to prepare for as it ‘ticks’ all of the critical factors. Each of the critical factors is discussed in more detail in the rest of this chapter.

Figure 34: Mapping critical factors against climate impacts to explore priorities for climate change preparation

<table>
<thead>
<tr>
<th>Critical factor</th>
<th>Flooding</th>
<th>Erratic weather e.g. heavy rainfall affecting harvests</th>
<th>Heat wave</th>
<th>Coastal erosion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Likelihood of event in next 20 years</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suddenness of impact</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severity of impact on people</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of people directly affected</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vulnerability of people affected</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial impact on business &amp; economy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knock-on effects &amp; consequences</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Need for large-scale effort &amp; investment to adapt</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5.1.1 Likelihood of event affecting the UK within next two decades

A critical factor for workshop participants when they were deciding which climate events were a priority for the UK to prepare for, was how likely that event was to happen in the UK in the future. This was based on their own perception of likelihood, which was largely conflated with whether the impact was already affecting the UK. For instance, as discussed in Chapter 3, flooding was prioritised as an impact to prepare for as it was acknowledged to already be affecting the UK and it was therefore imagined that it would continue to do so. Similarly, workshop participants considered poor harvests pushing up food prices to be highly likely because they already believed this was happening. Whilst participants may not necessarily have linked these perceived increases in food prices to extreme weather, it further underlines the link between experience and calculation of likelihood.
“We are already getting poor harvests. We already have new pests and diseases.”
Workshop participant aged 18-25, social grade ABC1, London

As shown in Figure 35, the survey results also revealed a strong association between perceptions of the seriousness of current events and those believed to be most likely to become more common in the future. This data is based on the average rating of likelihood and seriousness across the sample of 2,007 online survey respondents.

Figure 35: Current seriousness of climate impacts for the UK and likelihood of these impacts becoming more common in the UK by 2050

While a few participants felt the greatest priority was to prepare for events which were likely to happen within the next five years, most felt it was wise to prepare for events that were likely to happen within the next two decades. Many workshop participants felt it was not appropriate to prepare for climate events which were expected to have significant impacts for the UK on a longer timeframe (more than 20 years) as they felt many factors could change within this time period. For instance, they anticipated there may be more precise information on the scale, location and nature of the impacts, more advanced technology to deal with it, or even changes which mean it never happens.

“50 years ahead is too far to imagine, maybe 20 is ok but more than that and the world will be so different, and I would of thought, well in 50 years we would have got it sorted by then.”
Workshop participant aged 50+, social grade ABC1, Edinburgh

Workshop participants did not consider the need to make decisions now to instigate long-term preparations that may prove necessary later. For instance, they did not consider the need to make decisions on building regulations now.

Workshop participants did not naturally also consider the frequency with which different climate events could affect the UK – for instance how often we may be affected by floods, or heat waves. When prompted, this was a criterion which participants struggled to get to grips with and factor into their decision making. Instinctively, participants wanted to prioritise the...
impacts likely to occur most frequently. However they did not make trade-offs between the frequency and the severity of these events.

“I think the more often it happens the more you need to do something about it.”
Workshop participant aged 50+, social grade C2DE, Birmingham

Survey respondents were asked how concerned they would be if severe climate events, such as the flooding of November 2012 or the heat wave of summer 2003 became more common. Comparing the level of concern for such events if they occurred at different frequencies provides an indication of how the frequency of climate impacts affects risk acceptability.

Method note:
For both questions, the samples were split such that one quarter each were asked how concerned they would be if these events occurred every other year, every 5 years, every 10 years or every 25 years i.e. individual respondents were presented with just one possible frequency for each event. They were presented with information about the impacts: for the floods, 1880 properties were affected, 4 people died and the likely cost to insurers is £500m. For the heat waves, 2,000 additional deaths were caused in the UK and over 30,000 across Europe.

Figure 36 shows that most survey respondents would be concerned if severe flooding became more common, largely irrespective of the frequency. Three quarters (73%) would be concerned if such flooding occurred every 25 years, of which a quarter (24%) would be very concerned. If flooding of this scale occurred every other year, four out five (82%) would be concerned, one third (32%) very much so. This suggests that this risk is not acceptable even if it remains relatively infrequent. The workshops suggested this is due to the number of critical factors associated with flooding (see Figure 34). Participants also perceived flooding to take effect very suddenly and to have knock on effects. The slightly higher levels of concern among survey respondents as the frequency increases suggests that the likelihood of it occurring soon is a factor in determining risk acceptability of flooding, but not as important as others.

Figure 36: Concern of flooding frequency

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Very concerned (%)</th>
<th>Fairly concerned (%)</th>
<th>Not very concerned (%)</th>
<th>Not at all concerned (%)</th>
<th>Don't know (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every other year</td>
<td>32</td>
<td>50</td>
<td>13</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Once every 5 years</td>
<td>31</td>
<td>50</td>
<td>16</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>Once every 10 years</td>
<td>27</td>
<td>49</td>
<td>16</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>Once every 25 years</td>
<td>24</td>
<td>49</td>
<td>18</td>
<td>53</td>
<td></td>
</tr>
</tbody>
</table>

Base: 2,007 people aged 16+ in the UK
While concern over flooding generally does not vary with frequency, there is more variation in relation to perception of personal risk.

- Survey respondents who perceive their property as being at risk of flooding were more concerned by increased frequency: Were severe floods to occur every other year, net concern among those who believe they are at risk was 80%, compared with 65% who do not consider themselves at risk.
- For less frequent flooding events, the difference is wider: for those who think they are at risk net concern was 73%, whereas for those who do not it was 44%. This suggests that perception of personal risk is a more important factor in determining acceptability than frequency of the event.

Fig 37 shows that concern for an increased frequency of severe heat waves is lower than that for flooding. This is line with other findings presented in this report - whilst heat waves are seen as affecting large numbers of people and occurring suddenly, they do not have the severe impacts on people or business that floods do. A conclusion can be drawn that the public believe it is more acceptable to risk these events becoming more frequent than floods. Nevertheless, the frequency itself of heat waves affects the concern of survey respondents – and to a slightly greater extent than the impact of frequency on concern for flooding: whilst two thirds (65%) would be concerned if a heat wave such as that of 2003 were to occur every other year, three out of five (58%) would be if it happened every 5 or 10 years. This kind of heat wave occurring every 25 years would concern half (49%), the same percentage who would not be concerned. That fewer survey respondents would be concerned if heat waves remained relatively rare suggests that the likelihood of this event occurring in the next 20 years is an important factor determining risk acceptability - if it is believed they will be less frequent than this then concern is lower and risk more acceptable.

The differences here between floods and heat waves show that frequency can impact perceptions around concern but that it is not simply based on this. Instead, the public appear to start off with preconceptions around how great a challenge certain issues are.

**Figure 37: Concern of heat wave frequency**

| Q20. How concerned, if at all, would you personally feel if this kind of heat wave occurred in the UK? |
|---|---|---|---|---|---|
| **Very concerned (%)** | **Fairly concerned (%)** | **Not very concerned (%)** | **Not at all concerned (%)** | **Don't know (%)** |
| Every other year | 21 | 44 | 27 | 7 | 65% |
| Once every 5 years | 19 | 38 | 32 | 8 | 3 | 58% |
| Once every 10 years | 17 | 41 | 29 | 9 | 4 | 58% |
| Once every 25 years | 10 | 39 | 40 | 9 | 2 | 49% |

Base: 2,007 people aged 16+ in the UK
5.1.2 Suddenness or unexpectedness of event

Workshop participants also judged the risk posed by a climate event by how suddenly or unexpectedly it could occur. Impacts which could affect people and businesses with little warning were considered a greater priority to prepare for. For example, preparing for flooding was deemed more important than preparing for coastal erosion as a flood event was perceived to be a sudden dramatic event which would happen too quickly to be dealt with at the time. On the other hand, participants believed coastal erosion would be a very gradual change which would never pose an immediate threat.

Whilst survey respondents were not explicitly asked to consider this, the results suggest that ‘suddenness’ was a factor in their decision making as well. For instance, whilst low lying coasts being permanently flooded or eroded due to rising sea levels was among the impacts generating the most concern for survey respondents, it was not allocated as many resources to preparing for it as other more immediate impacts such as flooding.

5.1.3 Impact on people

Survey respondents were asked to rank a series of principles to show which they thought were most important to consider when deciding how to prepare and respond to climate change. Figure 38 shows that the most important factors to consider according to the public are those related to the impact on people. Three different principles related to the impact on people (loss of life, the number affected and the vulnerability of those affected) were all ranked significantly higher than principles about protecting wildlife or the natural environment, or minimising costs to consumers or businesses.

Workshop participants also placed high priority on the impacts that would affect people, although there were also concerns about the economic impacts of a changing climate. As shown below, this may in part be due to information shown to workshop participants about the impact for business.
Method note:
One of the workshop exercises was to place dots which represented financial investment in preparations on different areas of the country (cities, rural, coasts) and within these areas to place the dots on impacts affecting people, business or the natural environment. Participants were able to allocate 10 dots to start with, but then had to remove 5 of these in order to reveal their ultimate priorities for protection.

Figure 39 presents the outcome of this exercise in the Manchester workshop. The same pattern was seen in all workshops. It is evident that people and business were consistently prioritised over impacts for the natural environment (shown by the number of dots placed against these sections of the poster).

Figure 39: Prioritisation of investment between people, business and the environment in the Manchester workshop

5.1.3.1 Severity of the impact on people

Figure 38 shows that ‘avoiding loss of human life’ was considered by far the most important principle guiding prioritisation decisions by survey respondents. Three in five (59%) rated it as the most important principle, with three quarters (75%) rating it as either the most or second most important.

Whilst ‘minimising the overall number of people at risk’ was also considered important (13% as most important, 41% as most or second most important), these results suggest that on balance the public prioritise impacts threatening lives over all else.

Some workshop participants expressed similar views: although many wished to minimise the number of people affected (discussed in section 5.1.2.2 below), others prioritised those impacts that would affect a smaller number of people but severely. A severe consequence was considered to be loss of life, loss of property or a significant impact on health. These were felt to be more significant impacts than those considered as ‘inconveniences’ such as disruption to transport systems or hosepipe bans.

“"When trying to prioritise you’ve got two ways of doing it “things that affect a lot of people not very much, and things that affect not many people but affect them a lot. I’ve chosen the things that affect people a lot. If you’re in a city and there’s a heat wave it’s not going to kill you, but if you live on the coast and your house gets washed away then that’s really going to impact your life.”
Workshop participant aged 50+, social grade ABC1, Great Yarmouth
5.1.3.2 Number of people affected by the event

The workshops allowed for a more detailed discussion of the trade-off between protecting lives against minimising the overall number of people at risk. On balance, many participants prioritised preparations which would protect the largest number of people. The implication of this, as discussed in section 5.2.1, was that many wanted preparations to focus on cities as they are the main centres of population.

“There are more people living there so more people will be affected.”
Workshop participant, aged 50+, social grade ABC1, Manchester

The trade-off between the number affected and the severity of the effect led most workshop participants to prioritise water shortages over coastal erosion for instance. This balance of opinion was given spontaneously by some participants, but for others it was made after they were shown information on the numbers of people likely to be affected by different climate events.

Method note:
Towards the end of the workshop, after learning of the possible impacts of climate change and preparation actions that could be taken, participants were presented with information which detailed the probable scales of each impact (Figure 40). This showed a range from “best case” to “worst case” scenarios if no action was taken by 2050. The range reflected the inherent uncertainty in predicting climate change impacts. These scales were based on data from HR Wallingford adaptation experts.

Figure 40: Scale of impacts

<table>
<thead>
<tr>
<th>Low end of possible range</th>
<th>High end of possible range</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLOODING</td>
<td>800,000  ↔  2.25 million more people at significant risk of river and coastal flooding</td>
</tr>
<tr>
<td>COASTAL FLOODING</td>
<td>600,000  ↔  1 million more people at significant risk of coastal flooding</td>
</tr>
<tr>
<td>HEAT WAVES</td>
<td>600  ↔  6,000 more premature deaths a year due to hot weather</td>
</tr>
<tr>
<td></td>
<td>6,000  ↔  60,000 extra days in hospital a year due to hot weather</td>
</tr>
<tr>
<td>Milder Winters</td>
<td>4000  ↔  24,000 fewer premature deaths a year due to milder winters</td>
</tr>
<tr>
<td></td>
<td>Reduced household energy bills due to milder winters potentially leading to savings of over £1 billion per year</td>
</tr>
<tr>
<td>WATER SHORTAGES</td>
<td>27 million shortages  ↔  59 million people living in areas affected by water shortages i.e. between half and all the people living in the UK</td>
</tr>
</tbody>
</table>

Many workshop participants were shocked to learn that water shortages could affect between half and the whole population of the UK by 2050 if no action is taken. The knowledge that the entire UK population could be affected caused many participants to place more weight on preparing for water shortages than they had previously.
A few participants, having read this information, explicitly stated that preventing the deaths of a few hundred people as a result of hot weather was less critical than protecting the water supplies of millions of people.

