National Infrastructure Commission

Phase 2: public research

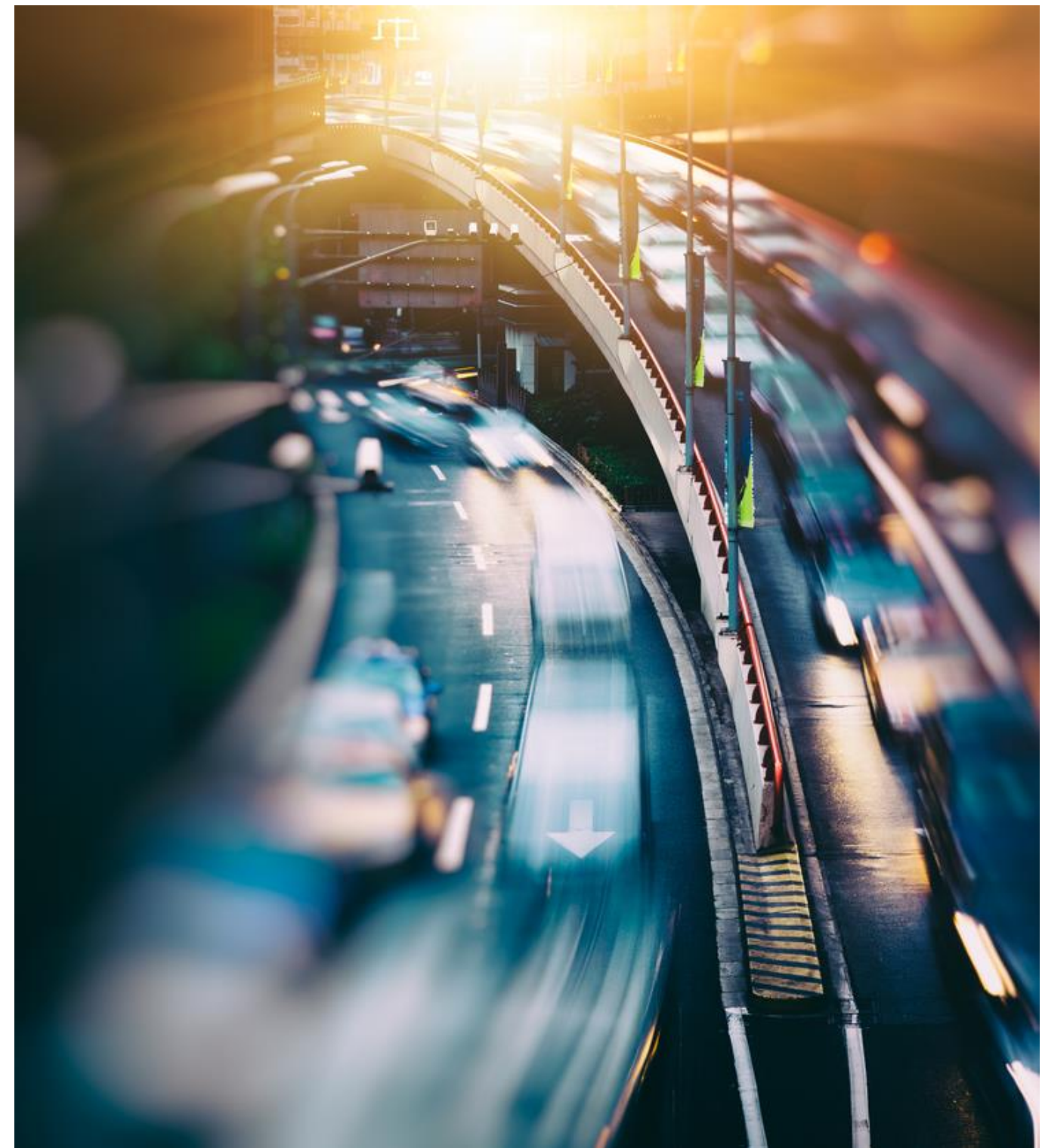### Final report

May 2018

Ipsos MORI
Social Research Institute

Contents

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Disclaimer

- This report was commissioned as part of the evidence base for the National Infrastructure Assessment. The views expressed and recommendations set out in this report are the authors' own and do not necessarily reflect the position of the National Infrastructure Commission.

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Executive summary – 1

The National Infrastructure Commission (NIC) asked Ipsos MORI to explore how the public feel about the UK's strategic approach to infrastructure challenges over the next ten to thirty years, in order to inform the National Infrastructure Assessment in 2018, and the wider work of the NIC. This report summarises our findings from eight workshops across England, a representative online survey of 2,238 people across the UK, and a literature review of existing research. It covers a broad range of infrastructure themes to give a picture of public perceptions of the UK's approach to: waste, digital communications, water, flooding, energy, and transport.

Overall views

Overall, protecting the environment was seen as a priority and an essential part of future-proofing the UK for participants who considered it vital to protect the UK's natural assets from threats such as climate change and increasing pollution levels. Almost eight in ten (78%) Britons agreed with the statement "the UK is at a turning point; it needs to have a long-term vision for infrastructure, and the confidence to invest in it, to ensure the UK continues to be a good place to live and work." However, the cost to individuals was an important consideration in shaping views, with participants wanting to ensure that the costs for future infrastructure did not disproportionately fall on individuals and was, instead, shared among government, manufacturers and other private companies as well as customers and taxpayers.

Waste

Participants were supportive of recycling in principle, though frustrated with existing recycling procedures that vary across the country. While over two thirds of Britons (68%) currently say they recycle on a daily basis, there were demands for a more simple and consistent approach. There was support for reducing the amount of plastic used in packaging instead of increasing the cost of packaging or using more recyclable materials, although there was limited awareness of the impact this could have on shelf life. While participants were willing to take responsibility for recycling products, they felt that the consumer should not bear the cost alone and that there was a key role for government in encouraging companies to adopt environmentally friendly behaviours.

Preferences for reducing food waste over improved food waste collection resonated across workshops, along with a belief that individuals and households are not the main culprits when it comes to wasting food. Although 79% of Britons who do not currently use a food waste bin would be prepared to use one if it were provided by their local council, workshop participants emphasised the need for supermarkets and manufacturers to act to reduce waste.

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Executive summary – 2

Digital communications

There was widespread support for a standard universal broadband service, that provided reliable broadband to all homes. While the speed of broadband was seen as less important than reliability for households, participants felt it was of national importance for UK industry. It was widely accepted that rural areas have poor access to broadband in comparison to urban areas, and there was strong support for the reliability of rural connections to be improved by the government, with options available if households wanted to "top up" their broadband speed. 54% of Britons disagreed that those living in rural areas should pay up to £10 more for installation, in line with the perception of government responsibility. However, workshop participants were divided over whether they were personally prepared to pay extra for rural areas to have the same access to broadband and less than a third of Britons surveyed (29%) would be willing to increase their current broadband bill by £2 to help subsidise broadband in these areas.

Water

According to workshop participants, the reliability and quality of the UK's water supply was "taken for granted" and they tended to be satisfied with the service and price of their bills. Participants were receptive to water reuse as an alternative to reducing wasted water, with support for home adaptations making this possible. This mirrored broader preferences for small-scale, incremental improvements to UK infrastructure instead of significant technological changes that were less familiar to participants.

Water meters were viewed as a way of reducing household water use, although participants with a water meter did not always check their water use. There were mixed views on the compulsory installation of water meters with 45% of survey respondents supporting this in principle and participants describing concerns that some groups could lose out through higher bills without wasting any more water e.g. if they have a large family or need to use water for medical purposes. Likewise, 61% of survey respondents opposed compulsory installation if it meant higher bills for their household. There was a desire for water companies and the government to support individuals to reduce their water usage in combination with individuals taking responsibility for avoiding waste.

Flooding

There were a wide range of views on current flood defences, but there was support for an equal standard of flood defences across the UK, particularly given the unpredictable nature of flooding events in the context of climate change. 59% of survey respondents agreed everyone should receive the same amount of flood protection, even if some properties in flood risk areas cost the government more to protect. However, 51% of respondents also agreed that everyone should have a decent standard of flood protection, but more should be done in cities and towns where it is cheaper to install flood protection. As with broadband infrastructure, workshop participants questioned the extent to which individuals can choose where they live leading to an enthusiasm for equality of access wherever possible.

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Executive summary – 3

Energy

Participants found it difficult to conceptualise alternative approaches to heating, although discussions uncovered that high-tech heating systems are welcomed in principle, even if current understanding and awareness is limited. While there was support for the principle of new technologies, participants questioned whether enough was being done to ensure new homes are environmentally friendly and that the upfront cost of home adaptations does not prevent access for those on lower incomes. Smart meters were also believed to have made individuals more aware of their energy usage, leading to reduced use and financial savings.

The need for renewable energy was widely acknowledged, but there were concerns about meeting demand. Two thirds of survey respondents (66%) also agreed that the UK should make greater use of onshore wind farms to generate electricity. However, the prospect of nuclear energy was met with widespread apprehension and concerns around safety.

Transport

There was widespread support for greater public transport options, with participants saying they would be willing to make greater use of public transport instead of using a car. Participants emphasised how this was contingent on improvements in the cost and reliability of local public transport, which were key factors that prevented them from using it more frequently.

Workshop participants questioned the range and reliability of electric vehicles, particularly how far a driver would be able to travel on a single charge. Most survey respondents would prefer to charge an electric vehicle at home, with 72% of people agreeing they would consider charging an EV at home if they owned one. More than half of respondents would also consider charging an electric vehicle in a car park (63%), at a supermarket (62%) or at work (52%).

There was significant concern about how autonomous vehicles would integrate with existing road use patterns, including anxiety about the safety of passengers and other road users, the privacy of drivers, and legal accountability if things go wrong. While parallels were made with existing supported driving technology such as assisted parking, the lack of control involved in an autonomous vehicle was regarded as a more frightening prospect by participants.

There was scepticism about congestion charging outside London, coupled with uncertainty about how changes to paying for roads and road use would work in practice. Road charging options were seen to be penalising those in poorly connected areas or drivers that have to use the roads at rush hour due to their work or family commitments.

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Executive summary – 4

- **Overall conclusions:**

  - **Responsibility needs to be shared**
    Individuals are prepared to do more, but only if government, manufacturers, private companies, and other citizens also contribute. For example, there was widespread support for individuals increasing the amount of waste they recycle, while recognising that supermarkets and manufacturers also contribute through the type of packaging they use on products and the amount of food wasted before it is bought.

    E.g. recycling & food waste

  - **Equality of access was a priority**
    Particularly so where proposals required customers to pay more. More should be done to remove barriers for households on lower incomes to ensure they are able to support environmentally friendly behaviours and are not disadvantaged by the high cost of new technologies or adaptations. For example, there were concerns that separate lanes for autonomous vehicles could result in a "fast lane" that only those on higher incomes could afford, or that the high upfront cost of home adaptions could prevent households from making environmentally friendly changes and lose out on long-term cost savings.

    E.g. home adaptations

  - **Demands for a basic standard of infrastructure**
    That individuals can then "top up" if needed. This should be the government's responsibility to ensure everyone has access to an equal standard of service. For example, participants felt broadband access was a necessary part of modern life, and, therefore, a basic standard should be available to everyone in the country regardless of cost or location.

    E.g. broadband access

  - **Support for small, realistic changes**
    There was a preference for small-scale incremental changes to improve familiar forms of infrastructure that participants used on a regular basis. For example, participants felt easy improvements could be made to recycling processes that would result in significant benefits or that the UK could reduce the amount of water wasted by storing water more effectively (both within homes and at a national level).

    E.g. water storage options

Introduction

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Introduction

- The National Infrastructure Commission (NIC) asked Ipsos MORI to explore **how the public feel about the UK's strategic approach to infrastructure challenges over the next ten to thirty years** to inform the National Infrastructure Assessment in 2018, and the wider work of the NIC.

