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## Supplementary Materials: The Right Stuff? Informing Adaptation to Climate Change in British Government

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### 1. Longitudinal Comparison of the 2003 and 2012 Surveys

To provide a direct comparison between the survey results collected in 2003 with those in 2012, many of the open and closed Likert-scale questions were repeated with only the answer options updated where appropriate. These included the following:

- How much do you personally know about climate change? (Answers: A great deal; A fair amount; Not very much; Nothing).
- Do you feel that your Local Authority has enough information to decide whether they should change any of their plans or policies because of climate change? (Answers: Yes, definitely; Yes, probably; No, probably not; No, definitely not; and Don't know).
- How often are the following sources of information used to understand the potential impacts of climate change on your Local Authority? (Options: TV; Colleagues; Friends; Newspapers; Internet; Specialist publications; UKCP09; UKCIP02; CCRA; NGOs; Environment Agency; DEFRA; DECC; Met Office; LGA; Climate change partnerships; Government literature; Adaptation Sub Committee. Answers: Always; Sometimes; Rarely; Never)
- When thinking about climate change, how easy is it to understand the sources of information listed below? (Options: TV; Colleagues; Friends; Newspapers; Internet; Specialist publications; UKCP09; UKCIP02; CCRA; NGOs; Environment Agency; DEFRA; DECC; Met Office; LGA; Climate change partnerships; Government literature; Adaptation Sub Committee. Answers: Very easy; Easy; Difficult; Don't understand; Not applicable)
- How reliable do you think the following sources of climate information are? (Options: TV; Colleagues; Friends; Newspapers; Internet; Specialist publications; UKCP09; UKCIP02; CCRA; NGOs; Environment Agency; DEFRA; DECC; Met Office; LGA; Climate change partnerships; Government literature; Adaptation Sub Committee. Answers: Very reliable; Reliable; Not reliable Don't know; Not applicable)
- How much responsibility for management the impacts of climate change should fall to the following? (Options: International Community; National Government; Local authorities; Businesses; Communities; Individuals' Answers: Total responsibility; Partial responsibility; A little responsibility; No responsibility)

As the adaptation landscape changed between 2003 and 2012, our most recent survey also included questions to reflect these differences:

- To what extent is your local authority concerned about the following? (Options:

Economic downturn; Being prepared for weather extremes; A large-scale industrial accident; A serious incident affecting the transport network; A health-related emergency; A changing climate; A terrorist attack; Answers: Very concerned; Concerned; Not very concerned; Not concerned at all; not applicable; Don't know).

- Below is a list of possible future effects of a changing climate on the UK. For each one, please highlight whether you think it presents a risk or opportunity, both or neither for your Local Authority area. (Options: Especially warm summers; Especially dry summers; Especially wet summers; Intense heat waves; Very mild winters; Very wet rainy winters; Heavy downpours causing localized flooding; Severe coastal flooding; Heavy snowfall. Answers: Large risk; Small risk; No real difference; Small opportunity; Large opportunity; Both risk and opportunity; Don't know; Not applicable).
- In the last three years, has your Local Authority been significantly affected by any of the events listed above? (Options: Especially warm summers; Especially dry summers; Especially wet summers; Intense heat waves; Very mild winters; Very wet rainy winters; Heavy downpours causing localized flooding; Severe coastal flooding; heavy snowfall. Answers: Yes; No; Don't know; Not applicable).
- What is the most useful way for the Government to help Local Authorities adapt for a changing climate? (Options: Provide more information about the effects of climate change in the UK; Use less jargon & scientific language in published materials; Say what the effects of climate change will be not what they might be; Reduce red tape, bureaucracy; Show how climate change offers opportunities; Increase funding, grants, or ring-fencing; Increase staffing (e.g. climate change officers); Reintroduce national indicator (e.g NI 188) for adapting to climate change. Answers: Most important; Fairly important; Probably not important; Unimportant; Not applicable)

## 2. Codes for Open-Ended Responses to the 2012 Survey

Our 2012 survey included several open-ended questions, including: 'If you can think of any other ways the Government can help local authorities [to adapt] not listed please specify below' and 'If you have any additional comments that you would like to share with us please use the space provided below'. The responses were imported in the qualitative software of NVivo and manually coded to identify emergent themes. Below, the six codes used are highlighted and explained:

- *Political leadership*. This code captured discussions over what local authority staff felt the roles and responsibilities of central and local government should be in adapting to climate change. Responses fell into two broad categories: (i) failure of central government to take the lead on climate adaptation and how this was perceived as giving local government mixed messages; and (ii) difficulties of getting institutional buy-in from councillors and senior management at local authorities to commitment to time, money or policies to adaptation actions.
- *Resources*. This code recorded responses over the availability (or lack thereof) of resources – human, technical and financial – to plan for, and adapt to, climate change. Local authority staff emphasised how austerity measures had reduced the number of people dedicated to adaptation work e.g. redundancies and down-sizing of depts), training to improve technical knowledge had gone, and tighter