“The numbers [of deaths] are small, obviously human life is important, but I feel comfortable with those losses.”

Workshop participant, aged 50+, social grade, Monmouth

Some workshop participants considered the changes to the climate as a whole and thought about whether impacts felt in one part of the year would be balanced by changes in another, making these impacts a lower priority to prepare for. For example, it was suggested that lower energy needs in milder winters would be balanced out by greater energy needs in hotter summers for air conditioning. A more extreme example, was balancing out more premature deaths and hospital admissions from hotter summers, with fewer deaths in milder winters. Therefore these impacts were considered lower priority to prepare for due to this cancelling out effect, as impacts leading to an absolute change were considered more important.

5.1.3.3 Impact on vulnerable groups

“Protecting particularly vulnerable people such as the elderly and poor” was a primary consideration for one in eight (12%) survey respondents, with 46% placing it as one of the two most important principles. It was therefore given similar weight to that of minimising the overall number of people at risk, but not thought to be as crucial as avoiding loss of human life.

Workshop participants also expressed concern for protecting vulnerable people – particularly those suffering poor health, living with a disability or on low incomes. However, again when given time within the workshops to consider the trade-offs required to prioritise preparations many participants also wanted to protect the young and economically active who could be termed ‘contributors to society’. Some felt this was ultimately more important than protecting some vulnerable groups, particularly older people. Section 5.3 of this chapter discusses the groups of people considered a priority to protect in more detail.

5.1.4 Financial impact on businesses and the wider economy

Only 2% of survey respondents felt “minimising cost to businesses” was the most important consideration and 6% thought it was the most or second most important principle. By contrast 54% said it should be the least important factor. A minority of respondents felt “minimising cost to consumers” was an important principle (4% most important, 11% most or second most important) when rated against the other principles, including loss of life. Minimising costs was rated as less important than safeguarding wildlife and landscape by survey respondents.

While workshop participants also agreed that minimising the impacts for people was the ultimate priority (as shown in Figure 38) the economic impact of a changing climate – both for the UK economy as a whole, for specific businesses, and for individual consumers - was felt to be very important. It was a key factor in their discussions about priorities for preparations came significantly ahead of protecting wildlife and landscapes for most.

“If the job of the government is to protect the country you’ve got to look at this from an economic point of view.”

Workshop participant aged 50+, social grade ABC1, Manchester
For instance, protecting agricultural land from extreme weather events was a top priority due to the economic knock-on effects of fewer exports, loss of earnings for agricultural businesses and higher food prices for individual consumers.

Another economic factor considered by some workshop participants was the impact on tourism. The few participants who did want to prioritise protection of the UK’s coastal areas felt this was important due to the tourism connected with these areas (the priorities for different types of area around the UK are discussed in more detail in section 5.2).

The importance placed on protecting business in the workshops may reflect the type of business being considered by participants. Their concern for businesses was sometimes qualified as concern for small businesses in particular. If the survey respondents were conflating business with “big business” this may explain the lower level of priority awarded to it. The workshop participants assumed “big business” would be relatively unaffected by climate change as they would have protection through insurance.

Furthermore, workshop participants were given information on the specific impacts that climate change could have for business. It was often a reaction to these impacts that participants decided to direct resources to helping businesses adapt. By contrast, survey respondents were not presented with information about business and climate change.

### 5.1.5 Knock-on effects and wider consequences of event

A common way in which workshop participants debated the significance of a climate change impact was the extent to which an initial impact had knock-on effects to create other changes or affect different aspects of the UK. For instance, participants were given the example of a rural shopkeeper who may have to close down their shop due to transport disruptions caused by flooding (see Figure 41).

**Figure 41: Workshop case-study character shop owner**

I live in a village in Scotland where I grew up. I run a small shop. Last year floods led to transport problems, and my stock didn’t get through. I lost money and nearly had to close down. I am worried that in the future I might lose my business, if that happens I’ll have to move away from the area and try and find work somewhere else.

Many participants felt this shopkeeper should be prioritised for protection as the closure of the shop had wide reaching consequences for the economy and atmosphere of the local community.

“I think it affects people’s livelihoods directly and impacts on community life. If rural communities become an unreliable place to live then people will leave and they will dwindle.”

Workshop participant aged 25-50, Kendal
There was a similar feeling about protecting those in agriculture to protect rural communities and consumers nationwide.

“If you protect your farmers you protect the whole community really.”
Workshop participant aged 50+, social grade C2DE, Birmingham

Another example of where knock-on effects were commonly considered by workshop participants was in relation to impacts on the natural environment. Only 6% of survey respondents felt “safeguarding wildlife/landscape” should be the most important principle. During the workshops the environmental impacts which were of greatest concern were those felt to have an adverse knock-on effect for people – for instance, the loss of marine wildlife affecting food sources and food prices, or problems with the quality of drinking water. Only a few workshop participants supported protection of the natural environment for the sake of the environment alone. While some wanted to, when asked to prioritise the allocation of resources they could not justify protecting the natural environment ahead of either people or business.

5.1.6 Extent to which large-scale investment and effort required

For some workshop participants, the perceived ease of taking action to prepare for a change in the climate was also a factor. They believed some changes would occur on their own without needing additional effort or coordination. Workshop participants based their assessment of the ‘ease of preparing’ on two main factors:

1) Whether they believed individuals would naturally adopt different behaviours which would mean the change in climate required no large-scale investment or effort; and
2) Whether other areas of the world were felt to be affected by a certain climatic condition.

For instance, as discussed in Chapter 3, it was considered lower priority to prepare for hot weather than to prepare for heavier rainfall. One of the reasons for this was that participants expected people living in the UK, and especially those living in cities, to naturally adapt their lifestyles and behaviours to deal with hotter weather. For instance, it was expected that people would carry bottled water with them when travelling, that they would install air conditioning if needed and so on. Most did not envisage this requiring significant investment or effort on the part of government or businesses.

“Realistically for the hot weather people can buy their own fans and they can understand they need to take precaution.”
Workshop participant aged 18-25, social grade ABC1, London

Workshop participants regularly dismissed the risk associated with a change in climate if it was considered to be easily dealt with in other countries around the world. For instance, the consequences of a hotter climate were quickly dismissed with the example of Dubai often given as proof that populations can prosper in that climate.

“There are a lot of hot countries in the world so solutions to this aren’t expensive and it’s not a huge problem.”
Workshop participant aged 18-25, social grade ABC1, London

This showed a lack of understanding that other places have already undergone adaptations and preparations to deal with this climate that we have not done in the UK. Many participants assumed preparations were not needed, as they perceived other countries to be dealing with the same threat without taking action.
5.2 Implications of critical factors for preparing across different areas of UK

Method note:
The deliberative workshops explored whether participants felt particular areas of the UK – that is cities and towns, countryside and rural communities or coastal areas - were a greater priority to protect, and prepare for climate change. This was not covered in the online survey.

The critical factors discussed above had implications for which areas of the UK workshop participants felt should be prioritised for climate change preparations.

Overall workshop participants supported protection being directed to the areas of the country most at risk.

“I don’t need flood defences near me, I’m 800 foot up. You need to put money where is needed.”
Workshop participant aged 50+, social grade ABC1, Monmouth

Participants in fairly wet areas (e.g. Lake District, Monmouth and Belfast) acknowledged that investment in protection against drought and water shortages would, and should, be targeted at the South East rather than in areas of low water stress.

“All the money for preparation will go to southern England.”
Workshop participant aged 25-50, social grade C1C2, Belfast

Workshop participants made judgements on which areas of the country were most at risk using the critical factors discussed above. Overall, cities and agricultural areas were identified as critical to protect from the effects of climate change. Workshop participants were less concerned about protecting the UK’s coastal areas - participant’s perceptions of the risks faced by the coast, and the level of preparation they felt was appropriate for these areas is discussed in more detail in Chapter 3. The weight given to preparations in these different types of area is illustrated in Figure 42. This shows the outcome of the investment allocation workshop exercise described in section 5.1.3. The example shown is from the Birmingham workshop but this reflects the outcome at many of the workshops.

Figure 42: Prioritisation of investment between cities, rural areas and coastal areas in the Birmingham workshop
5.2.1 Preparing the UK’s towns and cities for climate change

Cities were considered vital to protect by many workshop participants as they ‘tick’ many of the key criteria discussed above:

- Home to a large population;
- Home to a large population of vulnerable people (living in poor health, with a disability and/or on a low income); and
- Economic centres as location of many businesses and hubs of infrastructure.

“There’s a lot more of the amenities [in cities]. Countryside is important, but all the major infrastructure, airports and stuff is in towns and cities...businesses tend to be in the big cities.”
Workshop participant, aged 50+, social grade ABC1, Manchester

“There are more people in towns and cities. Industry needs to be protected and people need to be protected. Cities are the hub of the surrounding countryside so if they go down everything goes with it.”
Workshop participant, aged 25-50, Kendal

Some workshop participants, from around the UK, particularly identified London as a priority to protect from a changing climate. This was because London was considered the economic centre of the country and the most populated area.

“In terms of economic impact on the country, if London ground to a halt because it was flooded that would have a massive impact on the country.”
Workshop participant, aged 50+, social grade ABC1, Manchester

The desire among workshop participants to protect the UK’s cities was not always clearly linked to a specific climate impact. There was in fact some confusion and uncertainty about the nature of the threat faced by cities. Although some highlighted towns and cities as being at particular risk of flooding due to paving over of private gardens and other green spaces, others did not realise that some of the large cities faced an increased flood risk. Many also did not find it credible that warmer temperatures could make cities unbearable places to live and work. The priority placed on cities may, therefore, uncover a more general desire to protect the most populated urban areas, regardless of the threat. This critical factor, along with the economic importance of cities, explains why many participants prioritised their protection.

5.2.2 Preparing the UK’s countryside and rural areas for climate change

Rural areas were also considered important to protect by workshop participants. This was mainly because they were conflating rural areas with productive agricultural land. As discussed in Chapter 3, the preservation of the UK’s home-grown food supply was prioritised over many other climate risks.

“That’s what tipped me to put countryside at number one. The countryside will provide for towns and cities if we invest.”
Workshop participant, aged 50+, social grade ABC1, Manchester

Some rural areas in particular were mentioned by workshop participants as a priority to protect. For example East Anglia which was perceived as a critically important arable farming area at risk due to low-lying land.
The desire among workshop participants to protect rural agricultural areas appeared to also be linked to a deeper underlying concern about preserving and protecting British farming. Climate change was seen as one of a number of threats to farming as a viable business in the UK.

Although some workshop participants felt farmers already benefitted from significant amounts of government assistance, most nevertheless wished to protect them further due to their perceived importance to food production.

“It [threats to food supply] affects the majority of people - everybody eats! Although this is reluctant as far as I'm concerned as farmers get so many hand outs but they're so important.”
Workshop participant, aged 25-50, Kendal

Rural areas were generally prioritised by workshop participants due to this link to farming, however a few also wished to focus protection here as they felt rural communities were more vulnerable and less able to protect themselves. By contrast, these participants felt urban areas were largely populated by businesses with insurance which would protect them from any climate risks.

5.2.3 Preparing the UK’s coastal areas for climate change

As shown in Figure 42, coastal areas were generally seen as the least important of the three areas to protect by workshop participants. An assessment of several of the critical factors discussed in section 5.1 contributed to them being regarded as lower priority:

- Coastal areas were believed to have smaller and less dense populations;
- Coastal areas were perceived to have lower economic value than either cities (due to businesses) or rural areas (due to farming) – although some recognised they may have economic value from tourism;
- The risks facing the coasts were perceived to be gradual - whilst there was some sympathy for those who would have to relocate, many participants believed that inhabitants of at risk areas had the time to move away before their house would be severely damaged, and should do so.

As discussed in section 3.4.4 a slight majority of survey respondents agreed that retreat would be preferable to investing significantly in protecting these communities; around half (53%) agreed that “it is better for people to move away from some coastal communities vulnerable to erosion and loss of land to the sea rather than spend millions of pounds trying to protect them.” This view was also shared by those living closer to coastal areas, with half (53%) of those living within one kilometre of the coast also agreeing.