- This report is based on findings from eight workshops across England and a representative online survey of 2,238 people across the UK. An interim report was presented and shared with the NIC in April 2018, helping to shape the findings presented in this final report.
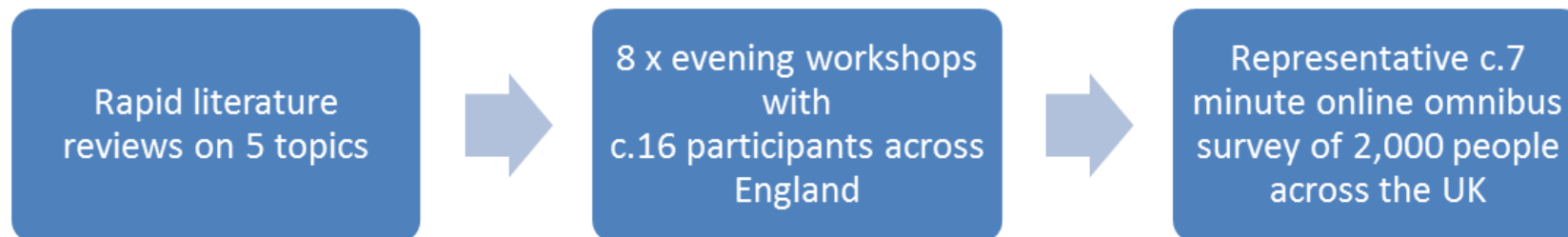
How to read this report

- The report is structured by each infrastructure theme explored in the research: **waste, digital communications, water, flooding, energy, and transport**. It begins with a summary of participants' initial thoughts on infrastructure and respondents views on the NIC's priority statements. Throughout, the term "*participants*" is used to refer to insights from the workshops and the term "*respondents*" refers to those who completed the survey.

- All quotes have been drawn from the workshops, and include a reference to the location and table group (older or younger). Due to rounding, bar charts may not always add to 100%, and charts with the same percentage may not align perfectly.

- Although our analysis of each theme draws on discussions from all eight of the workshops, three themes were discussed in-depth in each location during the second half of each workshop. This means our analysis of each theme may lean more heavily on insights from the locations where detailed conversations took place. The table below outlines which themes were discussed during the second half of each workshop.

Transport	Energy	Digital communications	Water/ flooding	Waste
• Newcastle • London • Bristol • Stoke • Blackpool • Torquay	• Newcastle • London • Stoke • Blackpool • Sleaford	• Newcastle • London • Stoke • Blackpool	• Bristol • Malton • Torquay • Sleaford	• Bristol • Malton • Torquay • Sleaford

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Our approach

- To balance the need for in-depth views on the different infrastructure themes as well as scalable findings from across the UK, a mixed methods approach was used with three core phases:

    - **A rapid literature review** on the five infrastructure themes to capture existing research about the public's views on infrastructure. This informed the development of the workshop discussion guide and questionnaire design, ensuring the research was able to fill gaps in our existing knowledge.

    - **Eight evening workshops** (lasting three hours each) in locations across England with c.16 participants. The workshops were designed to capture in-depth views on the future of UK infrastructure, drawing out areas of consensus and disagreement. Participants were divided by age between two tables at each workshop to capture differences in views between older and younger groups. Fieldwork was conducted between 15th February and 14th March 2018.

    - **A representative online omnibus survey of 2,238 adults (18+)** to test insights from the workshop with a representative group of people from across the UK. Fieldwork was conducted between 23rd and 26th March 2018.

8 workshop locations

| Rapid literature reviews on 5 topics | → | 8 x evening workshops with c.16 participants across England | → | Representative c.7 minute online omnibus survey of 2,000 people across the UK |

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Overall views on infrastructure

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Overall views on infrastructure

In advance of the workshops, participants were asked to look for news articles on several infrastructure topics and bring these along on the day to give a sense of how they understood and described infrastructure. Top of participants' minds across the workshops were recycling and plastics, which were mentioned in every group. The water shortages in South Africa and local transport were also commonly highlighted as familiar news stories with fieldwork taking place in February and March 2018 during which time the water shortages in South Africa were frequently in the news.

Infrastructure priorities aligned with levels of familiarity and use

- Distinguishing the widespread press coverage of water infrastructure in South Africa from the other themes illustrates how participants engaged with the types of infrastructure they are most familiar with – recycling and transport being part of their daily lives. This familiarity resonated throughout discussions, with participants focusing on areas for practical and realistic change rather than futuristic technologies which were remote from their day to day lives. Transport was a key priority for participants across the country. But while London focused on improvements to local public transport, other areas emphasised the importance of good national road and rail connections.

Satisfaction with the UK's infrastructure was mixed

- Participants were broadly satisfied with the UK's infrastructure, emphasising how we "take it for granted" that utilities like water and gas will work. However, participants did compare the UK's recycling infrastructure poorly to other European countries and felt that the rest of the world were out performing the UK when it comes to digital infrastructure (including broadband and 4G/5G networks). Over two thirds of respondents (68%) agreed with the statement "The UK's infrastructure is not good enough; something needs to be done," and 32% felt this statement most reflected their feelings [see chart on page 11].

- The significance of infrastructure to a place was also emphasised, with participants describing how infrastructure interconnects with the success of an area including supporting local employment prospects, building homes and creating a local community. Similarly, participants recognised the impact of infrastructure on the country as a whole, including the need to leave a legacy for future generations. It was felt that current infrastructure investment is spent unevenly across the country, with more money being invested in London and the South compared to elsewhere.

"One thing that I saw which kept coming up was the plastics and how we have to cut back on that. They found out how much plastic we are dumping and it's surprising that the people who run the country don't know much about that."
[Stoke, younger]

"It's transport across the board. Once you leave London, we're not as important."
[Malton, younger]

"Other utilities come through more smoothly, it's almost like breathing. If we had problems, it would be different."
[Bristol, older]

"We talk about infrastructure a lot in Sleaford. We're building houses but there's no infrastructure to support those houses. Medical centres, schools, things like that."
[Sleaford, older]

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Visions of future infrastructure decision-making

The workshops introduced three visions of the future centred around different decision making priorities, to begin discussions around what the UK's infrastructure could look like in ten to thirty years' time, and move participants away from their current experiences to thinking about a longer timeframe. The three visions were:

- **Sustainable and green:** where decisions are made based on reducing the impact of climate change and supporting the environment.

- **Investing for the future:** where decisions are made based on future-proofing the UK and implementing the latest technologies.

- **Flexible choice:** where decisions are made by individuals, with various options to choose from.

Protecting the environment was seen as a priority and an essential part of future-proofing the UK

- The importance of protecting the environment was recognised throughout discussions, driving debate about how to enable individuals and companies to better support the environment. There were no clear differences between urban and rural locations, or older and younger groups – with participants consistently favouring the sustainable and green vison of decision making. In line with this, participants preferred the 'sustainable and green' vison of the future, seeing this as a feasible and optimistic aspiration that provided a path to incremental but achievable changes for individuals. There was a recognition that the country as a whole needs to look after current assets and ensure these benefit everyone in the UK, including protecting the environment as it is today from threats such as climate change and pollution. In contrast, participants felt that investing in new technology would be unlikely to have national benefits, instead concentrating the new technologies in larger, urban areas rather than the country as a whole.

- Similarly, 78% of survey respondents agreed with the statement "The UK is at a turning point; it needs to have a long-term vision for infrastructure, and the confidence to invest in it, to ensure the UK continues to be a good place to live and work". Overall, the highest number of respondents felt this statement best reflected their views, illustrating a demand for a long-term vision that prioritises the needs of individuals living in the UK rather than transforming the UK into a world leader.

The cost to individuals was an important consideration shaping views

- Workshop participants' second preference was for the 'investing for the future' vision, recognising the importance of high tech solutions to the economy and future jobs. However, there were concerns about the cost of this vision and uncertainty around who would be responsible for funding new technology. The 'flexible choice' vision was the least favoured as participants questioned the extent to which genuine choice would be available to individuals that may not be able to afford services. Those that preferred this option, emphasised how individuals should take responsibility for their actions and saw education as the route to change instead of coercion (e.g. fines) or greater government involvement.

"This is more present, there is more time for implementing change. Being sustainable now is paving the way, future generations can learn from us and keep it going. It's small changes like getting a water meter or heat pump -this is feasible and realistic."
[London, younger]

"Investing for the future. It's about bringing us up to a modern age. I like the electric cars and widespread broadband, and helping pollution. I just like it in general. There are good points for all, but I felt more connected to that."
[Blackpool, younger]

Overall views on infrastructure

To what extent do you agree or disagree with the following statements about the UK's infrastructure?

% Agree/Disagree

% most reflective*

The UK is at a turning point; it needs to have a long-term vision for infrastructure, and the confidence to invest in it, to ensure the UK continues to be a good place to live and work

| 38% | 40% | 14% | 2% | 1% | 5% |

39%

The UK's infrastructure is not good enough; something needs to be done

| 28% | 40% | 19% | 6% | 1% | 5% |
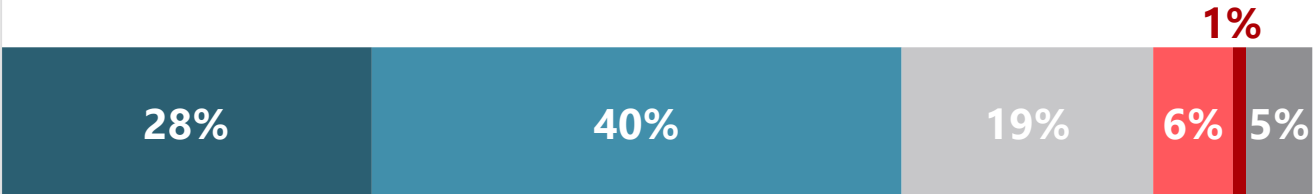
32%

The UK can be a world leader in infrastructure; it has delivered great infrastructure in the past and will do so again

| 16% | 36% | 30% | 11% | 2% | 6% |

18%

■ Strongly agree ■ Tend to agree ■ Neither agree nor disagree ■ Tend to disagree ■ Strongly disagree ■ Don't know