- budgets meant statutory duties were prioritised above everything else, including adaptation to climate change.
- *Local adaptation actions.* This code documented any tangible adaptation actions that local authority staff cited as either having been planned for, or had already been implemented, in relation to climate change. Two main responses were found: (i) introduction of new flood risk management measures, such as sustainable urban drainage (SUDs) and defences, or (ii) voluntary initiatives to cope with vulnerabilities in the community including buddy schemes and redesigning the distribution and delivery of meals-on-wheels.
  - *Economic costings.* This code captures discussions on the need for local authority staff to have access to economic tools that can quantify the cost/benefit ratios for local adaptation actions and offer a means to trace back future-savings. Responses centred on the lack of locally-applicable yet simple economic costing tools or how economic data was only available for certain adaptation options and not others. Economic costs were seen as essential to building a business case and gaining the leverage needed to fund adaptation actions.
  - *Regulation.* This code recorded responses to what extent local authority staff felt that top-down, central government, regulation or targets, such as NI-188, spurred on local adaptation actions. Those in favour of regulation suggested it provided a profile to adaptation that was institutionally difficult to ignore but others noted that regulation can be a blunt instrument that prescribes measures that may lack local relevance.
  - *Overcoming adaptation barriers.* This code documented where local authority staff gave examples of how they had overcome the barriers listed above to build support for adaptation actions. Mainstreaming adaptation and experimentation were the two main strategies employed. Making adaptation part of the corporate strategy means all departments take ownership of it and responsibility for translating it. While, efforts such as the Severe Weather Impacts Monitoring Systems (SWIMS) provided real-time data on the political, social and economic costs of extreme events, making it easier to justify future expenditure.

### 3. Interviews with Local Authority Staff

As part of the survey 2012, local authority staff were told that we would be ‘conducting further research in this area over the next 12 months, if [they were happy to be contacted as part of a follow-up to this questionnaire, and wish to discuss the issues raised further, [to] please provide [their] name and contact details’. Over half of the survey respondents, 50.1% (n=59), give us their contact details. In total, twenty respondents were chosen to ensure every region of Great Britain (England, Scotland and Wales) was covered, reflecting different job seniorities from chief environmental officers to climate change staff, from councils run by different political parties.

An email was sent to these respondents asking if they were still willing to take part in the research, and all agreed. Interviews were arranged at a place and time of their convenient, between December 2012 and January 2013. Whereas the survey focused primarily on *what* climate information local authority staff used, the interviews sought to understand *how* they used it and importantly *why* they used it. For example, when local authority staff said they used the UK’s latest climate projections, UKCP09, did they download the data, build graphs or generate figures for their local area via the website, or go to the briefing report for the national-scale headline messages? How was this information used in the

decision-making process (at the beginning, middle, or end)? And what weight was given to it in relation to other sources? These prompts allowed us to gain a much richer and deeper understanding of what ‘use’ meant.

Below is a list of questions each participant was asked:

1. Can you tell me about what climate adaptation work is your local authority currently doing? Why is this work being done? What’s driving this work?
2. How does your role fit into those activities? How long have you worked in this post? What kind of expertise/skills do you think the role requires?
3. Which sources of climate (adaptation) information are key to informing these activities? Can you walk me through how these sources are used (i.e. which parts)? Does your local authority utilise all the climate information available to it?
4. What, in your opinion, are the main strengths and weaknesses of current climate tools?
5. If the climate information/tools provided more economic evidence/costings would that help? If so, in what way (cf. Stern, cost-benefit analysis, high reward-low regret)?
6. What role do national, or even local, politics play in climate adaptation work? (e.g. mixed messages, localism agenda, Nottingham Declaration)
7. A recurring theme in the survey data was the call to (re)introduce statutory requirements like performance targets (e.g. NI-188). What do you think of this?
8. Does your local authority do most of its climate work in-house or use the services of specialist consultants instead?
9. Is there anything we haven’t covered that you would like to highlight?

Each interview was digitally recorded (with consent), lasting approximately 40-60 minutes, and was transcribed. These transcripts were imported to NVivo and manually coded for identify emergent themes. Below is a list of the codes used to make sense of the data:

- *Adaptation actions.* This code documented any tangible actions that local authority staff cited as either having been planned for, or had already been implemented, in relation to climate change. As detailed in section 2 above, adaptation actions were broken into two main categories: flood risk (engineering) solutions and community-based initiatives (vulnerability).
- *Institutional barriers to adaptation.* This code recorded the perceived institutional barriers local authority staff felt when trying to adapt to climate change. Resource constraints such as budget cuts, staff redundancies, and the drive to prioritise and achieve efficiencies were seen as major barriers to action, whilst the lack of central government leadership in appointing sceptics to cabinet posts was believed to have made it harder for local government to act alone.
- *Institutional drivers to adapt.* This code documented the motives highlighted by local authority staff was implementing adaptation actions. Reputation management (i.e. Nottingham Declaration) and regulatory compliance associated with the use of performance (e.g. NI-188); previous (and recent) experience of extreme weather events with high costs; an active resident and business community calling for action; and corporate concerns about the liability and vulnerable population, all were major themes in this code.
- *Use of climate information.* This code focused on how and why local authority staff used particular sources of climate information. Major themes included whether

climate information was used in-house or outsourced to consultancies; trade-offs between ease of use and comprehension; the mismatch over what data is available and what is needed (e.g. economic costs); and the challenges around the use of climate information in an input-output decision culture.

#### **4. Sources of External Local Authority Data**

To whether local authority size, type, or political party in power influenced responses given to our 2012 survey, we cross-tabulated our data with three official datasets:

- Data on local authority type (e.g. metropolitan, unitary, district etc) for 2012 can be downloaded for England, Scotland and Wales can be downloaded from the department of Communities and Local Government (see <http://www.communities.gov.uk/localgovernment/localregional/localgovernmentfinance/statistics/revenueexpenditure/revenue201112/>).
- Data on the size of populations for each local authority area for 2012 can be downloaded from the Office of National Statistics (see <http://ons.gov.uk/ons/taxonomy/index.html?nscl=Population+Estimates>).
- Data on which local political party was in power and held a majority (if there was one) for councils across England, Scotland and Wales in 2012 can be downloaded from the Election Commission (see <http://www.electoralcommission.org.uk/our-work/our-research/electoral-data>).