A similar sentiment was raised by one of the follow-up interview participants:

“I think, unfortunately, there’s got to be the pragmatic decisions of what bits can’t be saved rather than trying to throw everything far and wide and keep everything as it is. I think you kind of realistically sacrifice a few places and realise that the money outweighs the benefits and let nature take its course with those parts, and just focus resources on the areas where something can be done.”
Follow-up depth interview participant, aged 35, North West region

Survey respondents who think humans have contributed to climate change were less inclined to support this policy, however, with twice the proportion disagreeing (28%) than those who think climate change is natural (14%).
Furthermore, two thirds of survey respondents (65%) agreed that “It is fair that different people will face different levels of risk from changes in the climate because of where they choose to live” while only 9% disagreed. Again, three quarters of those who think climate change is natural agreed with this (76%) compared with three out of five (61%) who think it is man-made, suggesting that people who believe climate change is a result of human action are more likely to favour adaptation to minimise risk.

Among those who did want to prioritise protection in coastal areas the reasons were:

- the severity of the impacts likely to be felt in these areas i.e. permanent loss of homes and possessions;
- the economic importance of these areas for tourism.

*If you’re in a city and there’s a heat wave it’s not going to kill you, but if you live on the coast and your house gets washed away then that’s really going to impact your life*”

Workshop participant, aged 50+, social grade ABC1, Great Yarmouth

An example output from the Birmingham workshop is shown in Figure 43. This shows the ‘investment’ (represented as dots) allocated to impacts which could affect coastal areas. The dots which are struck through show those removed when funding had to be prioritised. In this example all but two dots were removed highlighting the low level of priority given to coasts, particularly when tough choices had to be made. A similar trend was observed in all the workshops.

**Figure 43: Workshop exercise to prioritise investment on climate change preparations**
5.3 Implications of critical factors for helping different groups of people prepare for climate change

Method note:
The deliberative workshops explored whether participants felt particular groups of people should be prioritised for protection from climate change. Seven characters were created to test this, and to reveal the principles by which participants were making prioritisation decisions. The seven characters are presented in the appendices.

Figure 44 draws the findings of this exercise together. Overall, the research found that vulnerable people should be prioritised for protection according to the public but also young, economically active citizens and those contributing to the economy and society such as those involved in agriculture and small business owners. People who choose to live or work in at-risk areas (e.g. on floodplains) were expected to bear more responsibility for dealing with the impacts themselves.

Figure 44: Prioritisation decisions for different groups of people at risk from climate change

- **Contributors to society** e.g. local businesses, farmers, young & economically active
  - “They should prioritise people who are doing more, good for the community rather than just helping individuals.”
  - Workshop participant aged 50+, social grade ABC1, Edinburgh

- **Vulnerable people** – workshop participants particularly prioritised those with health problems e.g. asthma sufferers
  - older citizens were given lower priority due to focus on protecting economically active

- **Chosen to live in ‘at-risk’ area**

  - 65% in survey agreed “it is fair that different people will face differently levels of risk from changes in the climate because of where they choose to live”, while 9% disagreed.
  - “Sympathise with the woman who doesn’t want her taxes to go to flood defences. She’s like us – we don’t want to spend money on people in the flood plain!”
  - Workshop participant aged 50+, social grade C2DE, Birmingham
5.4 Summary of public’s perceptions of acceptable and unacceptable risk preparation

Figure 45 draws together the findings of the online survey and deliberative workshops to summarise the key aspects of risk preparation that the UK public found acceptable and unacceptable. It should be noted that specific adaptation actions were not the focus of this research. Rather the aim was to understand how people perceive risk and public attitudes towards the principles on which any adaptation decisions should be made. This summary is based on Ipsos MORI's interpretation of the data collected. It should be noted that these do not necessarily represent the views of all research participants, but they do reflect the broad themes of opinion expressed.

Figure 45: Summary of public's perceptions of acceptable and unacceptable risk preparation

<table>
<thead>
<tr>
<th>Acceptable</th>
<th>Unacceptable</th>
</tr>
</thead>
<tbody>
<tr>
<td>• To invest in adaptations now based on best evidence available, even if this means preparations are made for events which never happen</td>
<td></td>
</tr>
<tr>
<td>• To invest most in preparations for:</td>
<td></td>
</tr>
<tr>
<td>- flooding</td>
<td></td>
</tr>
<tr>
<td>- water shortages</td>
<td></td>
</tr>
<tr>
<td>- protecting urban areas</td>
<td></td>
</tr>
<tr>
<td>- protecting productive agricultural land</td>
<td></td>
</tr>
<tr>
<td>• To accept that not everywhere and not everyone can be, or should be, protected equally – and to therefore focus less investment on preparations for*:</td>
<td></td>
</tr>
<tr>
<td>- sparsely populated coastal areas</td>
<td></td>
</tr>
<tr>
<td>- areas of natural environmental importance</td>
<td></td>
</tr>
<tr>
<td>- people who have chosen to live in at-risk areas</td>
<td></td>
</tr>
<tr>
<td>- warmer temperatures and heat waves</td>
<td></td>
</tr>
<tr>
<td>*While not risking significant loss of life or business or agricultural productivity</td>
<td></td>
</tr>
<tr>
<td>• To allow significant loss of:</td>
<td></td>
</tr>
<tr>
<td>- human life</td>
<td></td>
</tr>
<tr>
<td>- productivity for small businesses</td>
<td></td>
</tr>
<tr>
<td>- productive agricultural land</td>
<td></td>
</tr>
</tbody>
</table>

• To invest substantially to prepare for: |
| - events that may not happen within next 20 years |
| - consequences related to warmer climate |

• To allow the UK to face severe consequences from: |
| - flooding |
| - water shortages |
| - failed harvests leading to higher food prices |

• To not exploit the opportunities created by changes in the climate e.g. tourism or new crops
6 Appendices - Project methodology

6.1 Recruitment of Sample

This section provides additional information about the Ipsos MORI access panel. This information should be consulted in addition to methodological details in the main document (Section 2).

The Ipsos Access Panel (IIS) is an online panel consisting of a pre-recruited group of individuals or households who have agreed to take part in online market and social research surveys. Ipsos uses a “double opt-in” process for all panellists. Individuals wishing to join the panel first complete the online recruitment survey, where main demographic information is provided by panellists, and accept the terms and conditions of membership, constituting the first “opt-in” to panel membership. Panellists then receive an e-mail and are required to click on a link to confirm they would like to participate in panel membership. This constitutes the second “opt-in”.

The panel is continuously refreshed using a variety of sources and methods, the most important being Affiliate Networks. Affiliate Networks enables recruitment from many different sources as affiliates typically run recruitment campaigns in partnership with 20 to 40 different websites at a time. Panels are actively monitored and maintained through a series of continuous quality checks including checks for membership duplication across databases, screening for ineligibility (e.g. IP address tracking), purging of inactive members, and name, email, postcode, and cross-questions validation.

For all studies using the IIS panel, panellists are rewarded with points for every survey they complete. The points allocated depend on the questionnaire length and what the research requires of them (for instance, the number of points would be higher if it required a diary to be completed). Accumulated points can be redeemed on the dedicated panellists' website for a variety of vouchers. Rewarding points is the preferred incentive system on panels as it is seen as a neutral system which does not skew the participation of specific groups of people. Panellists are restricted to how a maximum number of surveys they can take complete in any given month.

The sample for the current survey was reserved from the panel and quotas applied to ensure a representative sample completed the questionnaire. Panellists were recruited using an email invitation including a link to the online questionnaire and information regarding the length of the survey as well as available incentive points.

6.2 Statistical Reliability

Because a sample, rather than the entire population of the UK population, was interviewed the percentage results are subject to sampling tolerances. This means that we cannot be certain that the figures obtained are exactly those we would have if everybody had been interviewed (the ‘true’ values). We can, however, predict the variation between the sample results and the ‘true’ values from a knowledge of the size of the samples on which the results are based and the number of times that a particular answer is given.

The table below illustrates the predicted range for different sample sizes and percentage results at the ‘95% confidence interval’ – i.e. the confidence with which we can make this
prediction is 95%, that is, the chances are 95 in 100 that the ‘true’ value will fall within a specified range. The tolerances that may apply in this report are given in the table below.

<table>
<thead>
<tr>
<th>Overall statistical reliability(^{13})</th>
<th>Approximate sampling tolerances applicable to percentages at or near these levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size of sample on which survey result is based</td>
<td>10% or 90%</td>
</tr>
<tr>
<td>All 2,007 respondents</td>
<td>±</td>
</tr>
<tr>
<td>All male (979) or female (1,028) respondents</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Ipsos MORI

For example, with a sample of 2,007 people where 30% give a particular answer, the chances are 19 in 20 that the ‘true’ value (which would have been obtained if the whole population had been interviewed) will fall within the range of plus or minus 2 percentage points from the sample result.

When results are compared between separate groups within a sample (for example, between men and women), different results may be obtained. The difference may be ‘real’, or it may occur by chance (because not everyone in the population has been interviewed). To test if the difference is a real one – i.e. if it is ‘statistically significant’, we again have to know the size of the samples, the percentage giving a certain answer and the degree of confidence chosen. If we assume the ‘95% confidence interval’, the differences between the two sample results must be greater than the values given in the table below:

<table>
<thead>
<tr>
<th>Statistical reliability between subgroups</th>
<th>Approximate sampling tolerances applicable to percentages at or near these levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size of sample on which survey result is based</td>
<td>10% or 90%</td>
</tr>
<tr>
<td>c. 979 men vs. 1,028 women</td>
<td>±</td>
</tr>
</tbody>
</table>

Source: Ipsos MORI

For example, if 10% of men give a particular answer compared with 13% of women, the chances are 95 in 100 times that this 3 percentage point difference is significant (i.e. greater than or equal to 3 points), which could not have happened by chance.

\(^{13}\) Strictly speaking the tolerances shown here apply only to random samples; but in practice good quality quota sampling has been found to be as accurate.
6.3 Quotas
The following quotas were used in the online survey:

<table>
<thead>
<tr>
<th>AGE</th>
<th>Nat Rep Quotas</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 - 24</td>
<td>14.82%</td>
</tr>
<tr>
<td>25 - 34</td>
<td>15.99%</td>
</tr>
<tr>
<td>35 - 44</td>
<td>17.69%</td>
</tr>
<tr>
<td>45 - 54</td>
<td>16.75%</td>
</tr>
<tr>
<td>55 - 64</td>
<td>14.53%</td>
</tr>
<tr>
<td>65 - 74</td>
<td>10.58%</td>
</tr>
<tr>
<td>75 - 99</td>
<td>9.65%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GOVERNMENT OFFICE REGIONS(HCAL_REGION1)</th>
<th>Nat Rep Quotas</th>
</tr>
</thead>
<tbody>
<tr>
<td>NORTH EAST</td>
<td>4.24%</td>
</tr>
<tr>
<td>WALES</td>
<td>4.86%</td>
</tr>
<tr>
<td>SCOTLAND</td>
<td>8.52%</td>
</tr>
<tr>
<td>NORTHERN IRELAND</td>
<td>2.80%</td>
</tr>
<tr>
<td>NORTH WEST</td>
<td>11.14%</td>
</tr>
<tr>
<td>YORKSHIRE AND HUMBERSIDE</td>
<td>8.54%</td>
</tr>
<tr>
<td>WEST MIDLANDS</td>
<td>8.70%</td>
</tr>
<tr>
<td>EAST MIDLANDS</td>
<td>7.23%</td>
</tr>
<tr>
<td>EAST OF ENGLAND</td>
<td>9.32%</td>
</tr>
<tr>
<td>SOUTH WEST</td>
<td>8.58%</td>
</tr>
<tr>
<td>SOUTH EAST</td>
<td>13.63%</td>
</tr>
<tr>
<td>GREATER LONDON</td>
<td>12.44%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GENDER</th>
<th>Nat Rep Quotas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>48.73%</td>
</tr>
<tr>
<td>Female</td>
<td>51.27%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

Source: Eurostat 2010

<table>
<thead>
<tr>
<th>WORKING/NOT WORKING</th>
<th>Nat Rep Quotas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working</td>
<td>59.94%</td>
</tr>
<tr>
<td>Not Working</td>
<td>40.06%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

Source: LFS 2006

The final data has also been weighted to reflect this population profile.
6.4 Survey questionnaire

Climate change risk acceptability
Draft questionnaire
31/01/13 FINAL

INTRODUCTION

Thank you for agreeing to help with this research. We would like to ask you about your opinions on a range of subjects. The main subject matter will become clear early on in the survey.

ASK ALL
Q1.
Which of these, if any, would you say are the three most important issues facing the UK today?