None of these   10%

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Waste

Recycling behaviours

Participants were supportive of recycling in principle

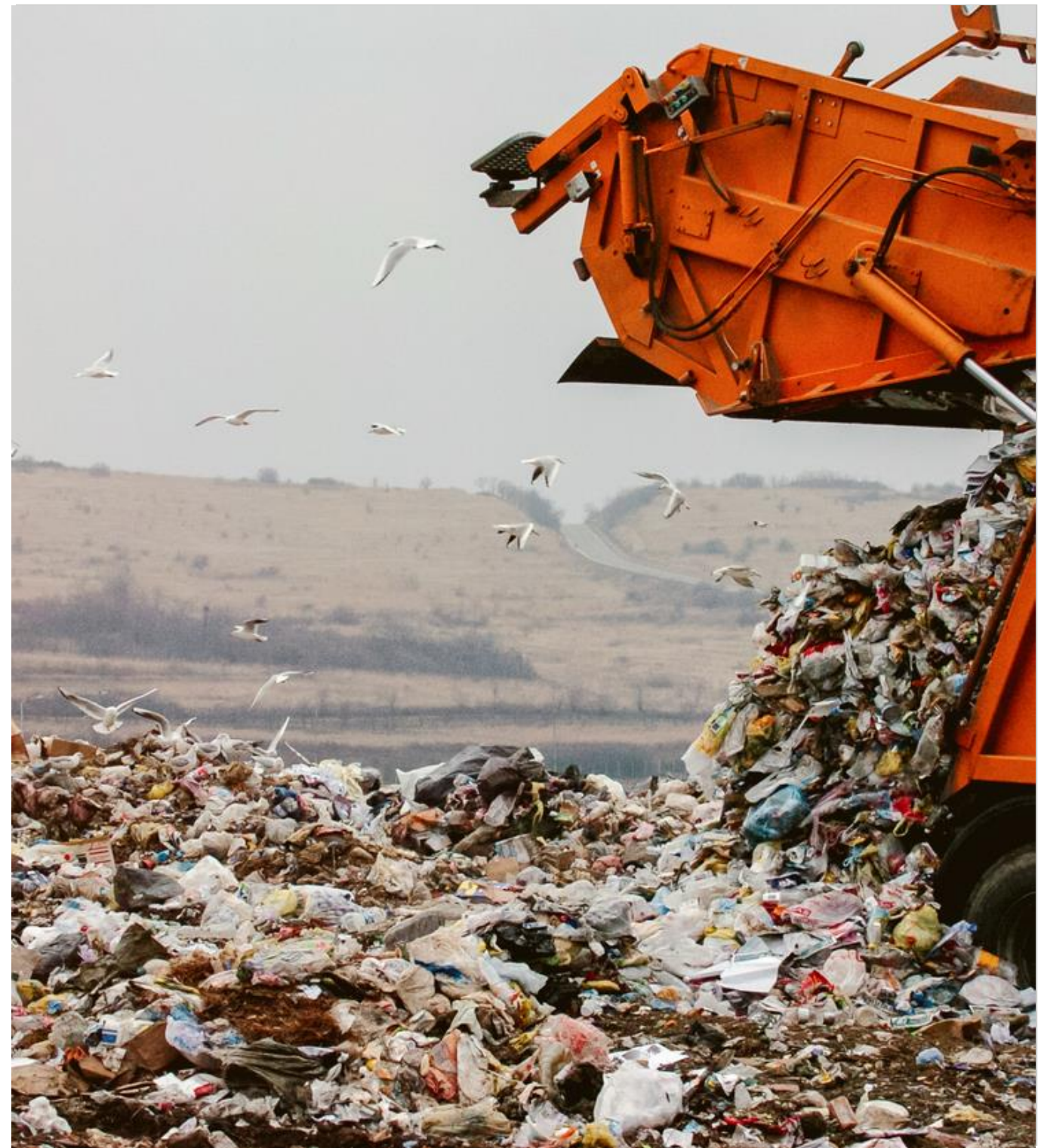- Recycling was seen as extremely important by participants across the workshops, who expressed a willingness to expand their future recycling habits in order to recycle as much as possible. In line with this, the survey shows that over two-thirds (68%) of respondents recycle on a daily basis, with women more likely to recycle daily than men. Older age groups are also significantly more likely to state they recycle their plastic at home every day than those under 34 with 78% of 45-54 year olds and 73% of 55 to 75 year olds agreeing they recycle daily. This compares to 59% of 25-34 year olds and 53% of 16 to 24 year olds.

- While acknowledging that recycling behaviours are ultimately down to the individual, participants desired more information from the government on recycling, notably on what can be recycled, in what bins, and how the recycling process works. Participants were anxious to be given reassurance from the government or local council that what they were recycling was not ending up in landfill, and that they weren't wasting their time sorting their waste.

72% of women **65%** of men

sort plastic packaging daily

"It's pointless recycling something if it goes into landfill. If all the recyclable things are recycled then that's okay but if you are putting it into a black or green box for the sake of doing it then it's a waste of everyone's time."
[Bristol, older]

Daily	2-3 times a week	Once a week	Once a month	Rarely
68%	16%	6%	1%	3%

"I sort plastic packaging at home for recycling."

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Recycling in practice

There were frustrations with existing recycling procedures

- Participants wanted to see standard recycling practices across the country, describing their frustration around the current variation between councils including variable collection dates and materials accepted by each local authority. It was widely held that individual recycling behaviours only had an impact if everyone contributed by making similar positive changes to their recycling habits. However, there was a sense of a current imbalance across the country, with a perception that some areas recycle more than others. Instead, participants would like to see standard practices enforced by the government so that each area participates equally in recycling the nation's waste.

- There was also a desire for a simplification of the recycling process, for example clearly and consistently labelled bins for each material, and colour coded food packaging to categorise which bin a package can be placed in. Similar small changes by manufacturers and local government were regarded as an easy way to minimise the risk of people putting things into the bin because of misunderstanding rather than unwillingness to recycle.

- Participants felt strongly that financial incentives for recycling, such as deposit return schemes, were preferable to fines for not recycling properly, and expressed concern that a fear of fines for recycling incorrectly could lead to people avoiding recycling altogether.

Reducing plastics on packaging was viewed as important

- Reducing the amount of plastic used on products was seen as more important than increasing the use of packaging that is easier to recycle. However, participants did not have a comprehensive awareness of the issues surrounding reduced packaging, such as shorter shelf lives or greater spoiling, and saw the issue primarily from the standpoint of reducing plastic. This indicated the need for better dissemination of information on recyclable and non-recyclable plastic including the reasons why food comes in plastic packaging. Participants felt strongly that the government should be responsible for encouraging companies to reduce and stop their use of unrecyclable materials as packaging. Suggestions included introducing regulations and fining companies which did not follow the rules.

"On the Stoke side I have one big bin but on the other side they have nine different bins. I have to sort it out but I'm unsure whether I pay the same as they do over there."
[Stoke, older]

"People are frightened by these companies that are employed to look in people's bins and fine them £600. These are people who probably can't afford a fine."
[Sleaford, younger]

"Reduce the need to recycle by not using plastic in the first place."
[Bristol, older]

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Paying for recycling

However, participants felt that the consumer should not bear the cost alone

- The potential increase in the cost of food with the introduction of more recyclable packaging was a significant concern for participants, who saw cost as a priority for them while shopping. This is supported by recent Ipsos MORI research[1] that found the public are concerned about the effects of plastic waste on the environment, but despite this, only 43% would stop buying goods that have packaging that cannot be recycled. There was concern that the introduction of recyclable packaging for food products at higher prices than non-recyclable packaging would make recycling unaffordable for those on lower incomes. This was perceived as unfair as everyone should be able to contribute to help the environment.

- Participants believed that supermarkets and food manufacturers should be responsible for reducing the amount of plastic packaging, or covering the cost of more expensive, recyclable packaging. If necessary, it was felt the government should support this through new regulations, but supermarkets or manufacturers should not expect consumers to pay more for their food. However, the survey indicates that the total annual cost of recyclable packaging may influence attitudes as respondents were split on the issue with half of respondents (50%) agreeing much/slightly more that they would be willing to pay an extra £30 a year to buy more easily recyclable packaging, as opposed to 34% agreeing they support no price increase even if this meant less plastic could be recycled. In line with this mixed picture, 40% of people in a recent Ipsos MORI[2] study believe that responsibility should be shared equally between consumers, goods producers, retailers and government. This compared to 27% placing sole responsibility on the companies producing packaged goods, 13% on retailers and 11% on government only.

"I think a lot of people want to do the right thing and have good intentions, but if it's a choice between cost and doing the right thing, it will come down to cost."
[Sleaford, younger]

"From a consumers point of view you shouldn't pay extra or a premium for buying a recyclable product. The onus should be on the companies."
[Bristol, younger]

1 - https://www.ipsos.com/ipsos-mori/en-uk/public-concern-about-plastic-and-packaging-waste-not-backed-willingness-act

2 - https://www.ipsos.com/ipsos-mori/en-uk/public-concern-about-plastic-and-packaging-waste-not-backed-willingness-act

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Views on recyclable packaging and current recycling rates

Statement A:
I would be willing to pay an extra £30 on my yearly grocery bill to buy more easily recyclable packaging

Statement B:
I would prefer my grocery bill to remain the same, even if it meant less plastic could be recycled

Agree much more with
- 26%
- 19%

Agree slightly more
- 24%
- 15%

Don't agree with
- 12%

Don't know
- 4%
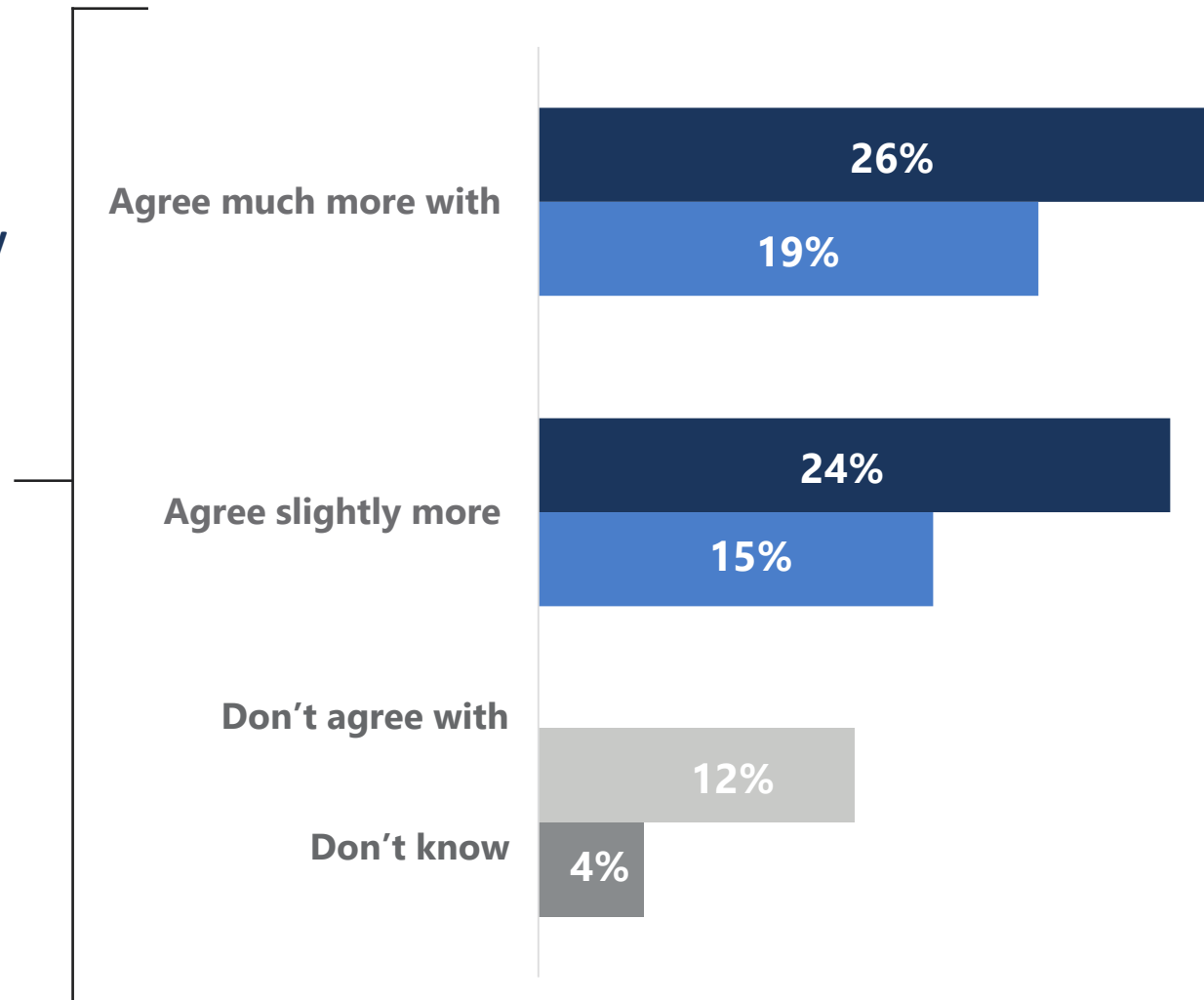
50% of respondents agreed they would pay £30 more a year for recyclable packaging.

34% of respondents agreed they would prefer their bill to remain the same even if it meant less plastic could be recycled.

Food waste

Preference to reduce food waste over improved food waste collection

- Participants were largely uninterested in attempts to improve food waste collection, preferring instead to focus on reducing food wastage itself. It was felt that as individuals, everyone has the responsibility to reduce the amount of food they waste by checking sell-by dates and buying reasonable quantities. However, the survey revealed that nearly eight in ten (79%) people who do not already use a food waste bin, would be willing to use a separate bin for food waste compared to 15% of people who would be unwilling to use a separate food waste bin. Almost a third of people surveyed (29%) stated they already use a separate bin for their food waste.

Individuals and households are not seen as the main culprits

- Participants felt that any food waste they produced was insignificant compared to the waste from supermarkets and industry. As such, they felt the government should focus on changing the behaviours of companies rather than individuals, including supermarkets that were seen to throw away large quantities of food. This could include pressuring companies to monitor sell-by dates and stop marketing foods in a way which could lead to food wastage, such as encouraging people to buy large quantities for discounts. Participants would like to see unused food given to food banks instead of being thrown away.

"The supermarkets have a lot of power over people, with use-by and best-before dates. we're governed by what the packaging is telling us." [Sleaford, younger]

"Focus on larger companies making more of an effort to make changes." [Torquay, younger]

Q. Would you be willing or not to use a separate food waste bin (collected weekly) to dispose of your food waste if this were provided by your local council?

Yes – I would be willing to use a separate food waste bin **79%**

No – I would not be willing to use a separate food waste bin **14%**

Don't know **7%**

Base: All - 1599 adults from across the UK - those that do not already use a food waste bin (23rd – 26th March 2018)

Waste – literature review findings

The public are concerned with the environmental impact of food packaging and there is evidence the public would support initiatives to reduce packaging waste. A 2008 Ipsos MORI study found that over half (51%) of consumers were personally concerned about the amount of packaging used for food, while a 2017 Viridor study found that 69% of the British public would be willing to pay for a deposit return scheme.

There is widespread confusion about how to correctly recycle rubbish and many households are recycling incorrectly. The 2017 Viridor study found that only 16% of people believe that recycling labels are easy to understand, while a 2017 WRAP tracker found that over half (53%) of UK households dispose of one or more items in the general rubbish that is possible to recycle.

The public want increased manufacturer and producer responsibility for waste. A 2017 Britain Thinks piece found that 70% of people agree with increased producer responsibility for packaging waste, while a 2011 ICM Research study found that 63% agree that financial rewards for recycling are a good idea.

Whose problem is it?

Who if anybody do you believe should take most responsibility for finding a way to reduce the amount of unnecessary packaging which is sold?

Companies that produce packaged goods	27%
Companies that sell packaged goods	13%
Government	11%
Consumers	3%
All of the above equally	40%
Nobody has a responsibility to do this	*
Other	*
Don't know	5%
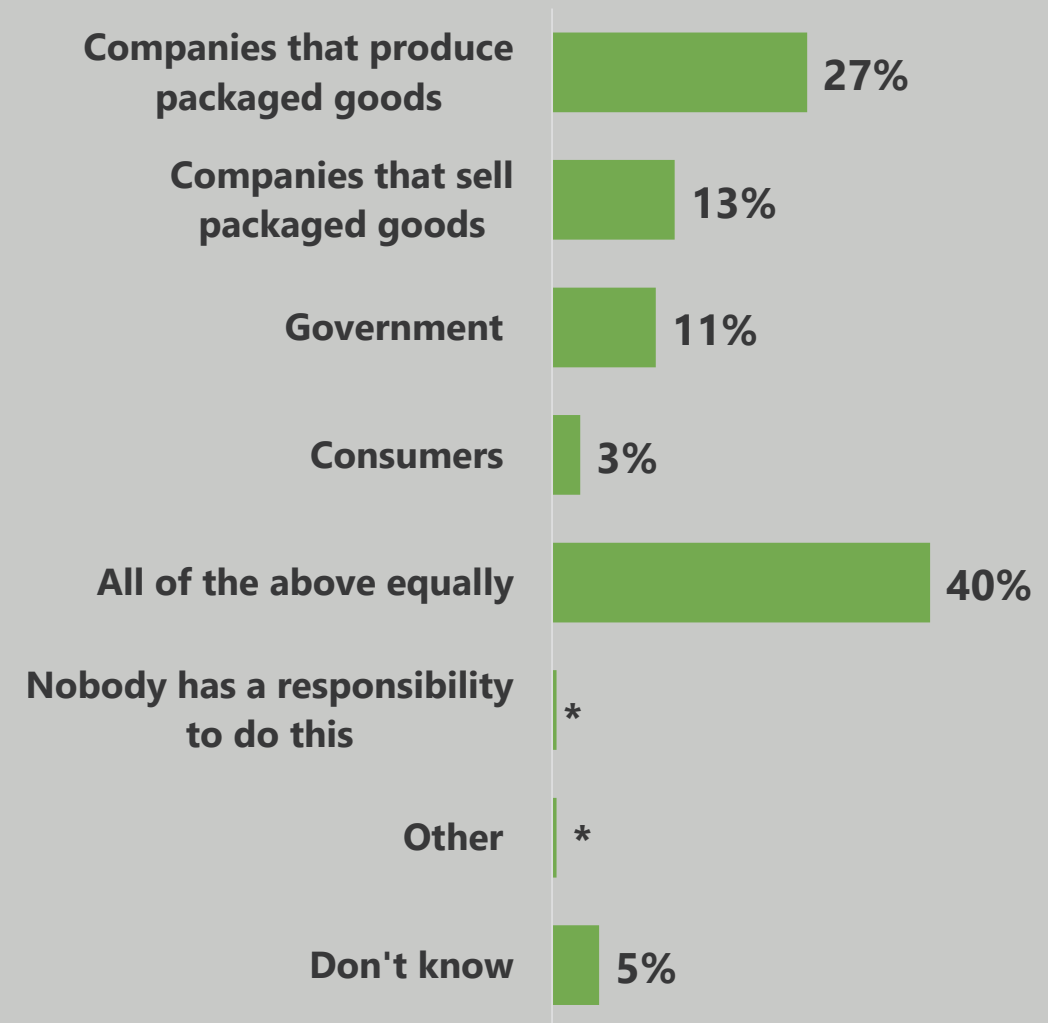
Base: 1,681 British online adults 16-75, 23-27 February 2018 .
Source: Ipsos MORI'/King's College London

Digital communication

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Broadband access

There was widespread support for a standard universal broadband service

- The survey revealed that people are slightly more satisfied with the reliability of their broadband connection (69% agree) compared to its speed (64% agree). During workshops, it was widely accepted that rural areas have poor access to broadband in comparison to urban areas, with slower speeds and reliability. This was reflected in the survey: those living in urban areas were significantly more likely to strongly agree that they are satisfied with the speed of their broadband (22% versus 12% of those in rural areas) and its reliability (22% versus 13% of those in rural areas).

- The importance of the internet in everyday life was emphasised by participants, as they described their increasing reliance on it for public services including schools, healthcare, the elderly and vulnerable citizens. This was alongside the view that internet access was essential to 'modern' living, whether it is being used for a business or personal use, such as shopping. For this reason, participants felt that a basic level of broadband service should be available to all, a service that should be guaranteed by the government. This was also shown in the survey, where 86% of respondents agreed that all parts of the United Kingdom should have equal broadband access.

- However, participants distinguished between reliability and faster speeds, stressing that a basic level of service should focus on reliability as high speeds are not necessary for most current day to day online tasks. In this way, high speed broadband was not seen as a necessity but a product that customers should be able to purchase at a higher cost: a personal choice rather than a required utility. However, this led to concerns that if prices diverged between a basic service and a high speed premium, inequality would develop between those who can afford a decent service and those who cannot.

Faster broadband services were seen as nationally important

- In contrast, participants who placed a high value on faster broadband speeds, saw this as crucial to the UK maintaining its importance on the world stage and to supporting UK businesses and industry.

- The need to future-proof homes for the smart technologies of the future was not seen as credible by participants, who found it difficult to see why homes would need very fast internet connections. They did not draw links between mobile coverage and broadband and struggled to engage with the prospect of increasing mobile coverage making broadband redundant in the future when prompted by moderators.

69%
of respondents agree they are satisfied with the reliability of their broadband connection

Base: All - 2238 adults from across the UK (23rd – 26th March 2018)

"Even farms need internet nowadays, because it's a business. Everything is contactable via an email address."
[Newcastle, younger]

"More important than speed is that it works. If you had a smart device but it kept cutting out, what's the point?"
[London, younger]

86%
of respondents agree all parts of the UK should have equal broadband access

Base: All - 2238 adults from across the UK (23rd – 26th March 2018)

"Does it matter what speed as long as you can do what you need to?"
[Blackpool, younger]

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Broadband access

Q. To what extent do you agree or disagree with the following statements?

I am satisfied with the speed of my broadband connection.

	Strongly agree	20%
	Tend to agree	44%
	Neither agree nor disagree	14%
	Tend to disagree	13%
	Strongly disagree	7%
	Don't know	1%

	URBAN	RURAL
% Agree	66%	57%
% Disagree	18%	30%

I am satisfied with the reliability of my broadband connection.

	Strongly agree	20%
	Tend to agree	49%
	Neither agree nor disagree	12%
	Tend to disagree	11%
	Strongly disagree	6%
	Don't know	1%

	URBAN	RURAL
% Agree	71%	60%
% Disagree	16%	26%

Legend:
- Strongly agree
- Tend to agree
- Neither agree nor disagree
- Tend to disagree
- Strongly disagree
- Don't know

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Broadband in rural areas

There was strong support for equal broadband access in rural areas

- Participants supported the principle of rural areas having the same access to broadband services as urban areas. They believed this was important to support economic growth in rural areas, to avoid creating divisions between urban and rural areas, to save money on transport by supporting people to work from home, and enabling rural areas to function independently of cities.

- However, participants were divided over whether they were prepared to personally pay extra for rural areas to have the same access to broadband. The survey showed that less than a third (29%) would be willing to increase their bill by £2 to help subsidise broadband in rural areas, with people in higher social grades AB and C1 significantly more likely to be willing to accept this cost increase (AB 32%, C1 34%) than those in lower social grades (C2 26% and DE 22%). During workshops, those who did not support subsidising broadband in rural areas cited the fact that people living in rural areas did so by choice and that other services, such as housing and transport, are less expensive in rural areas.

- Conversely, the extent to which individuals were able to choose where they live was disputed by participants describing the lack of affordable homes in urban areas which can push people to rural areas in order to buy a home. The survey also revealed that over half of respondents (54%) disagreed with those living in rural areas having to pay up to £10 more for broadband installation. Respondents from rural areas were significantly more likely to disagree with this than their urban counterparts (70% versus 51%), and those in lower social grades (DE) were significantly less likely than social grades AB, C1 and C2 to support rural areas paying more for their broadband (15 % versus 23%, 20%, 21% respectively). Those from rural areas were keen to use innovative methods to improve their coverage such as masts being erected on church spires to increase connections.

- Participants felt the government should be responsible for ensuring a basic level of broadband service was provided throughout the country by forcing providers to subsidise rural coverage costs themselves, or by subsidising rural broadband through taxpayers' money. Broadband providers should be responsible for the installation of any new infrastructure, including any costs for establishing better rural connections. It was voiced that the government may even make these changes without telling the public, and that small differences in broadband prices to subsidise rural areas would generally go unnoticed.