RANDOMISE STATEMENTS
MA UP TO 3
DK IS SA

1. Economy/Economic situation
2. Unemployment/Factory Closures/Lack of Industry
3. National Health Service/Health care
4. Race relations/Immigration
5. Crime
6. Inflation/Prices
7. Education
8. Poverty/Inequality
9. Housing
10. Pensions/Social security
11. Climate change
12. War/Conflict
13. Terrorism
14. Protecting the environment/Dealing with pollution
15. Extreme weather events
16. Other (please specify) [TEXT BOX] [ANCHOR AT BOTTOM]
17. Don't know [ANCHOR AT BOTTOM]

ASK ALL
Q2.
And now please think about the future. Which of these, if any, would you say will be the three most important issues facing the UK in the future?
RANDOMISE STATEMENTS
MA UP TO 3
DK IS SA

1. Economy/Economic situation
2. Unemployment/Factory Closures/Lack of Industry
3. National Health Service/Health care
4. Race relations/Immigration
5. Crime
6. Inflation/Prices
7. Education
8. Poverty/Inequality
9. Housing
10. Pensions/Social security
11. Climate change
12. War/Conflict
13. Terrorism
14. Protecting the environment/Dealing with pollution
15. Extreme weather events
16. Other (please specify) [TEXT BOX] [ANCHOR AT BOTTOM]
17. Don’t know [ANCHOR AT BOTTOM]

ASK ALL
Q3.
To what extent do you agree or disagree with each of the following statements?

DOWN SIDE OF GRID
SA PER ROW

1. Humans have the right to modify the natural environment to suit their needs
2. Humans are severely abusing the planet
3. Plants and animals have the same rights as humans to exist
4. Nature is strong enough to cope with the impact of modern industrial nations
5. Humans were meant to rule over the rest of nature
6. The balance of nature is very delicate and easily upset

ACROSS TOP OF GRID
1. Strongly agree
2. Tend to agree
3. Neither agree nor disagree
4. Tend to disagree
5. Strongly disagree
6. Don’t know

ASK ALL
Q4.
Thinking back over your life in the UK, do you personally feel that over the long term you have seen any changes in the weather the UK experiences?
SA
ROTATE RESPONSE OPTIONS SO 50% SEE OPTION 1 FIRST AND 50% SEE OPTION 4 FIRST

1. Yes, definitely
2. Yes, probably
3. Probably not
4. Definitely not
5. I have not been living in this country long enough to tell [ANCHOR AT BOTTOM]
6. Don't know [ANCHOR AT BOTTOM]

ASK IF CODE 1-3 AT Q4.

Q5.
During your life in the UK do you feel the following have become more or less frequent in the UK, or stayed about the same?

DOWN SIDE OF GRID
SA PER ROW
RANDOMISE ORDER

1. Snow
2. Cold winters
3. Mild winters
4. Dry periods without rain
5. Heatwaves
6. Flooding
7. Periods of heavy rainfall
8. Hot summers
9. Coastal erosion (where the sea wears away the land)

ACROSS TOP OF GRID
1. A lot more frequent
2. A little more frequent
3. About the same
4. A little less frequent
5. A lot less frequent
6. Don't know
ASK IF CODE 1-3 AT Q4.

Q6.
And again, during your life in the UK, would you say the following have become more or less severe or stayed about the same?

DOWN SIDE OF GRID
SA PER ROW
RANDOMISE ORDER

1. Snow
2. Cold winters
3. Dry periods without rain
4. Heatwaves
5. Flooding
6. Periods of heavy rainfall
7. Hot summers
8. Coastal erosion (where the sea wears away the land)

ACROSS TOP OF GRID
1. A lot more severe
2. A little more severe
3. About the same
4. A little less severe
5. A lot less severe
6. Don’t know

ASK ALL
Q7.
Do you believe your property is at risk of flooding? The answer you give will be treated confidentially and will not be passed on to anyone outside of Ipsos MORI.

Do you feel it is...

SA
1. Definitely at risk
2. Possibly at risk
3. Not at all at risk
4. Don’t Know

ASK ALL
Q8.
Do you expect your home to be at an increased risk of flooding by 2050, or not?

SA
1. Yes - definitely
2. Yes - probably
3. No - probably not
4. No - definitely not
5. Don’t know
ASK ALL

Q9.
How serious a problem do you think the following currently are for the UK, or do you not think they are a problem at all?

DOWN SIDE OF GRID
SA PER ROW
RANDOMISE ORDER

1. Snow
2. Cold winters
3. Mild winters
4. Dry periods without rain
5. Heatwaves
6. Flooding
7. Periods of heavy rainfall
8. Hot summers
9. Coastal erosion (where the sea wears away the land)

ACROSS TOP OF GRID
1. Very serious
2. Fairly serious
3. Not very serious
4. Not at all serious
5. Don’t know

ASK ALL

Q10.
And how serious a problem do you think the following currently are to your local area, or do you not think they are a problem at all?

Please consider your local area to be the area within a 20 minute walk of your home.

DOWN SIDE OF GRID
SA PER ROW
RANDOMISE ORDER

1. Snow
2. Cold winters
3. Mild winters
4. Dry periods without rain
5. Heatwaves
6. Flooding
7. Periods of heavy rainfall
8. Hot summers
9. Coastal erosion (where the sea wears away the land)
**INTRODUCTION SCREEN**

The following questions are about what you think might happen in the UK in future.

**ASK ALL**

**Q11.**

How likely, if at all, do you personally think it is that the following will have become more common **in the UK** by 2050? Even if you are not sure, we are interested in your opinion.

**DOWN SIDE OF GRID**

**SA PER ROW**

**RANDOMISE ORDER**


**ACROSS TOP OF GRID**

ASK ALL

Q11(a).

And how likely, if at all, do you personally think it is that the UK will have a warmer climate by 2050? Even if you are not sure, we are interested in your opinion.

1. Virtually certain
2. Very likely
3. Likely
4. About as likely as not
5. Unlikely
6. Very unlikely
8. Exceptionally unlikely
9. Don’t know

ASK ALL

Q12.

How concerned would you be if by 2050 the UK did have…

DOWN SIDE OF GRID
SA PER ROW
RANDOMISE ORDER

1. More snow
2. More cold winters
3. More mild winters
4. More dry periods without rain
5. More heatwaves
6. More flooding
7. More periods of heavy rainfall
8. More hot summers
9. More coastal erosion (where the sea wears away the land)
10. More extreme weather
11. A warmer climate

ACROSS TOP OF GRID

1. Very concerned
2. Fairly concerned
3. Not very concerned
4. Not at all concerned
5. Don’t know
ASK ALL
Q13.

Different people and organisations have made various predictions about the things that might or might not happen as a result of changes to our climate. From your own perspective, to what extent do you agree or disagree that each of the following will be likely to happen in the UK by 2050?

Even if you are unsure, please answer as best you can, giving your overall impressions.

SA PER ROW
RANDOMISE ORDER
EACH RESPONDENT WILL ONLY SEE 10 RANDOMLY SELECTED RISKS/IMPACTS SPLIT ACROSS TWO SCREENS I.E. TWO BLOCKS OF FIVE ON EACH SCREEN

FOR SECOND SCREEN PLEASE CHANGE QUESTION TEXT SLIGHTLY:

And now consider the following predictions.

From your own perspective, to what extent do you agree or disagree that each of the following will be likely to happen in the UK by 2050?

Even if you are unsure, please answer as best you can, giving your overall impressions.
DOWNSIDE OF GRID
1. Low lying coasts being permanently flooded or eroded by rising sea levels
2. Some types of wildlife are lost or decline in number because they cannot relocate to where the climate remains suitable for them
3. Air pollution gets worse from hotter weather, which particularly affects people with poor health or breathing problems
4. Increased demand for energy for cooling (e.g. air conditioning) due to a warmer climate
5. Lower demand for energy due to warmer winters
6. Poor harvests, due to extreme weather, pushing up food prices
7. New crops previously grown abroad become more common in the UK due to a warmer climate
8. More tourists choosing to visit the UK because of a warmer climate
9. A reduction in marine wildlife from changes in sea temperature
10. More people’s health suffering in extreme heat, particularly the elderly, due to more frequent heat waves
11. Fewer vulnerable people dying in the cold due to milder winters
12. Disruption to trains, roads, and public transport due to more frequent heat waves
13. Cities and large towns, which trap heat, becoming unbearably hot due to heat waves
14. More homes being flooded as a result of heavy rainfall
15. Public services like roads, power stations, schools and hospitals being disrupted as a result of heavy rainfall
16. Droughts causing serious water shortages due to changes in rainfall patterns
17. New pests and diseases, previously only thriving in warmer climates, become common in the UK
18. More people permanently move to the UK because of changes in the climate of their own country
19. More people living in the UK take their holidays in the UK rather than going on holiday abroad, due to a warmer UK climate

ACROSS TOP OF GRID
1. Strongly agree
2. Tend to agree
3. Neither agree nor disagree
4. Tend to disagree
5. Strongly disagree
6. Don’t know
ASK ALL
Q14.

How concerned would you be, if at all, if the following did happen in the UK?

SA PER ROW
RANDOMISE ORDER
DOWNSIDE OF GRID
EACH RESPONDENT WILL ONLY SEE THE 10 RANDOMLY SELECTED RISKS/IMPACTS THAT THEY PREVIOUSLY SEE AT Q13. SPLIT ACROSS TWO SCREENS I.E. TWO BLOCKS OF FIVE ON EACH SCREEN
NOT CLICK ‘NEXT’ UNTIL THEY HAVE BEEN ON THAT SCREEN FOR 20 SECONDS

ACROSS TOP OF GRID
1. Very concerned
2. Fairly concerned
3. Not very concerned
4. Not at all concerned
5. Don’t know

ASK ALL APART FROM THOSE WHO DO NOT CODE 1-3 FOR ANY OF 1-19 AT Q14 Q15.

And of the following things, which three [or ‘which one’ IF RESPONDENT SAYS THEY ARE ‘Very concerned, Fairly concerned or Not very concerned’ FOR 2 STATEMENTS AT Q14 ] would you think would concern you and your family the most if they did happen? Please rank them starting with the one causing the greatest concern. [or ‘Please select the one causing the greatest concern’ IF RESPONDENT SAYS THEY ARE ‘Very concerned, Fairly concerned or Not very concerned’ FOR 2 STATEMENTS AT Q14 ]

DOWNSIDE OF GRID
SA PER ROW
LIST ALL STATEMENTS LISTED AT Q14 IN WHICH RESPONDENT INDICATED THEY WERE ETHER ‘Very concerned, Fairly concerned or Not very concerned’

ACROSS TOP OF GRID
1. Of greatest concern
2. Second highest level of concern
3. Third highest level of concern
4. Don’t know

IF ONLY ‘Very concerned, Fairly concerned or Not very concerned’ FOR 2 OR 3 STATEMENTS AT Q14 THEN LIST JUST ‘Greatest concern’ ACROSS TOP OF GRID]
The planet’s climate has changed over time and will continue to change in the future. Reducing Greenhouse Gasses like carbon dioxide will help to limit the amount of change, but some change is unavoidable. The next section of this survey is about how we might deal with the impacts of changes in the climate.

In this survey, we are interested in your views on how we could deal with the impacts and not whether they are a result of human activity or natural processes.

Please consider who you think should be responsible for taking action to prepare for any future changes in the climate and the consequences in the UK. Please note that we would like you to think about who should be responsible for coping with the consequences of changes to the climate. For example, this might mean improving flood defences (on homes or by rivers), installing air conditioning (in houses or offices), or being prepared for more frequent heatwaves.

We do not want you to think about who should be responsible for preventing climate change.

ASK ALL
Q16
Please indicate which, if any, of the following groups you think should be responsible for taking action to deal with the consequences of climate change in the UK?

1. Environmental charities
2. Individuals and their households
3. Insurance companies
4. Industry / business
5. Local communities
6. Local authorities
7. National Government
8. Other (specify) [TEXT BOX] [ANCHOR AT BOTTOM]
9. None of these [ANCHOR AT BOTTOM]
10. Don’t know [ANCHOR AT BOTTOM]
ASK IF SELECTED MORE THAN ONE FROM Q16, CODES 1-7
ONLY PRESENT CODES (1-7) SELECTED AT Q16
Q17.
And please now select up to three [two IF SELECT TWO FROM CODES 1-7 AT Q16] of the following that you feel should have most responsibility for taking action to adapt to climate change in the UK. Please rank in order of responsibility

DOWNSIDE OF GRID
RANDOMISE ORDER
MA UP TO 3
DK IS SA

1. Environmental charities
2. Individuals and their households
3. Insurance companies
4. Industry / business
5. Local communities
6. Local authorities
7. National Government
8. Don't know [ANCHOR AT BOTTOM]

ACROSS TOP OF GRID
1. Most responsibility
2. Second most responsibility
3. Third most responsibility
ASK ALL

Q18.

Please indicate the extent to which you agree or disagree with the following statements.