"Everyone should be treated equally. More people would stay in rural areas and not move to big cities so this would impact other issues like housing because there won't be a demand for people to move to cities."
[London, older]

"If you choose to live in areas in the countryside, I think you should pay more."
[Newcastle, younger]

54% of respondents disagreed with those living in rural areas having to pay up to £10 more for broadband installation

Base: All - 2238 adults from across the UK (23rd – 26th March 2018)

"Private companies should pay because they are actually the ones offering the service, they are the providers of the service for the public and I think they should accommodate for the public."
[Newcastle, younger]

Broadband in rural areas

Q. To what extent do you agree or disagree with the following statements?

Chart 1 — All parts of the UK should have equal access to broadband internet:
- Strongly agree: 52%
- Tend to agree: 34%
- Neither agree nor disagree: 9%
- Tend to disagree: 3%
- Strongly disagree: 1%
- Don't know: 1%

Chart 2 — I would be willing for my broadband bill to increase [by about £2] so that people in rural areas can access the same quality of broadband as everyone else:
- Strongly agree: 8%
- Tend to agree: 21%
- Neither agree nor disagree: 25%
- Tend to disagree: 22%
- Strongly disagree: 21%
- Don't know: 3%

Chart 3 — People in rural areas should pay for the higher cost of installation through higher broadband bills [about £10 more]:
- Strongly agree: 5%
- Tend to agree: 14%
- Neither agree nor disagree: 23%
- Tend to disagree: 26%
- Strongly disagree: 28%
- Don't know: 4%

Legend:
- Strongly agree
- Tend to agree
- Neither agree nor disagree
- Tend to disagree
- Strongly disagree
- Don't know

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Base: All - 2238 adults from across the UK (23rd – 26th March 2018)

Digital communications – literature review findings

The majority of the public think the internet is something everyone should have access to. A 2013 Policy Exchange study found that four in five people (79%) think the internet is something everyone should have.

People do not consider communication infrastructure as a barrier to access. A 2017 Ofcom study found that issues with communications infrastructure was not one of the main reasons cited by members of the public for not using the internet. The public are also split over whether it is more important to improve broadband speed and coverage even if that means more physical infrastructure such as masts, street cabinets and overhead lines, with 49% supporting this and 49% opposed.

There is a rural-urban divide in access to broadband connections. But the public in general do not believe that people living in remote and rural areas should pay more for their broadband, with 57% believing they should not and 24% believing they should pay more for broadband (Policy Exchange, 2013).

People value reliability over speed. The Policy Exchange study also found that 64% of people believe that ensuring a basic broadband speed is available everywhere in the country is more important than high broadband speeds being available in most (but not all) spaces (Policy Exchange, 2013).

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Water

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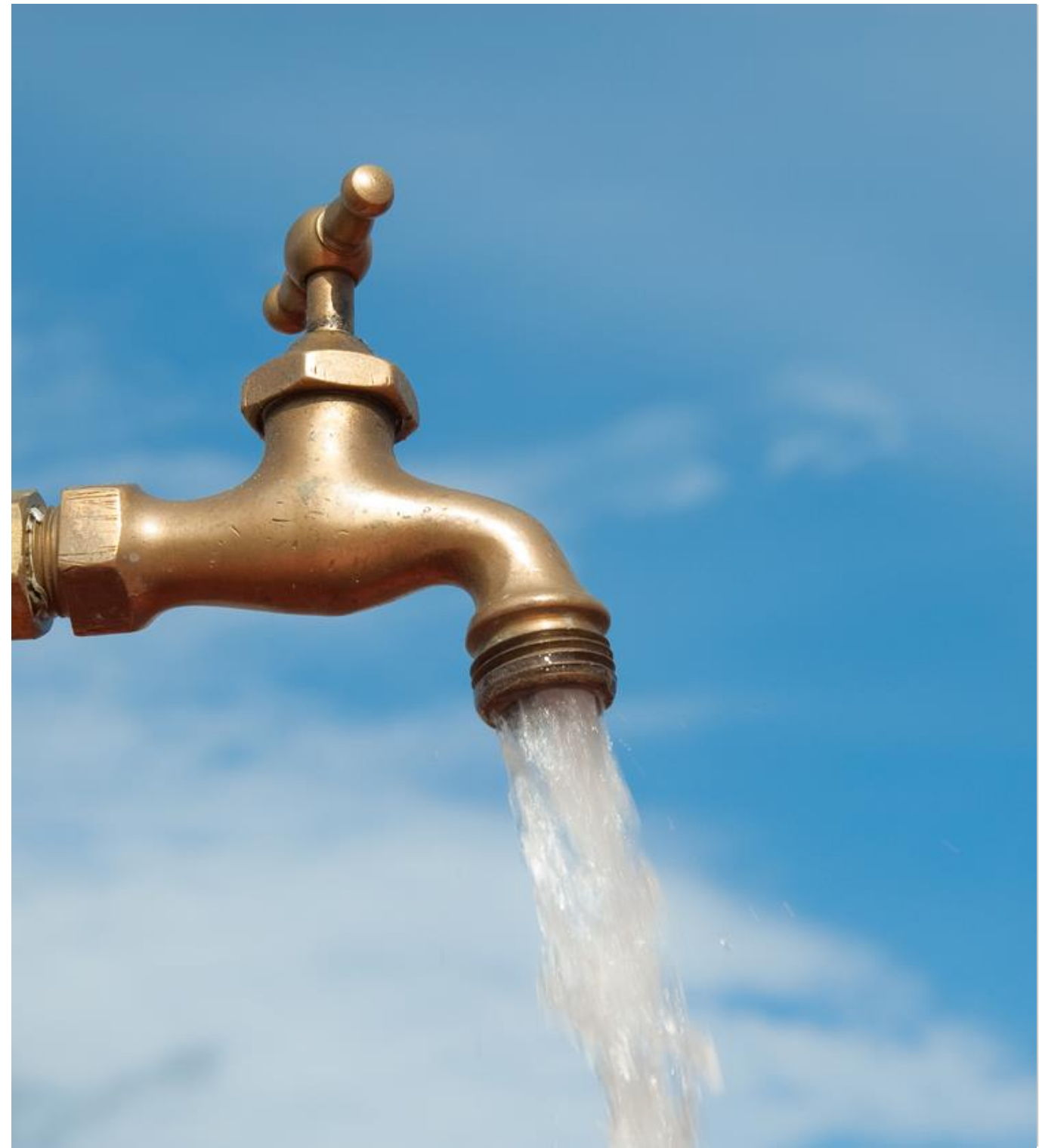
The UK's current water infrastructure

The reliability and quality of the UK's water supply is "taken for granted"

- Participants were familiar with the infrastructure surrounding their water supply, and tended to be satisfied with the service and price of their bills. Notably, this was not the case in Torquay, where bills were perceived to be higher than the rest of the country. The UK's water resources were not seen as being at risk, compared to other parts of the world such as Australia. This aligns with Ipsos Global @dvisor[1] research last year that found 74% of people felt the current quality of water supply and sewage infrastructure was "very" or "fairly good".

- In this way, it was felt that the reliability and quality of the UK's water supply was taken for granted by the public. However, participants did describe occasional water shortages during the summer which they linked to ageing infrastructure and poor planning. There was an assumption that the UK has ample water resources so there should be no excuse for water shortages or hosepipe bans. Despite being satisfied with the quality of water infrastructure, participants felt constrained by the lack of choice of water suppliers and felt this limited their ability to negotiate on price.

Participants were open to water reuse as an alternative to reducing wasted water

- An emphasis was placed on better use, and reuse, of water supplies rather than focusing on reducing how much individuals use in their day to day lives. Participants felt there was a "hierarchy of what can be wasted", suggesting they would be prepared to reuse some types of water such as reusing the water from a washing machine to flush a toilet. There was support for adaptations to home infrastructure and technology that allowed individuals to do this easily, such as places to store used water in new homes. Participants wanted greater information about what adaptations would involve (including what it would mean for saving water) and greater support to help individuals make changes.

"I don't think about water shortages, I have never worried that water is a finite resource here. Yes globally it is, but it's ok here in the North." [Malton, younger]

"We have enough water until the sun comes out and for some unknown reason it all goes." [Bristol, older]

"We're bad at recycling water, the amount of water we get we don't seem to do much with it." [Torquay, younger]

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Water metering

Water meters were viewed as a way of reducing household water use

- Participants had a high level of awareness about water meters, although the number of participants with a water meter varied across workshop locations. Often, those with a water meter described how it had altered their behaviour by reducing the amount of water they use. For example, one participant described how he had decreased how often he washes his car, while another shares bathwater with their family.

- Water meters were seen as a positive way of encouraging individuals to reduce their water use by participants that both had personal experience of water meters and those that did not. This aligns with the views of survey respondents, with 66% of respondents agreeing that the installation of a water meter changes peoples' behaviour and reduces their use of water (23% "strongly agree", 43% "tend to agree"). Helping to identify leaks was another advantage attributed to water meters, with participants monitoring their water consumption through a meter or noticing higher water bills that highlighted when water was being wasted through leaks.

- However, a number of participants with a water meter described how they rarely check their water use, describing how meters can be inaccessible and difficult to check. This tallies with the survey which found only 20% keep track of how much water their household uses more than once a month, compared to 27% who check rarely, and 44% who never track their water use. This illustrates the importance of convenience in supporting individuals to monitor and reduce their water consumption, beyond installing a meter on its own, for example raising awareness of apps that link to a water meter.

There were mixed views on the compulsory installation of water meters

- While participants broadly supported water meters, there were concerns that some groups (such as families, people with care needs and some businesses) would lose out through higher bills as they have higher levels of water consumption. This was regarded as being unfair to those who might have to pay more because of their household circumstances rather than the amount of water they wasted. Participants discussed the need for government support in these circumstances and felt this was a barrier to the compulsory installation of water meters in all homes. Likewise, survey respondents were divided on the compulsory installation of water meters, with 45% of respondents supporting compulsory installation in principle (19% "strongly support", 26% "tend to support") compared to 25% that opposed (13% "tend to oppose", 12% strongly oppose"). Views differed across the UK, with Scotland (36%) and Northern Ireland (44%) more likely to oppose this compared to those in England (23%) and Wales (19%).

"I think it would make people more aware of how much water they can use. When we went over to a water meter our bills went down a lot. When I was brushing my teeth, I wouldn't leave the tap just running and I was more aware of chucking away water for no reason."
[Sleaford, younger]

"You look at your bills and if it's quite high then I'll go and check the meter but apart from that it's such a palaver I wouldn't do it."
[Bristol, older]

45% of respondents supported compulsory water meter installation in principle

Base: All - 2238 adults from across the UK (23rd – 26th March 2018)

"But what about families? With single people it is a bit different."
[Torquay, older]

Water metering

Q. In principle, to what extent would you support or oppose the compulsory installation of a water meter in all homes?

Q. To what extent would you support or oppose the compulsory installation of a water meter in all homes in the following circumstances? (%support/oppose)

In principle — 45% / 25%

If it helps to address water leaks — 65% / 11%

If you live in an area at risk of drought — 51% / 12%

If it means higher bills for you — 15% / 61%

Strongly support/ tend to support

Strongly oppose/ tend to oppose
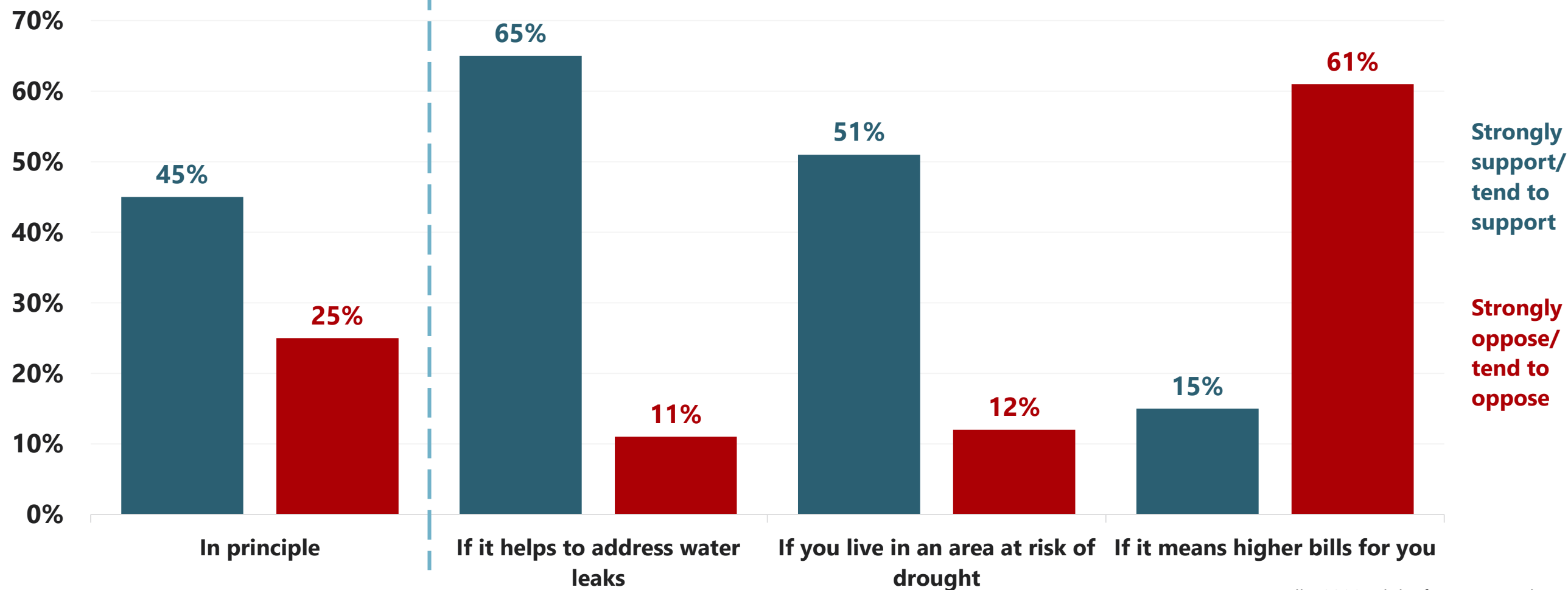
Base: All - 2238 adults from across the UK (23rd – 26th March 2018)

Water metering

There is support for households being able to choose to install a meter

- While 65% of respondents supported the compulsory installation of a water meter if it helped to address water leaks, only 15% of respondents supported compulsory installation if it meant higher bills (comparing to 61% opposing installation). Workshop participants recognised that behaviours linked to water usage will ultimately come down to personal cost (and the price of bills) rather than purely environmental motivations. In this way, participants sceptical of the benefits of water meters argued against compulsory installation, emphasising that this should be a choice for households until the impact of water meters can be demonstrated. 62% of survey respondents also agreed that people should be able to choose whether or not to install a water meter (30% "strongly agree", 32% "tend to agree") compared to 18% who disagreed that this should be a choice (7% "strongly disagree", 11% "tend to disagree").

- There was scepticism that having a water meter would reduce the cost of household bills and concern that once you installed a water meter you could not reverse the decision, making it difficult to assess the impact on individuals. Only 35% of survey respondents agreed that people with a water meter pay less on their bills (11% "strongly agree", 24% "tend to agree").

A desire for water companies and the government to support individuals to reduce their water usage

- While participants recognised that individuals should take responsibility for their water usage, they felt water companies and the government could support individuals to do this. In particular, companies should be accountable for maintenance issues including fixing leaks to reduce overall water consumption, investing in infrastructure to improve the reuse of water, and helping inform the public about the benefits and cost savings of water meters. Similarly, participants felt the government could play a role in educating people about the need to reduce wasted water as well as regulating companies to ensure they fix leaks.

"If we see how much you use, you are more conscious, it would improve awareness and that could improve behaviour. But that is about personal cost rather than environment."
[Malton, younger]

62% of respondents agreed that people should be able to choose if they want a water meter in their home or not

Base: All - 2238 adults from across the UK (23rd – 26th March 2018)

"Until they can prove there's a lot of benefits then it should be a choice."
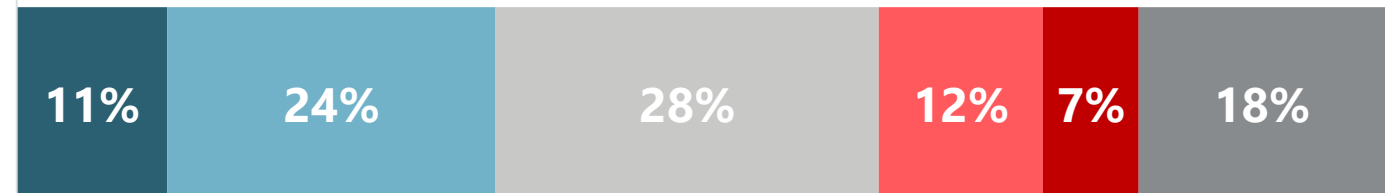[London, younger]

"It will be good in the end but question is how much can you do on your own – everybody has got to do it."
[Torquay, younger]

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Water metering

Q. To what extent do you agree or disagree with the following statements?

People with water meters pay less on their water bills than those who don't have a water meter
- Strongly agree: 11%
- Tend to agree: 24%
- Neither agree nor disagree: 28%
- Tend to disagree: 12%
- Strongly disagree: 7%
- Don't know: 18%

The installation of a water meter changes peoples' behaviour and reduces their use of water
- Strongly agree: 23%
- Tend to agree: 43%
- Neither agree nor disagree: 18%
- Tend to disagree: 6%
- Strongly disagree: 3%
- Don't know: 6%
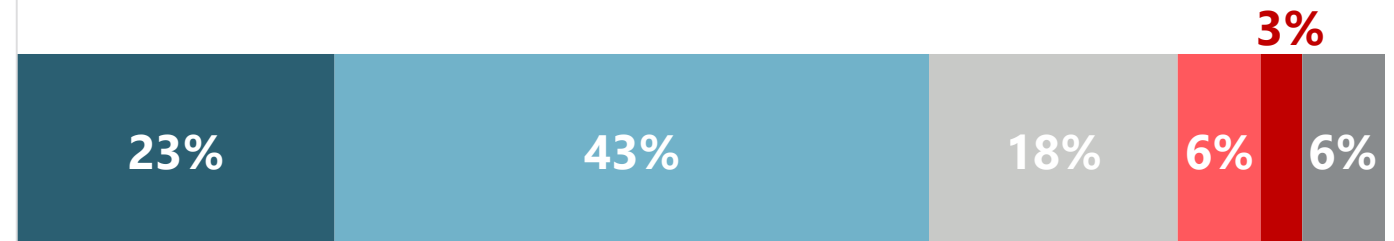
People should be able to choose if they want a water meter in their home or not
- Strongly agree: 30%
- Tend to agree: 32%
- Neither agree nor disagree: 17%
- Tend to disagree: 11%
- Strongly disagree: 7%
- Don't know: 3%
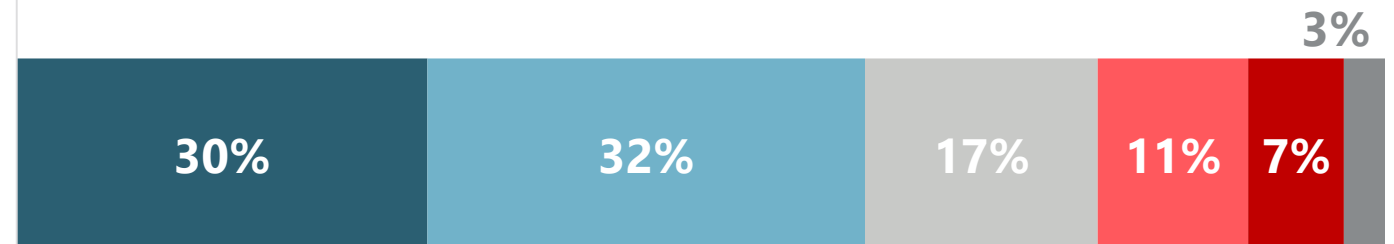
Legend: ■ Strongly agree ■ Tend to agree ■ Neither agree nor disagree ■ Tend to disagree ■ Strongly disagree ■ Don't know

Water – literature review findings

The public are broadly unaware of any pressures on the UK's water supplies. The Consumer Council for Water (CCW) found 69% of the public had not seen anything in the media about pressure on water supplies. Those who had, rela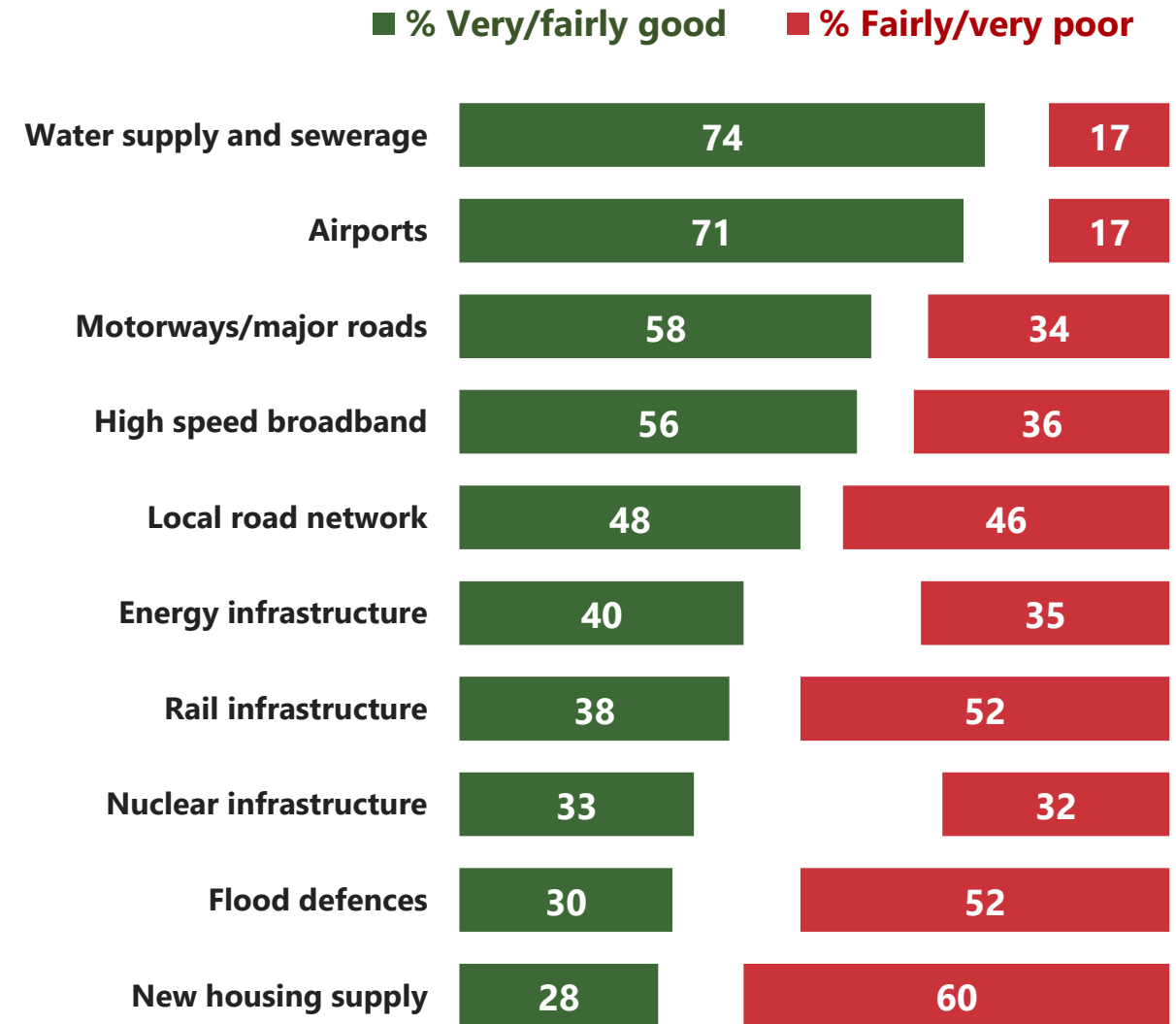ted this to droughts or hosepipe bans. Only 13% attributed this pressure to 'ageing infrastructure', with more people talking about population increases and weather problems (CCW, 2015). Ipsos MORI Global @dvisor also found that 74% of Britons believe the current quality of their water and sewerage supply is "very" or "fairly" good, receiving the highest rating of the types of infrastructure tested in the survey.