SA PER ROW
RANDOMISE ORDER
DOWNSIDE OF GRID
PLEASE ENSURE 15 SECOND DELAY

1. The people in my community would help out if extreme weather caused problems locally
2. The elderly and vulnerable would be looked after by our local community if there was severe weather
3. It is better for people to move away from some coastal communities vulnerable to erosion and loss of land to the sea rather than spend millions of pounds trying to protect them
4. It is fair that households in an area currently at risk of flooding may struggle to get home insurance in future
5. We’ll just have to put up with the consequences of climate change
6. We can avoid the worst impacts of climate change by planning well for them
7. I know how to keep myself safe and healthy during a heat wave

ACROSS TOP OF GRID

1. Strongly agree
2. Tend to agree
3. Neither agree nor disagree
4. Tend to disagree
5. Strongly disagree
6. Don’t know
ASK ALL
Q18a.
And now please consider the following statements and indicate the extent to which you agree or disagree with them.

SA PER ROW
RANDOMISE ORDER
DOWNSIDE OF GRID

1. I am worried that the government, in taking action on climate change, will try to restrict the things I want to do
2. Protecting my home from a flood is my responsibility
3. The government is responsible for protecting properties against flooding
4. Individuals and organisations who contribute to climate change should take on the responsibility of dealing with its consequences
5. It is inevitable that events like flooding and drought will become more likely in the UK in future
6. It is fair that different people will face different levels of risk from changes in the climate because of where they choose to live
7. The health of people like me is at risk during a heat wave

ACROSS TOP OF GRID
1. Strongly agree
2. Tend to agree
3. Neither agree nor disagree
4. Tend to disagree
5. Strongly disagree
6. Don’t know
The flooding that affected much of the UK in November 2012 affected an estimated 1,880 properties, caused 4 deaths and is likely to cost insurers around £500 million. The total economic losses were higher.\textsuperscript{14}

Flooding on this scale in the UK is currently very rare.

In the future, it could become more common if rainfall patterns change. How concerned, if at all, would you personally feel if flooding of this scale became more common, so that it was happening about [every other year / once every 5/10/25 years somewhere in the UK]?  [EACH RESPONDENT ONLY ASKED ONE OF THESE, SPLIT SAMPLES]

SA
1. Very concerned
2. Fairly concerned
3. Not very concerned
4. Not at all concerned
5. Don't know

The heat wave that Europe experienced in 2003 led to 2,000 additional deaths in the UK according to the Office of National Statistics and over 30,000 deaths across Europe.

One estimate is that, in today's climate, this scale of heat wave might happen in the UK roughly once every 40 years.

However, it is thought that summers this hot could happen more often in future as a result of changes in the climate.

How concerned, if at all, would you personally feel if this kind of heat wave occurred in the UK [every other year / once every 5/10/25 years]?  [EACH RESPONDENT ONLY ASKED ONE OF THESE, SPLIT SAMPLES]

SA
1. Very concerned
2. Fairly concerned
3. Not very concerned
4. Not at all concerned
5. Don't know

\textsuperscript{14} http://thoughtleadership.aonbenfield.com/Documents/201212_if_monthly_cat_recap_november.pdf
ASK ALL

Q21.
PLEASE ENSURE 30 SECOND DELAY FOR ‘NEXT’. IF RESPONDENT MAKES A MISTAKE (E.G. ADDS MORE THAN 15 TOKENS) DO NOT RE-START 15 SECOND DELAY

ALLOW DON’T KNOW

Please consider the following potential consequences to the UK that might happen as a result of changes to the climate.

We would like you to imagine you are running the country and need to decide what the priorities should be in relation to preparing for climate change and coping with the impacts of climate change.

You have 15 tokens to allocate to the things that you feel should be prioritised as areas for investment/action. These tokens represent the budget that local and national government would have to deal with the impacts of a changing climate, including minimising the negative impacts or taking advantage of any opportunities it presents.

The more tokens you give to something the more money would be spent on it.

You can use the tokens however you prefer, allocating them to as few (zero) or as many (up to 15) different things as you like. You can also allocate more than one token to dealing with a specific impact if you would like to.

EACH RESPONDENT WILL ONLY SEE THE 10 SELECTED RISKS/IMPACTS THEY SAW AT Q13
RANDOMISE STATEMENTS
NEXT TO EACH STATEMENT INCLUDE TEXT BOX WHERE RESPONDENT CAN ENTER A VALUE BETWEEN 0-15. TOTAL VALUE CAN NOT EXCEED 15 ACROSS ALL STATEMENTS. ADD TOTAL BOX TO SHOW THE TOTAL NUMBER OF TOKENS THEY HAD ADDED – NUMBER TO BE UPDATED AS THEY ADD EACH TOKEN

1. Don’t know
ASK ALL

Q22.
PLEASE ENSURE 15 SECOND DELAY FOR ‘NEXT’. IF RESPONDENT MAKES A MISTAKE (E.G. ADDS MORE THAN 5 TOKENS) DO NOT RE-START 30 SECOND DELAY

ALLOW DON’T KNOW

Please now consider the same potential consequences to the UK that might happen as a result of changes to the climate.

This time, you only have 5 tokens to allocate depending on which you feel are most important to be prioritised as areas for investment/action.

The more tokens you give to something the more money would be spent on it.

You can use the tokens however you prefer, allocating them to as few (zero) or as many (up to 5) different things as you like. You can also allocate more than one token to a specific impact if you would like to.

EACH RESPONDENT WILL ONLY SEE THE 10 SELECTED RISKS/IMPACTS THEY SAW AT Q13
RANDOMISE STATEMENTS
NEXT TO EACH STATEMENT INCLUDE TEXT BOX WHERE RESPONDENT CAN ENTER A VALUE BETWEEN 0-5. TOTAL VALUE CAN NOT EXCEED 5 ACROSS ALL STATEMENTS. ADD TOTAL BOX TO SHOW THE TOTAL NUMBER OF TOKENS THEY HAD ADDED – NUMBER TO BE UPDATED AS THEY ADD EACH TOKEN

1. Don’t know

ASK ALL

Q23.
In the future if our climate continues to change, we will need to prepare for and respond to the impacts. Please rank the following principles based on how important you feel they should be in deciding how to prepare and respond. Even if you are not sure, please try to rank these by importance, we are just interested in your initial reactions.

Please rank them from 1 to 6 where 1 is the most important and 6 is the least important.

PRESENT LIST OF STATEMENTS WITH TEXT BOX WHERE RESPONDENT CAN INPUT NUMERIC VALUE 1-6
RANDOMISE ORDER OF LIST

1. Minimising cost to businesses
2. Minimising cost to consumers
3. Avoiding loss of human life
4. Safeguarding our wildlife/landscape
5. Minimising the overall number of people at risk
6. Protecting particularly vulnerable people such as the elderly and poor
7. Don’t know [ANCHOR AT BOTTOM]
ASK ALL
Q24.
PLEASE ENSURE 10 SECOND DELAY FOR ‘NEXT’

Here are some other changes that people might make to adapt to changes in the climate. Which of the options best describes what you personally think about each of these?

<table>
<thead>
<tr>
<th>DOWN SIDE OF GRID</th>
<th>ACROSS TOP OF GRID</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Install guards or covers to protect my home from flooding</td>
<td>1. I don’t really want to do this</td>
</tr>
<tr>
<td>2. Remove surfaces that don’t allow water to be absorbed from driveways or gardens</td>
<td>2. I haven’t really thought about doing this</td>
</tr>
<tr>
<td>3. Make sure I have insurance cover for flooding or other extreme weather events</td>
<td>3. I’ve thought about doing this, but probably won't do it</td>
</tr>
<tr>
<td>4. Ask my local council what they are doing to help</td>
<td>4. I’m thinking about doing this</td>
</tr>
<tr>
<td>5. Install air-conditioning</td>
<td>5. I’ve tried doing this, but I’ve given up</td>
</tr>
<tr>
<td>6. Plant trees or re-landscape gardens to provide more shade</td>
<td>6. I’ve done this</td>
</tr>
<tr>
<td></td>
<td>7. I don’t think this is relevant to me</td>
</tr>
</tbody>
</table>

ASK ALL
Q25.
How convinced are you, if at all, that climate change is currently affecting the planet?

<table>
<thead>
<tr>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Totally convinced</td>
</tr>
<tr>
<td>2. Fairly convinced</td>
</tr>
<tr>
<td>3. Not very convinced</td>
</tr>
<tr>
<td>4. Not at all convinced</td>
</tr>
<tr>
<td>5. Don’t know</td>
</tr>
<tr>
<td>6. No opinion</td>
</tr>
</tbody>
</table>
ASK ALL
Q26.
How convinced are you, if at all, that climate change is currently affecting the UK?

SA
1. Totally convinced
2. Fairly convinced
3. Not very convinced
4. Not at all convinced
5. Don’t know
6. No opinion

ASK ALL
Q27.
How concerned, if at all, are you about climate change?

SA
1. Very concerned
2. Fairly concerned
3. Not very concerned
4. Not at all concerned
5. No opinion
6. Don’t know

ASK ALL
Q28.
When, if at all, do you think the UK will start feeling the effects of climate change?

SA
1. We are already feeling the effects
2. In the next 2 years
3. In the next 5 years
4. In the next 10 years
5. In the next 25 years
6. In the next 50 years
7. In the next 100 years
8. Beyond the next 100 years
9. Never
10. Don’t know
11. No Opinion
ASK ALL Q29.
Please select from the following list which of these emotions, if any, best describe how you feel when you think or hear about climate change. Please select up to 3.

RANDOMISE STATEMENTS
MULTICODE UP TO 3
DK IS SA

1. Scared
2. Angry
3. Happy
4. Sad
5. Optimistic
6. Pessimistic
7. Depressed
8. Worried
9. Motivated
10. Indifferent
11. Interested
12. Don’t know

ASK ALL Q30.
How much if anything would you say you personally know about the term ‘Climate change’? Would you say you know...

SA

1. A great deal
2. A fair amount
3. Not very much
4. Nothing

ASK ALL Q31.
Thinking about the causes of climate change, which, if any, of the following best describes your opinion?

SA. ROTATE RÉPONSE OPTIONS SO 50% SEE OPTION 1 FIRST AND 50% SEE OPTION 5 FIRST. OPTIONS 6 AND 7 ANCHORED AT BOTTOM

1. Climate change is entirely caused by natural processes
2. Climate change is mainly caused by natural processes
3. Climate change is partly caused by natural processes and partly caused by human activity
4. Climate change is mainly caused by human activity
5. Climate change is entirely caused by human activity
6. I think there’s no such thing as climate change
7. Don’t know
ASK ALL

Q32.
To what extent do you agree or disagree with each of the following statements about climate change?

DOWN SIDE OF GRID
SA PER ROW
RANDOMISE ORDER
PLEASE ENSURE 30 SECOND DELAY BEFORE ‘NEXT’

1. The seriousness of climate change is exaggerated
2. It is uncertain what the effects of climate change will be
3. I am confident the UK will be able to cope with the impacts of climate change
4. There are risks to people in the UK from climate change
5. There are benefits to people in the UK from climate change
6. Climate change will mostly affect areas that are far away from here
7. My local area is likely to be affected by climate change
8. I will be directly affected by the impacts of climate change
9. I am more concerned about the impact of climate change on developing countries than about the impacts for the UK
10. The effects of climate change are too far in the future to really worry me

ACROSS TOP OF GRID
1. Strongly agree
2. Tend to agree
3. Neither agree nor disagree
4. Tend to disagree
5. Strongly disagree
6. Don’t know
ASK ALL
Q33.
Which of the following, if any, would you go to in order to find out information about climate change?
MA. ROTATE
DK AND NONE ARE SA

1. Charities
2. Colleagues
3. Family/ friends
4. Government and Government Agencies including their websites and publications
5. Newspapers/ newspaper websites
6. TV
7. The media in general
8. Internet search engine (e.g. Google)
9. Other websites
10. Scientists working for private companies
11. Scientists working for universities
12. Scientists working for charities or environmental groups
13. Insurers/ my insurance company
14. Your Local Authority/ Council
15. Other (please specify) [INSERT TEXT BOX]
16. None – I would not want to find out information about climate change
17. Don’t know

ASK ALL
Q34.
And which, if any, of these would you trust to tell you about the likely impacts of climate change?
MA. ROTATE AS PER Q33
DK IS SA

1. Charities
2. Colleagues
3. Family/ friends
4. Government and Government Agencies including their websites and publications
5. Newspapers/ newspaper websites
6. TV
7. The media in general
8. Internet search engine (e.g. Google)
9. Other websites
10. Scientists working for private companies
11. Scientists working for universities
12. Scientists working for charities or environmental groups
13. Insurers/ my insurance company
14. Your Local Authority/ Council
15. Other (please specify) [INSERT TEXT BOX]
16. None – I would not trust any of these to tell me about the likely impacts of climate change
17. Don’t know
**ASK ALL**

**Q35.**

Have you, or someone close to you, ever experienced any of the following extreme weather events?

**DOWN SIDE OF GRID**

<table>
<thead>
<tr>
<th>Code</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Flood damage to your home (not including rain leaking through the roof or burst pipes)</td>
</tr>
<tr>
<td>2.</td>
<td>Flooding in your local area (e.g. experiencing disruption to travel)</td>
</tr>
<tr>
<td>3.</td>
<td>Water restrictions/shortages due to low rainfall</td>
</tr>
<tr>
<td>4.</td>
<td>Heat wave (discomfort/ being unable to sleep)</td>
</tr>
<tr>
<td>5.</td>
<td>Heat wave (health significantly affected)</td>
</tr>
<tr>
<td>6.</td>
<td>Heat wave (experiencing disruption to travel or working)</td>
</tr>
</tbody>
</table>

**ALONG TOP OF GRID**

1. Yes - to me
2. Yes - to someone close to me
3. No, neither to me or anyone close to me

**ASK IF ANSWER CODE 1 (YES-TO ME) FOR ANY IMPACT STATEMENT AT Q35**

**Q36.**

To what extent, if at all, did this weather-related event [these weather-related events IF ‘YES- ME’ FOR MORE THAN ONE IMPACT STATEMENT AT Q35] disrupt the day-to-day life/lives of your household?

**DOWN SIDE OF GRID**

<table>
<thead>
<tr>
<th>Code</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Flood damage to your home (not including rain leaking through the roof or burst pipes), garden or vehicle</td>
</tr>
<tr>
<td>2.</td>
<td>Flooding in your local area (e.g. experiencing disruption to travel)</td>
</tr>
<tr>
<td>3.</td>
<td>Water restrictions/shortages due to low rainfall</td>
</tr>
<tr>
<td>4.</td>
<td>Heat wave (physical discomfort/ being unable to sleep)</td>
</tr>
<tr>
<td>5.</td>
<td>Heat wave (your health being affected)</td>
</tr>
<tr>
<td>6.</td>
<td>Heat wave (experiencing disruption to travel)</td>
</tr>
</tbody>
</table>

**ALONG TOP OF GRID**

1. To a great extent
2. To some extent
3. Hardly at all
4. Not at all
5. Don’t know
ASK ALL
Q37.
Below are some statements about your local area. Please select the extent to which you agree or disagree with each statement. By local area, we mean within a 20 minute walk of your home.

DOWN SIDE OF GRID
ROTATE STATEMENTS.
SA PER ROW

1. I feel like I belong to this neighbourhood
2. If I were to move I would like to live in a similar place to where I live now

ACROSS TOP OF GRID
1. Strongly agree
2. Tend to agree
3. Neither agree nor disagree
4. Tend to disagree
5. Strongly disagree
6. No opinion
7. Don’t know

ASK ALL
Q38.
Which of the following best describes your home?
SA

1. Being bought on a mortgage
2. Owned outright by household
3. Rented from Local Authority
4. Rented from Housing Association / Trust
5. Rented from private landlord
6. Other - please specify
7. Don’t know

ASK ALL
Q39.
Do you have household insurance that would cover flooding and other climate impacts? The answer you give will be treated confidentially and will not be passed on to anyone outside of Ipsos MORI.

SA
1. Definitely
2. I think so
3. I’m not sure
4. No
ASK ALL
Q40.
Please indicate how long you have lived in your current property, as well as how long you have lived in your local area (if different)? By local area, we mean within a 20 minute walk of your home.

DOWN SIDE OF GRID
SA PER ROW. INCLUDE LOGIC CHECK: CANNOT ENTER LOWER RESPONSE FOR LOCAL AREA THAN IS ENTERED FOR CURRENT PROPERTY
1. Current property
2. Local area

ACROSS TOP OF GRID
1. Less than one year
2. Between 1 and 2 years
3. Between 2 and 5 years
4. Between 5 and 10 years
5. Between 10 and 25 years
6. More than 25 years

ASK ALL
Q41.
How many years have you lived in the UK?

1. [INSERT TEXT BOX] [ALLOW NUMERIC RESPONSE. MINIMUM 1, MAXIMUM CURRENT AGE]
2. Less than one year

ASK ALL
Q42.
What would, in your opinion, be the lowest amount of money that you and your household would need in order to live comfortably and without problems? This would be income after tax.

Please select whether you would prefer to provide this information per week, per month, or per year. Please enter the amount in whole pounds (£).
SA
INCLUDE TICK BOX NEXT TO EACH OF THE BELOW OPTIONS, THEN OPEN TEXT BOX NEXT TO TICKED BOX – ALLOW NUMERIC RESPONSE.

1. Week MINIMUM 1, MAXIMUM 99,999
2. Month MINIMUM 1, MAXIMUM 999,999
3. Year MINIMUM 1, MAXIMUM 9,999,999

CODE NUMERIC RESPONSE, ALLOW DON’T KNOW. RESPONSES TO BE CODED TO ANNUAL AMOUNT
ADD DUMMY QUESTION TO RECODE Q42 RESPONSE TO ANNUAL AMOUNT
ASK ALL
Q43.
Do you, or anyone else in your household, have any long-standing illness, disability or infirmity?
MA 1 AND 2, 3 IS SA

1. Yes – me
2. Yes – other household member
3. No – no one in the household

ASK ALL
Q44.
Which, if any, is the highest educational or professional qualification you have obtained. If you are still studying please select the highest achieved so far.

SA [APART FROM CODE 8 ‘STILL STUDYING’ WHICH CAN BE MA WITH 1-7]
1. GCSE/O-level/CSE
2. Vocational qualifications (=NVQ1+2)
3. A level or equivalent (=NVQ3)
4. Bachelor Degree or equivalent (=NVQ4)
5. Masters/PhD or equivalent
6. Other
7. No formal qualifications
8. Still studying
9. Don’t know

ASK IIS PANELLISTS ONLY
Q45.
We will be analysing the results to this survey to see if people living in different parts of the country have different views. To do this we need to make sure that the postcode information we hold about respondents is up to date. Please indicate whether the postcode that we hold for you – below – is correct. If it is not, please provide an updated postcode.

This information will not be passed on to anyone else and will only be used to analyse how views differ in different parts of the country.

[TEXT] (PRESENT POSTCODE FROM PANEL INFO)

1. Yes this is correct
2. No, this is incorrect (Please type in your full postcode) [INSERT TEXT BOX]
3. Prefer not to answer
ASK NORTHERN IRELAND PANELLISTS ONLY
Q45a

We will be analysing the results to this survey to see if people living in different parts of the country have different views. To do this we need to collect postcodes so that we can identify where in the country people live.

This information will not be passed on to anyone else and will only be used to analyse how views differ in different parts of the country.

Please type in your full postcode in the box below.

1. [INSERT TEXT BOX]
2. Prefer not to answer

ASK ALL
Q46.
Thank you for taking part in this survey. The research is on behalf of the Department for Environment, Food and Rural Affairs (Defra). Defra may also be conducting other research in this area at some time in the next 24 months. Would you be willing to be re-contacted for this research?

Should you agree to this, your personal details would be held securely by Defra and be used for no other purposes other than to invite you to participate in other research studies. Responses to this questionnaire will remain confidential.

You would also be able to have your details removed from this panel at any time on request.

SA

1. Yes – would be willing
2. No – would not be willing

NOTES

Other demographic variables to be provided from the panel data:
Age (information for 100% individuals)
Gender (information for 100% individuals)
Social grade (information for c. 75% households – can provide if required)
Working status (information for c. 99% individuals)
Location (information for 100% individuals)
6.5 Workshop Discussion Guide

PREPARE: Discussion Guide for deliberative workshops

<table>
<thead>
<tr>
<th>Time</th>
<th>Process</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.00– 10.20</td>
<td><strong>1. WELCOME AND INTRODUCTION</strong></td>
<td>Warm up and get a sense of perception of place, and what experience they have of living in other places which may have different climates/environmental risks.</td>
</tr>
<tr>
<td></td>
<td>IN PLENARY:</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Welcome from Ipsos MORI</strong> – independent research company, introduce team, explain client/ observers <em>(when appropriate)</em> NB. At this stage we will not be introducing who the client is as may influence reactions**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ground rules for discussion:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• all views valid; please speak up and respond/agree/disagree to other points of view</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• do not talk over one another;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• may need to interrupt to move discussion on;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• confidential with no direct attribution;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• permission to record (and film if appropriate – ALL PARTICIPANTS MUST SIGN FORM IF FILMING);</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• plenary and group discussion;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• breaks and end time;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• housekeeping (turn phones off, any scheduled fire alarms, fire exits).</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>2. PARTICIPANT INTRODUCTION</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Introductions (one at a time): First name, where they live, how long they lived in area</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Warm up questions addressed to whole group:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>➢ What are the things you like most about your local area? Why do you say this?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>➢ Do you see yourself living here in another 20-30 years? Why/Why not?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>➢ Do you feel part of a community here? Why/Why not?</td>
<td></td>
</tr>
<tr>
<td>10.20-10.30</td>
<td>3. MOST IMPORTANT CURRENT AND FUTURE ISSUES FOR UK</td>
<td></td>
</tr>
<tr>
<td>-----------------</td>
<td>--------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>IN PLENARY:</strong></td>
<td>- What do you think are the most important issues facing the UK today? What makes you say this?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- And what do you think will be the most important issues for the UK in the future? Why?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Find out what risks are top-of-</td>
<td></td>
</tr>
</tbody>
</table>

- Have you ever lived anywhere else in the UK for a prolonged period of time?
- Have you ever lived in another country for a prolonged period of time?
PROBE: How far into the future are you thinking when you mention that issue? Is it something that will be important within the next 5 years, 10 years, 50 years?

MODERATOR NOTE ISSUES ON FLIPCHART – TWO COLUMNS: PRESENT / FUTURE
- Which of the issues that have been mentioned do you think will be of particular relevance to your local area in the future?
- And which, if any, do you think are particularly relevant to you and your friends or family? Why? Why not others?

MODERATOR INDICATE ON FUTURE COLUMN WHICH ARE RELEVANT TO LOCAL AREA / PERSON

IF NOT MENTIONED CHANGES IN CLIMATE:
- What about changes in our climate? Do you think that is an issue for the UK now? Is it an issue for your local area? Why? Why not?
- Will changes in climate affect the UK in the future? Will it affect your local area? What aspects of life in the UK / your local area will be different as a result of changes in the climate?
- How far in the future do you think we’ll see these changes?

(KEEP TO A SHORT DISCUSSION AS WILL PROBE ON THIS FURTHER IN NEXT SECTION)

IF ALREADY MENTIONED A CLIMATE-RELATED RISK/HAZARD BUT HAS NOT LINKED IT TO CHANGE IN CLIMATE PROBE WHETHER THIS IS SEEN AS LINKED OR NOT

MODERATOR STICK FLIPCHART LIST ON WALL TO REFER BACK TO LATER

10.30 – 11:10

4. PARTICIPANT UNDERSTANDING AND REACTION TO CLIMATE CHANGE
IN PLENARY:
We are going to continue talking about changes in the climate now.

- I’d like you to think about how the phrase ‘changes in climate’ makes you FEEL. What emotions does it make you feel? Please look at the images on the table and pick up one that

Uncover emotional reactions to, and associations with, climate change.
<table>
<thead>
<tr>
<th>Represents the emotion that you feel. You can interpret the image in any way you want.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MODERATOR PUT PRINTED IMAGES ON TABLE</strong></td>
</tr>
<tr>
<td><strong>IF NEEDED:</strong> Do you tend to feel more positive or more negative when you hear this phrase, more optimistic or pessimistic, worried or not too concerned? Look for an image that represents that feeling.</td>
</tr>
<tr>
<td>Please tell the person next to you why you chose your selected image.</td>
</tr>
<tr>
<td><strong>MODERATOR ASK ONE PERSON FROM EACH PAIR TO FEEDBACK TO WHOLE GROUP.</strong></td>
</tr>
<tr>
<td><strong>MODERATOR PROBE TO UNDERSTAND WHAT IS BEHIND EACH EMOTION</strong></td>
</tr>
<tr>
<td>e.g. if ‘angry’ what are they angry with? i.e. someone could be angry with the human activity that is causing climate change, or angry with lack of action by government, or something else.</td>
</tr>
<tr>
<td>➢ Do you think you’ve had any personal experience of a change in climate? What? When? How did this affect the image you selected or did it not?</td>
</tr>
<tr>
<td>➢ I would now like you to think about the effects of changes to the climate as well as where they will be experienced. Please think about all of the ways in which you think it might affect people’s lives from very small things to much larger impacts. Do not worry if you are unsure of what they might be – we are interested to find out your opinions on this. Please call out your ideas.</td>
</tr>
<tr>
<td><strong>MODERATOR NOTE DOWN THE IMPACTS ON FLIP CHART</strong></td>
</tr>
<tr>
<td><strong>PROBE ON WHO THEY MIGHT EFFECT AND HOW, AND LOCALITIES AFFECTED</strong></td>
</tr>
<tr>
<td><strong>OBSERVE THE IMPACTS THAT PEOPLE WRITE DOWN AND ASK THEM TO PROVIDE MORE DETAIL IF THE RISK IS UNCLEAR. TRY TO PROBE ON WHAT THAT MIGHT MEAN FOR PEOPLE / INDUSTRY / SOCIETY (I.E. IF SOMEONE SAYS “WARMER SUMMERS”, WHAT IMPACT WILL THAT HAVE? WHAT WILL IT AFFECT AND HOW?)</strong></td>
</tr>
</tbody>
</table>

Find out what personal experience participants have of climate change.