Qualitative research on attitudes to water has found that members of the public want a more resilient water system, and are strongly against waste - there was more support for fixing leaks than building reservoirs to prevent water shortages (Britain Thinks, 2017).

Water meters are gaining traction, with the primary motivation being cost benefits. One study revealed that a third (35%) of water bills payers who have a water meter actively asked for it to be fitted in their homes, with 80% doing so to try and reduce their water bills. Comparatively, only 6% of water bill payers installed a meter to use less water on environmental grounds (CCW, 2015).

The public are divided in their efforts to reduce personal water use. Further research from CCS found that just over half (53%) of the public have made a conscious effort to reduce their water usage. However, only 9% of water bill payers have reused water to reduce their usage, with only 12% saying they would be willing to do so. (CCW, 2015).

Q. These next questions are about different types of infrastructure. Please indicate how good or poor you rate the current quality of each one in Great Britain.

■ % Very/fairly good   ■ % Fairly/very poor

	% Very/fairly good	% Fairly/very poor
Water supply and sewerage	74	17
Airports	71	17
Motorways/major roads	58	34
High speed broadband	56	36
Local road network	48	46
Energy infrastructure	40	35
Rail infrastructure	38	52
Nuclear infrastructure	33	32
Flood defences	30	52
New housing supply	28	60

Source: Ipsos MORI, Global @dvisor

Base: 1,004 GB adults among 21,043 adults (online), Aug-Sept 2017
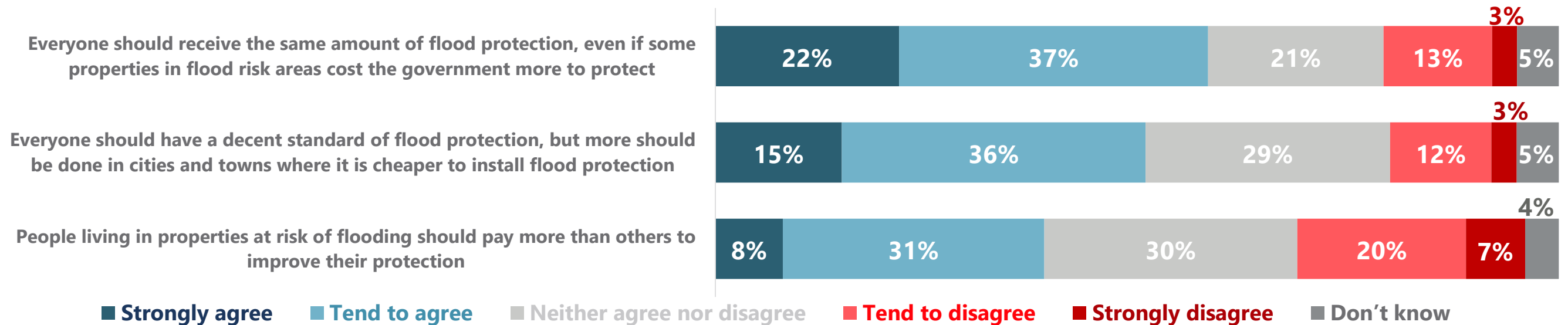
Flooding

Flooding

There were a wide range of views on current flood defences

- Drawing on knowledge of their local defences and awareness of significant flooding events across the UK, participants were sceptical about the level of current flood defences and felt *"sacrifices are made sometimes"* (Malton, younger) emphasising unequal levels of protection across the country. Lines were drawn between smaller, rural places receiving reduced support compared to larger, urban areas.

- The potential for climate change to impact the country's future needs for flooding defences was recognised, with participants highlighting the difficulties in predicting where future flooding events could occur. In this way, considering how to prevent flooding was regarded as an important aspect of the UK's flood protection, as well as defence infrastructure, such as thinking about how to tackle climate change or alterations to the natural environment. Participants strongly felt that homes should not be built on flood plains and that companies and the government had a responsibility to enforce this. This was regarded as an alternative to flood defences that would protect homes. If developers did build on flood plains, participants felt they should be responsible for paying for additional defences to protect the homes.

"It's difficult to sometimes explain to people that they have to be sacrificed for the benefit of other parts of the country."
[Sleaford, younger]

"If we go back a step and think is there anything we can do, why is flooding occurring more often and what can we do about it?"
[Malton, older]

Q. Now thinking about flooding and flood defences - that is barriers and systems to prevent flooding – to what extent do you agree or disagree with the following statements?

Statement	Strongly agree	Tend to agree	Neither agree nor disagree	Tend to disagree	Strongly disagree	Don't know
Everyone should receive the same amount of flood protection, even if some properties in flood risk areas cost the government more to protect	22%	37%	21%	13%	3%	5%
Everyone should have a decent standard of flood protection, but more should be done in cities and towns where it is cheaper to install flood protection	15%	36%	29%	12%	3%	5%
People living in properties at risk of flooding should pay more than others to improve their protection	8%	31%	30%	20%	7%	4%

■ **Strongly agree**   ■ **Tend to agree**   ■ **Neither agree nor disagree**   ■ **Tend to disagree**   ■ **Strongly disagree**   ■ **Don't know**

Base: All - 2238 adults from across the UK (23rd – 26th March 2018)

Flooding

There was support for an equal standard of flood defences across the UK

- The challenges in assessing future risk levels for flooding, along with the potential for significant damage to homes, led participants to emphasise the need for equal flooding protection across the country. 59% of survey respondents also agreed that everyone should receive the same amount of flood protection, even if some properties in flood risk areas cost the government more to protect (22% "strongly agree", 37% "tend to agree"), compared to 16% who disagreed (13% "tend to disagree", 3% "strongly disagree").

- Participants that accepted some variation in defences, felt that investment should be based on the need for protection from flooding or on vulnerable residents that may not be able to afford their own flood protection. In this way, areas at greater risk of flooding should receive more funding for defences. In contrast, 51% of survey respondents agreed that while everyone should have a decent standard of flood protection, more should be done in cities and towns where it is cheaper to install flood protection.

- Linked to this, there was disagreement as to whether living in a flood risk area was a choice for local residents. Those that saw this as a personal choice believed individuals should take greater responsibility for flood defences – either through paying more to fund defences or by purchasing higher insurance. This compares to 27% of respondents who did not believe people living in properties at risk of flooding should pay more to improve their protection. Participants living in risk-free areas also believed that they should not be expected to fund defences elsewhere. In contrast, the lack of affordable homes and the inability to predict where flooding may occur were factors perceived as limiting individuals' choices about where they live. For these reasons, participants supporting collective responsibility for funding flood defences felt individuals should not be penalised for the location of their home. Residents living in flood zones were already seen to pay more through the higher cost of house insurance.

"I think it's fair we all pay the same. You can't predict what is going to happen to a village, should they be paying more? It's out of your control."
[Torquay, younger]

59% of respondents agree everyone should receive the same amount of flood protection

Base: All - 2238 adults from across the UK (23rd – 26th March 2018)

"I did get a letter telling me where my taxes go and if I saw flood defences then I would be like 'but it doesn't flood here.' It is different to the fire service."
[Bristol, younger]

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Flooding – literature review findings

The public tend to attribute flooding to poor defensive infrastructure and would like to see more investment in defences.

A longitudinal study following the UK's 2013/14 flood events found the public are more likely to attribute fault to institutions and their mismanagement of river and land maintenance and inappropriate developments. This contrasted with the views of stakeholders who spoke about the impact of weather or climate change (University of Exeter 2016).

Participants in the study felt the primary solutions to flooding was infrastructure, dredging, upland management schemes. Desired infrastructure included sufficient working pumps, raised roads and flood barriers – 97% of respondents believed large scale flood defences were an important solution (University of Exeter 2016). However, alternative solutions got similar support: stronger regulation for building on flood plains, dredging, 'natural options' (University of Exeter, 2016).

Another study found that 57% of people would be willing to pay £10 a year for more flood protection (Britain Thinks 2017).

55% of people reported disruption to other essential services (gas, electricity, water) during the 2013/14 flooding and 72% experienced disruption to their travel illustrating the impact of flooding on other forms of infrastructure (University of Cardiff, 2015).

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Energy

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The future of heating

It is difficult to conceptualise alternative approaches to heating

- Participants found it difficult to formulate an opinion on the future of heating, and typically conceptualised their responses with reference to more familiar topics, such as climate change. Even if they did not think about it often, participants were generally aware of current methods of heating their homes, such as gas heating and electric heating. Gas was discussed as the cheapest and most widespread method. However as a finite source, its decline was seen as inevitable, probably to be replaced by electric or a newer technology. While participants discussed 'central heating', they were uncertain about how this operates in practice.

High-tech heating is welcomed but current understanding is limited

- Renewable and high-tech options for heating homes were supported, with participants comparing it to the shift away from coal heating in the past. Solar panels were seen as an alternative, which could heat homes and water. Participants were familiar with solar energy, whereas 'heat pumps' and 'geothermal heating' were harder to comprehend.

- Hydrogen heating was not widely known, although select participants were able to outline the process and understood the benefits of decarbonising their heating supply. Those who were less aware, linked it to hydrogen cars, which they viewed as a failure. Participants were overwhelmingly cautious, viewing hydrogen as a volatile gas, which was 'explosive' and compared to an 'atomic bomb'. Beyond this, they also questioned what the cost would be.

- While there was support for the principle of new heating technologies, participants questioned whether enough was being done to enforce a move to a more environmentally friendly way of heating homes, explaining that all new houses should be built with these heating supplies. Participants said they would be willing to temporarily move out of their home during an installation if it led to significant savings on their bills, but they questioned whether this would be necessary in practice. It was also felt that needing to move out of a property could exclude certain households from being able to upgrade to a new heating system such as those on low incomes who may not be able to afford to stay somewhere else or those that need to access local services such as families with children in schools close by.

"You tend to work with what you're given. If you buy a house that is gas-heated or electric, so unless you have enough money to change it, you don't think about it."
[Sleaford, younger]

"Hydrogen is a very combustible gas that is not the easiest to contain and use, there are gas leaks now that can be fatal. Heaven only knows what would happen if there was a hydrogen gas leak."
[Stoke, older]

"If it's a case of knocking walls down or redecorating, that might put people off. It depends on how much you're going to save, but if I was going to save so much, then I would have it done, definitely."
[Sleaford, younger]

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Energy efficient homes

Small-scale behavioural changes are widely made, encouraged by smart meters

- Participants discussed practical choices they have already made within their homes, such as using energy efficient lightbulbs or washing machines. They had also made behavioural changes, such as switching their lights off or using their washing machines at night-time, and they seemed proud to share these. While this was regarded as something all homes should strive towards, in reality, time and the pressures of daily life were seen as obstructions to more energy efficient behaviours.