Discover events/impacts participants associate spontaneously with climate change.
<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.10 –</td>
<td><strong>5. INTRODUCTION TO CLIMATE PROJECTIONS AND POSSIBLE IMPACTS IN PLENARY:</strong></td>
</tr>
<tr>
<td>11.20</td>
<td>PRESENTATION 1: explains official climate records, possible impacts, newspaper headlines from previous events (e.g. 2012 flooding, 2007 heat waves). Explain difference between mitigation and adaptation and that focus of the day is adaptation and preparation.</td>
</tr>
<tr>
<td></td>
<td>- What are your initial reactions to the information you have just seen?</td>
</tr>
<tr>
<td></td>
<td>- How does it make you feel? Why do you say that?</td>
</tr>
<tr>
<td></td>
<td>- PROBE: does it make you feel scared, angry, optimistic, pessimistic, interested to find out more?</td>
</tr>
<tr>
<td></td>
<td>- Do you have any questions about this, or is any of the information unclear?</td>
</tr>
<tr>
<td></td>
<td>MODERATOR IF NEEDED RE-ITERATE KEY MESSAGES SO THAT EVERYONE IS CLEAR THAT FOCUS TODAY IS ON PREPARATION AND ADAPTATION – not discussing causes, or how to reduce these.</td>
</tr>
<tr>
<td>11.20 –</td>
<td><strong>MORNING COFFEE BREAK</strong></td>
</tr>
<tr>
<td>11.35</td>
<td>Introduce discussion of whether climate change will lead to any positive outcomes for UK.</td>
</tr>
<tr>
<td></td>
<td>Set scene for rest of workshop, and allow time for any reactions / discussions in relation to this.</td>
</tr>
<tr>
<td></td>
<td>If anyone challenges the notion of a changing climate, or asks whether we’re talking about human-induced CC, we can point out that average temps have increased which influences wider climate. We will park any discussion of whether the climate is changing as that is not the subject of today’s discussion.</td>
</tr>
</tbody>
</table>
### 6. MAPPING CLIMATE IMPACTS

**SPLIT INTO TWO MINI-GROUPS WITH ONE MODERATOR WITH EACH. DIVIDE RANDOMLY**

We are now going to talk through some of the impacts that the UK might experience as a result of a changing climate.

**GIVE OUT CARDS WITH ONE CLIMATE IMPACT PRINTED ON EACH**

**EACH GROUP WORKS WITH A SEPARATE GRID ON THE WALL**

I’d like you to discuss each of them and agree where to place them on this grid. It uses a scale of how likely the event is to happen and how big the impact would be if it does happen. For example, you might think one of the potential impacts is very unlikely but if it did happen that there would be lots of consequences (either good or bad), or you might think an impact is pretty likely to happen but if it did it would not cause much difference.

Please think about this with the whole of the UK in mind – how likely to happen in UK? What impact for UK?

**MODERATOR TO SHOW PARTICIPANTS THE LIKELIHOOD / IMPACT GRID THEN DISCUSS EACH IMPACT AND PLOT EACH ONE IN TURN BASED ON BROAD CONSENSUS. NOTE DISSENTING OPINIONS WHERE THEY OCCUR**

- How are you deciding what to put where?
- How are you deciding how likely you think each event is? Is this based on anything you’ve seen or read, or any personal experience?
- What does ‘very likely’ mean to you for that event/impact? What does ‘very unlikely’ mean to you? How would you explain what that meant to someone else?

---

**NB: the aim is not here to get a definitive map of risks, but to elicit the principles participants use to position each impact.**

The two mini-groups tackle the task from different starting points (one using grid to help position impacts, and one just using list) to see whether they come to the same answers or not.

Find out how participants conceptualise likelihood and measure impact. What sort of scale do they naturally assume? What criteria to do they use to assess impact?
What are you thinking about when you say how large the impact could be? What would be a 'large' impact? What would be a 'small' impact?
What are the most important factors/criteria? What are consequences you are thinking about when you judge the level of impact?

**PROBE:**
- COST OF DAMAGE? – cost to individual, to business, to economy?
- NUMBER OF PEOPLE AFFECTED? WHO IS AFFECTED?
- SCALE OF AREA AFFECTED?
- ENVIRONMENTAL DAMAGE?

**ASK PARTICIPANTS TO WORK IN PAIRS TO DISCUSS:**

- Which of the impacts we’ve added to the grid would you say were a priority to try to prepare for?
- If you had to select two to prepare for which would they be?
- And are there any of these that you think we do not need to do anything about?
- If you had to choose 2 to not prepare for at all which would they be?

**AFTER 5 MINS ASK EACH PAIR TO REPORT BACK TO GROUP**

**MODERATOR CIRCLE PRIORITY ISSUES ON GRID – IF DIFFERENCES IN OPINION CIRCLE ALL THAT ARE FELT TO BE PRIORITY BUT NOTE DIVERGENCE OF OPINION**

- Why are you choosing these ones? What factors do you think are important in deciding what needs to be a priority?

**MODERATOR HELP GROUP MAKE A LIST OF THEIR CRITICAL FACTORS AS EACH PAIR FEED BACK**

**MODERATOR INDICATE ANY IMPACTS WHICH HAVE NOT BEEN SELECTED AS PRIORITY. ASK GROUP AS WHOLE:**

- Is it acceptable that we do not take any action to combat these impacts? Why is it acceptable?

---

Start uncovering principles behind trade-off decisions. The list of factors made here will be referred back to in later discussions as a tool for pushing forward/challenging later debate.
### What makes them different to some of the other ones that have been chosen as priorities?

- Do you think the priorities for the UK are the same as the priorities for your local area? Why? Why not? What changes would you make if you were considering this only in relation to your local area? Would there be differences in how likely these things were to happen? Or how large the impact would be? Or both?

- When you are talking about particular issues as priorities for action, who is it that you think is responsible for taking that action? PROBE: National government? Local authorities? Individuals? Businesses?

- Is this the same for all the issues or are there some that you think should be the responsibility of someone else? Who?

- Do you think the same people/organisation are responsible for issues that might affect the whole of the UK and those that are affecting just a small local area? What about for any issues that affect your own local area?

PROMPT ON FOLLOWING IF NOT ALL MENTIONED: PUBLIC, GOVERNMENT, SOCIETY, ENVIRONMENTAL NGOS

- Which of the impacts would you say were a priority to try to prepare for?
- Which two issues would you especially choose to focus preparations on?
- And are there any of these that you think we do not need to do anything about?
- Which two issues would you not choose to prepare for at all?

AFTER 5 MINS ASK EACH PAIR TO REPORT BACK TO GROUP.

### 7. COMPARING CLIMATE IMPACT MAPS

IN PLENARY: BRING GROUPS BACK TOGETHER
### LEAD MODERATOR TO SHOW GROUP 1 GRID NEXT TO GROUP 2 GRID AND COMMENT ON SIMILARITIES AND DIFFERENCES

IF SIGNIFICANT DIFFERENCES ASK GROUP TO COMMENT ON RATIONALE FOR POSITIONING AND/OR SELECTION OF PRIORITIES

WHICH DO PEOPLE FEEL ARE THE MOST LIFE-CHANGING IMPACTS? (either good or bad)

LEAD MODERATOR COMPARE LISTS OF FACTORS AND AGAIN COMPARE AND CONTRAST

LEAVE GRID / LIST / FACTORS UP FOR PARTICIPANTS TO CONTINUE TO CONSIDER OVER LUNCH

<table>
<thead>
<tr>
<th>12.25 – 1.05</th>
<th>LUNCH</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>1.05 – 1.15</th>
<th>8. WEIGHING UP RISKS</th>
</tr>
</thead>
</table>

IN PLENARY
Before lunch you started thinking about the most life changing things that could happen as a result of our changing climate. We also made a list of the factors which helped you decide which were the most life-changing. However, the challenge we face is not knowing exactly which of these events will happen, when they will happen or where they will happen.

PRESENTATION 2: Present idea of risk, and needing to weigh up chance of event happening against the impact if it does happen. Raise idea of having to decide what level of risk is acceptable, and fair. Explain challenge for Government and others in business and planning is deciding which actions to prioritise. Participants are going to be policymakers and help make these decisions.

- What do you think about the questions I’ve just raised? What reactions do you have?
- If you were a decision maker in government, or business, or planning how would you decide

Introduce idea that difficult choices need to be made as it will not be possible to protect everyone, everywhere from all climate risks.
### 9. COMPARING IMPACT ACROSS DIFFERENT AREAS

Of course in reality, different areas of the UK will face lots of different impacts from a changing climate. For instance, coastal areas will not only face flooding and erosion, but also be affected by warmer temperatures and water shortages like the towns and cities. In some areas it businesses or wildlife might be more affected than people, and some places will see opportunities as well as problems from a changing climate.

Here are three different types of area for you to consider. These are things which might happen in these types of area, if these sorts of climate events happen. This is based on us keeping the same level of preparation as we have today. **STICK UP THREE AREA POSTERS**

**ASK PARTICIPANTS TO STAND UP AND READ EACH POSTER**

- What are your first reactions to this information?
- What questions do you have?

Preparing for these events might involve investing in different ways to prepare for, and adapt to, the changes that happen.

Before we discuss them further, please imagine that you are in charge of deciding how to prioritise investment in preparing for climate change across the whole country and you have to think about how to balance the investment between areas. Please write down on your sheet the order you would put them in from the area which is the highest priority to prepare for to the area which is the lowest priority to prepare for. Write down numbers 1 to 3 next to each area – where 1 is highest priority, and 3 is lowest priority.

- How easy or difficult was that to do? What did you find easy / difficult about it?
- How did you decide how to prioritise the areas to invest most action in?
- What were you considering when you made your decisions?
DISCUSS EACH AREA IN TURN USING FOLLOWING PROBES FOR EACH:

- What do you think about the likely impacts for [towns and cities / countryside…]?
- What piece of information stands out to you most for this area?
- Are there any pieces of information about this area that you are less interested in or less concerned about?
- Overall, how large or small an impact do you think a changing climate is going to have for this area? For who / what in particular?
- What do you think can actually be done to help these areas? Who should do it?
- These are the impacts that could happen if we do not invest any more in preparing for a changing climate i.e. if we kept our current level of preparation this is what could happen. How acceptable is that? Why?

REFER BACK TO FINAL SLIDE IN PRESENTATION 2 – ‘What level of risk is acceptable?’

- Is the current level of preparation, and not investing anymore to take any further action, acceptable if these impacts happened every 50 years? What if it was every 20 years? Every 5 years? Every year?

IF NEEDED PROBE ON EACH OF FOLLOWING – to what extent were you thinking about:

- **Area affected** – are you more or less concerned about events that might affect towns and cities, or the countryside, or the coasts? Why? What difference does it make?

- **The type of events** – why is one felt to be more or less critical than another or is this not as important a factor as the impacts of the event?

- **Impacts for people** - were you thinking about the number of people affected? Or the way in which they're affected? Or the **type of people** worst affected?

- **Impacts of business** – to what extent were you considering the impacts for business? Was this more or less important than the impacts on people? More of less important than impacts on environment?

- **Impacts for environment** – to what extent were you considering the impacts for the
environment? Was this more or less important than the impacts on people? More of less important than impacts on business?

- **Positive impacts / opportunities** – to what extent were you considering the positive impacts?

  - How do you feel now about whether certain areas of the country should be protected to a greater extent than others? Where? Why/Why not?
  
  - Having talked about it more now, do you still want to stick to the same order or would you make any changes? Why?

ASK PARTICIPANTS TO NOTE DOWN ANY CHANGE IN ORDER ON THEIR HANDOUT

<table>
<thead>
<tr>
<th>1.45 – 2.45</th>
<th>10. INVESTING IN DIFFERENT LEVELS OF PREPARATION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>There are lots of different things that can be done to prepare for the impacts we’ve been discussing today. However, it will never be possible to prepare for absolutely every impact, in every area. I would now like you to think about which of the impacts facing the three areas you would prioritise to take action on – that could be action to help reduce the negative impacts (e.g. reduce the damage from flooding) or action to help make the most of the opportunities (e.g. investing to encourage tourism).</strong></td>
</tr>
</tbody>
</table>

GIVE DIFFERENT SET OF COLOURED DOTS TO THREE GROUPS. ASK THEM TO STICK UP 10 IN TOTAL NEXT TO IMPACTS ON THE THREE AREA POSTERS THAT THEY WOULD PRIORITISE FOR ACTION. **You can stick up 10 dots in total. You can spread them however you like. You could put all 10 dots against impacts happening in the same one area (i.e. all on the coastal poster), or you could split them across the three areas. You can put more than one dot next to a particular impact if you think it’s particularly important to prepare for.**

ASK EACH GROUP TO EXPLAIN THEIR DISTRIBUTION OF DOTS

  - How did you decide which impacts to prioritise to invest most preparation in?
  
  - What were you considering when you made your decisions?
MODERATOR REVIEW AND COMMENT ON SIMILARITIES/DIFFERENCES BETWEEN GROUPS

MODERATOR POINT TO IMPACTS THAT HAVE NO DOTS AGAINST THEM -
- Is it acceptable that nothing is done to prepare for these possible impacts? Why is this acceptable? Why is it not acceptable to not prepare for others that you have placed dots against?

MODERATOR ASK EACH GROUP TO STRIKE OUT 5 OF THEIR 10 DOTS i.e loose half the dots they placed on the posters
- How did you decide which impacts not to prepare for? Why these? Why not others? What makes one a priority over another?

A range of preparations are printed on each of these cards. In groups of 4 please decide which 5 of these preparations you think should be carried out.

GIVE PREPARATION CARDS OUT TO THREE GROUPS. ASK THEM TO SELECT 5 ONLY
- How did you decide which preparations to choose? Why these? Why did you not choose others?

MODERATOR REVIEW AND COMMENT ON SIMILARITIES/DIFFERENCES BETWEEN GROUPS

INTRODUCING COSTS OF PREPARING

Another factor we have to consider is **how much it costs to carry out these preparations.** The cards with blue text represent the most expensive preparations. You are now only able to include two of these types of card in your choices. Please review your preparations and make decisions about which two expensive preparations to carry out.
**MODERATOR REVIEW AND COMMENT ON SIMILARITIES/DIFFERENCES BETWEEN GROUPS**

- How easy or difficult was that to do? What did you find easy / difficult about it?
- How did you decide which preparations to choose?
- How do you feel now about who should be responsible for preparing for the UK’s changing climate? Does this depend on anything? REFER BACK TO EARLIER DISCUSSIONS OF RESPONSIBILITY TO CHECK IF CHANGED

Summary of this section: So, these are your provisional decisions about WHERE will be affected, and WHAT TYPES of preparation are possible. Recap on the preparations the group has suggested – this might be what you’d do if you were the decision makers. You have effectively made ‘an adaptation plan’.

In the next section we will ‘test’ this plan out against different examples of PEOPLE and RANGE of impacts.

<table>
<thead>
<tr>
<th>2.45 - 3.00</th>
<th>AFTERNOON COFFEE BREAK</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>3.00 – 3.30</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>11. TESTING THE ‘PLAN’ MADE BY PARTICIPANTS AGAINST PEOPLE AFFECTED</strong></td>
</tr>
</tbody>
</table>

SHOW SIX CHARACTERS STUCK UP AROUND THE ROOM

ASK PARTICIPANTS TO STAND UNDER THE CHARACTER THEY THINK NEEDS THE MOST HELP WHEN WE ARE PREPARING FOR CLIMATE CHANGE

PLENARY DISCUSSION

- Why have you chosen to stand under that person? How have you compared the level of risk they each face?
- How well is this person protected under the plan you made earlier?

Use characters and then scenarios to help participants understand the broad range of impacts that could be experienced from a particular ‘climate event’ / ‘change in climate’. 
<table>
<thead>
<tr>
<th>3.30–3.45</th>
<th>12. TESTING OUT THEIR ‘PLAN’ - HOW DOES IT WORK WHEN IMPACTS ARE UNCERTAIN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GIVE OUT ‘UNCERTAINTY OVER IMPACTS’ HANDOUT</td>
</tr>
<tr>
<td></td>
<td>There is a lot of uncertainty about the scale of the possible impacts from climate events. It is very difficult to predict exactly how many people will be affected. This sheet gives you information from scientists about how many people might be affected by different climate events by the 2050s.</td>
</tr>
<tr>
<td></td>
<td>- Does this make you feel any differently about the people and decisions we’ve discussed?</td>
</tr>
<tr>
<td></td>
<td>- Do you think the preparation decisions you’ve made would be ok? Is there anything you’d change? What? Why?</td>
</tr>
<tr>
<td></td>
<td>- If you were the Government / business / other decision maker, how would you decide what to prioritise now? Any changes?</td>
</tr>
<tr>
<td></td>
<td>PROBE: is it dependent on how many people affected? How often it happens? How big an area it affects? Who it is being affected? The economic cost?</td>
</tr>
</tbody>
</table>

PREPARE - Climate risk acceptability
Findings from a series of deliberative workshops and online survey

- How do you feel now about how the Government and other planning bodies and businesses should decide what to prioritise? Why?
- Which groups should be protected, or should be all be protected the same? Why?
- Do you think there are certain areas of the country that should be protected to a greater extent than others, or should the whole of the UK be protected the same? Where? Why?
- Are there certain risk/possible impacts you think we should prepare for more than others? Which risks? Why these?

LOOK BACK AT THE THREE AREAS AND THE PREPAREDNESS CHOICES WHICH HAVE BEEN MADE, AND PROBE ON HOW THE CASE STUDY CHARACTERS WOULD FARE UNDER THE PLAN THAT WE PREVIOUSLY MADE.

Help participants understand
<table>
<thead>
<tr>
<th>Summary of this section: For each group, how would you feel about your decisions if this ‘high impact’ event occurred? Or the ‘low impact’ event? How could you justify your choices? How acceptable is the risk you are taking? What if the impacts are very uneven, and the coasts face the most life-changing effects while people in the towns and cities do not feel much change</th>
<th>the challenge of making decisions about an uncertain future. Continue the discussion about what an acceptable level of risk is, and what needs to be prepared for at any cost.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.45 – 4.00</td>
<td>13. ADDING ELEMENT OF CONTEXT</td>
</tr>
<tr>
<td>Of course, risks from a changing climate are only one area in demand of government spending. Government also has to spend on adapting to many other future challenges. For instance, a growing population which has implications for health services, education services, crime prevention, housing, transport. We also have an ageing population with again implications for health services and social care services. REFER BACK TO LIST OF ISSUES FACING UK MADE AT START OF DAY</td>
<td></td>
</tr>
<tr>
<td>➢ Where you think spend for preparing for changes in our climate, fits compared to spending on these other future issues? Why? ➢ Who / what / where do we need to be considering most?</td>
<td></td>
</tr>
<tr>
<td>FINAL ROUND UP AND HOUSEKEEPING</td>
<td></td>
</tr>
<tr>
<td>IN PLENARY ➢ How did you find the tasks this afternoon? Easy / difficult? Interesting / Challenging? ➢ Are there any final comments or questions you would like to make about what we have discussed today? ➢ What are the key things you’re going to take away from the discussions we’ve had today?</td>
<td></td>
</tr>
</tbody>
</table>

Confirm research is being conducted on behalf of the Department for Environment, Food and Rural
Affairs (Defra). Thank respondents for participation which will be valuable in understanding in greater depth views towards the acceptability of risks posed by our changing climate.

Give out analysis consent form
Give out end of event questionnaire
Give out incentives and sign form
## 6.6 Concern at climate change impacts

**Q14. How concerned would you be, if at all, if the following did happen in the UK?**

<table>
<thead>
<tr>
<th>Climate Change Impact</th>
<th>Very Concerned (%)</th>
<th>Fairly Concerned (%)</th>
<th>Not Very Concerned (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor harvests, due to extreme weather, pushing up food prices</td>
<td>53</td>
<td>37</td>
<td>6%</td>
</tr>
<tr>
<td>More homes being flooded as a result of heavy rainfall</td>
<td>42</td>
<td>43</td>
<td>11%</td>
</tr>
<tr>
<td>Droughts causing serious water shortages due to changes in rainfall patterns</td>
<td>42</td>
<td>41</td>
<td>12%</td>
</tr>
<tr>
<td>Public services like roads, power stations, schools and hospitals being disrupted due to heavy rain</td>
<td>34</td>
<td>48</td>
<td>14%</td>
</tr>
<tr>
<td>More people’s health suffering in extreme heat</td>
<td>35</td>
<td>46</td>
<td>12%</td>
</tr>
<tr>
<td>New pests and diseases, previously only thriving in warmer climates, become common in the UK</td>
<td>39</td>
<td>42</td>
<td>14%</td>
</tr>
<tr>
<td>Low-lying coasts being permanently flood or eroded by rising sea levels</td>
<td>38</td>
<td>42</td>
<td>15%</td>
</tr>
<tr>
<td>Air pollution gets worse from hotter weather</td>
<td>36</td>
<td>44</td>
<td>14%</td>
</tr>
<tr>
<td>Some types of wildlife are lost or decline in number because they cannot relocate to where the climate…</td>
<td>40</td>
<td>39</td>
<td>14%</td>
</tr>
<tr>
<td>A reduction in marine wildlife from changes in sea temperature</td>
<td>36</td>
<td>42</td>
<td>16%</td>
</tr>
<tr>
<td>More people permanently move to the UK because of changes in the climate of their own country</td>
<td>29</td>
<td>39</td>
<td>21%</td>
</tr>
<tr>
<td>Disruption to trains, roads, and public transport due to more frequent heat waves</td>
<td>21</td>
<td>45</td>
<td>26%</td>
</tr>
<tr>
<td>Cities and large towns, which trap heat, becoming unbearably hot due to heat waves</td>
<td>23</td>
<td>40</td>
<td>28%</td>
</tr>
<tr>
<td>Increased demand for energy for cooling</td>
<td>18</td>
<td>41</td>
<td>31%</td>
</tr>
<tr>
<td>New crops previously grown abroad become more common in the UK due to a warmer climate</td>
<td>7</td>
<td>18</td>
<td>44%</td>
</tr>
<tr>
<td>Fewer vulnerable people dying in the cold due to milder winters</td>
<td>7</td>
<td>15</td>
<td>33%</td>
</tr>
<tr>
<td>More tourists choosing to visit the UK because of a warmer climate</td>
<td>4</td>
<td>11</td>
<td>45%</td>
</tr>
<tr>
<td>Lower demand for energy due to warmer winters</td>
<td>4</td>
<td>9</td>
<td>40%</td>
</tr>
<tr>
<td>More people living in the UK take their holidays in the UK</td>
<td>4</td>
<td>9</td>
<td>44%</td>
</tr>
</tbody>
</table>

Base: All who were presented with this climate change impact (minimum of 1,040)
6.7 Workshop stimulus (Characters)
These seven characters were presented to workshop participants to represent how climate change impacts affect people differently depending on the age, location, occupation, life status and health.

I’ve lived next to the sea all my life. I had no idea all those years ago that one day my own house would be at risk of falling into the sea. This has always been my home so I don’t want to leave.

I work and live in the city. I work hard and I don’t earn much, I’ve got student debts and still live with my parents as I can’t afford my own place yet. I don’t think the tax I pay should go towards helping people who have decided to live in areas which face risks – like flooding or coastal erosion. Why should I foot the bill for their choice?

We had our first baby a year ago so we had to move to a bigger house. We moved to this area even though we knew it was on a flood plain because it was a lot cheaper than other places. Now we’ve found out that we can’t get insurance because we’re at risk of flooding. We can’t afford to move anywhere else though.
I live in a village in Scotland where I grew up. I run a small shop. Last year floods led to transport problems, and my stock didn’t get through. I lost money and nearly had to close down. I am worried that in the future I might lose my business. If that happens I’ll have to move away from the area and try and find work somewhere else.

I live in a high rise block and have serious asthma. It can get so hot up on the high floors. I struggle to breathe and it really limits how much I can do and how much I can get around.

I commute into town every day for work. The trains are often delayed and cancelled because of electrical problems due to heat. Lots of people have this trouble and when we do make it in to work, we sometimes have to cover for colleagues who can’t make it. It affects the whole company.