- There was widespread awareness of smart meters, which participants felt were being increasingly adopted. It was believed that they make individuals aware of their energy usage, leading to reduced use and financial savings. But participants remained uncertain about having a meter installed in their home, fearing that it might increase costs if they use more electricity than their current fixed rate. Similarly, there was a sense that smart meters would not prevent households from using energy if they needed to.

Larger-scale physical changes are welcomed but prevented by cost

- Participants seemed most familiar with double glazing and insulation within walls and lofts. These were linked to making their homes warmer and bills cheaper. It was felt that these home adaptations were positive and all new houses should be built in this way. The main barrier to making changes was the expense of the adaptations, even if they would lead to long-term savings for households. The upfront cost of installing energy efficient fittings was a significant concern, with participants worried that those on lower incomes may be prevented from making their homes more energy efficient and thus facing higher energy bills in the future.

- Participants felt that government or supplier companies should pay for these changes, as it would be within their interest to reduce the amount of energy wasted. There was familiarity with previous government schemes which paid for insulation. Similar schemes were supported, provided the support was consistently applied to all homes.

"I'll stick towels on the line and then finish them off in the drier. They need finishing in the drier or they'll be hard and the kids will complain. I use common sense and use the line."
[Blackpool, older]

"Homes being built now should be lightyears ahead of homes which were built ten years ago. Homes should be being built much more efficient."
[Blackpool, younger]

"Most companies that supply will insulate the roofs. British gas has been doing it for years. I think the government was behind it at one point."
[London, younger]

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Electricity generation

The need for renewable energy was widely acknowledged, but there were concerns about meeting demand

- Participants believed that fossil fuels are currently the principle method of energy generation, but they recognised that this was a finite resource and not environmentally friendly, so likely to change. Renewable sources were seen as an alternative, with spontaneous mentions of wind, solar, tidal and biomass. This change to greater use of renewables was framed as inevitable, as it was seen as essential for safeguarding resources for future generations and to protect the environment. In fact, those living with at least one child are significantly more likely to agree that the UK should make greater use of onshore windfarms than those living with no children (34% versus 27%).

- In terms of renewable energy, participants spoke most comfortably about wind. They were accepting of wind turbines, favouring off-shore farms, which they reasoned were more effective than on-shore generation. However, only a quarter (24%) of survey respondents agreed that the UK should stop building on-shore windfarms, while participants were also accepting of how they look on the landscape, describing them as visually appealing as well as environmentally friendly. While there was discussion of 'Not In My Backyard' sentiment, this was qualified with the belief that it was a 'necessary evil'. This was supported by the nearly one third of respondents (29%) who disagree that local people should be able to prevent the building of onshore windfarms. Others spontaneously suggested they would be happy to have a turbine on their property.

- However, participants felt that renewables are not sufficiently widespread to produce enough energy to sustain demand, allowing concerns to arise about becoming dependent on other countries for our energy security. The reliability of renewables was also questioned including whether they could operate in unsuitable weather conditions. On a personal level, there were more practical considerations about domestics adaptions and whether they would be affordable or suitable for their houses.

The prospect of nuclear energy was met with widespread apprehension

- Participants were frightened by the prospect of nuclear energy, describing it as 'dangerous' and focusing on associated disasters, specifically Chernobyl. While discussion revolved around its negative connotations, such as nuclear waste or its impact on the population's health, participants' knowledge of how nuclear energy generation worked was limited. Beyond Chernobyl, participants found it hard to recollect other major incidents, with sentiment suggesting that it had a good record in the United Kingdom. It was felt that nuclear energy could be more reliable than renewable sources, and could also provide more jobs.

"We have no choice because that's the way it needs to go for the next generation we, have to rely on things that can be reused."
[Stoke, older]

"A lot of people don't like wind farms but I don't mind them. My mother's neighbour has a small one in the garden, maybe we all should."
[Sleaford, older]

"But with the spike in energy, like during the Coronation Street ads, it would be impossible for renewables to cover that."
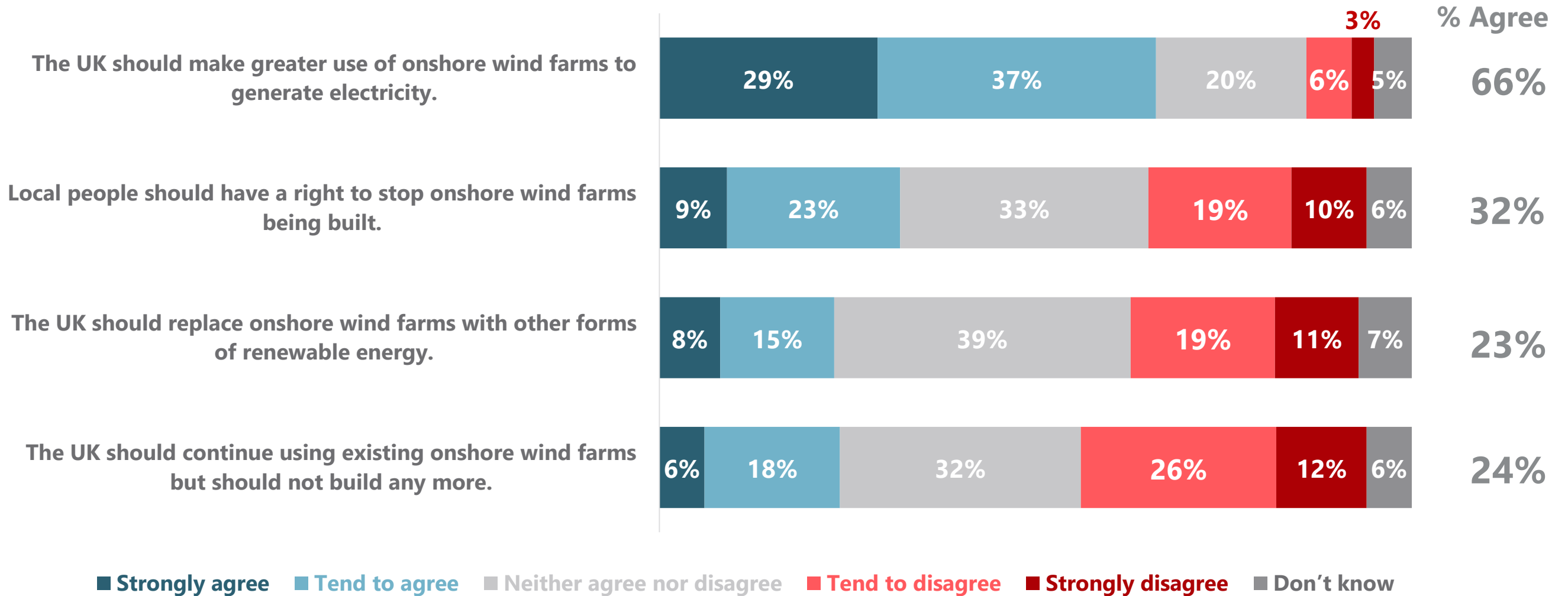[Stoke, younger]

"You hear bad things about nuclear, like it causing cancer or Chernobyl."
[Newcastle, older]

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Windfarms

% Agree

The UK should make greater use of onshore wind farms to generate electricity.
- Strongly agree: 29%
- Tend to agree: 37%
- Neither agree nor disagree: 20%
- Tend to disagree: 6%
- Strongly disagree: 3%
- Don't know: 5%
- **66%**

Local people should have a right to stop onshore wind farms being built.
- Strongly agree: 9%
- Tend to agree: 23%
- Neither agree nor disagree: 33%
- Tend to disagree: 19%
- Strongly disagree: 10%
- Don't know: 6%
- **32%**

The UK should replace onshore wind farms with other forms of renewable energy.
- Strongly agree: 8%
- Tend to agree: 15%
- Neither agree nor disagree: 39%
- Tend to disagree: 19%
- Strongly disagree: 11%
- Don't know: 7%
- **23%**

The UK should continue using existing onshore wind farms but should not build any more.
- Strongly agree: 6%
- Tend to agree: 18%
- Neither agree nor disagree: 32%
- Tend to disagree: 26%
- Strongly disagree: 12%
- Don't know: 6%
- **24%**

Legend: ■ Strongly agree ■ Tend to agree ■ Neither agree nor disagree ■ Tend to disagree ■ Strongly disagree ■ Don't know

Energy – literature review findings

Familiar technologies – renewable, nuclear, fossil fuels – have consistently retained their levels of public support. A quarterly tracker revealed that 82% of people express support for the use of renewable, while a third support nuclear (BEIS, 2017).

The majority of British homes use gas-fired boilers, and while newer heating technologies are relatively unknown, early adopters are generally positive about them. The Energy Saving Trust found that 80% of heat pump users were satisfied or very satisfied with the heating supplied through them (2013). Research conducted by Sciencewise (2016), also showed that the public were open to considering low-carbon heating technologies, with the main motivation being the potential for cheaper bills.
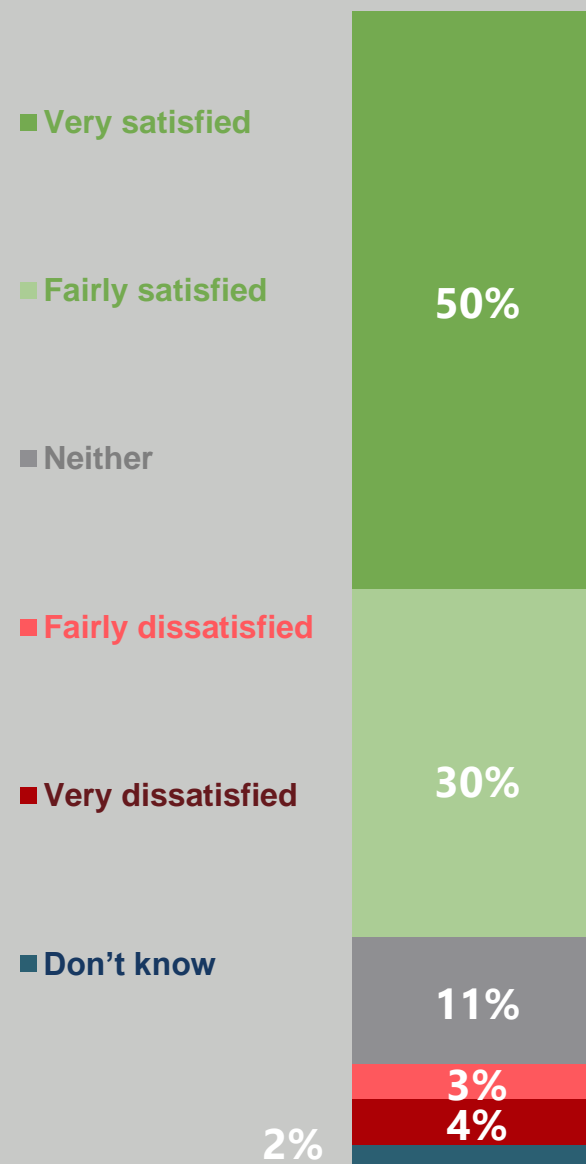
The public are open to improving their homes to make them more energy efficient. Britain Thinks (2017) have found that two thirds of the public (68%) are interested in using smart appliances. Research from Ipsos MORI (2017) has shown that while consumers are supportive of new technologies, specifically smart meters, this is not at any cost **– the financial benefits need to be made clear**. However, once installed, consumers are largely positive, with four-fifths (80%) saying they were satisfied.

Similarly, Ipsos MORI (2016) also indicated that nearly two-fifths (39%) would consider spending over a thousand pound to make their home more energy efficient. They identified awareness, motivation and affordability as key barriers to energy efficiency improvements. While a third of people were aware of cavity wall insulation (32%), only 22% knew about loft insulation.
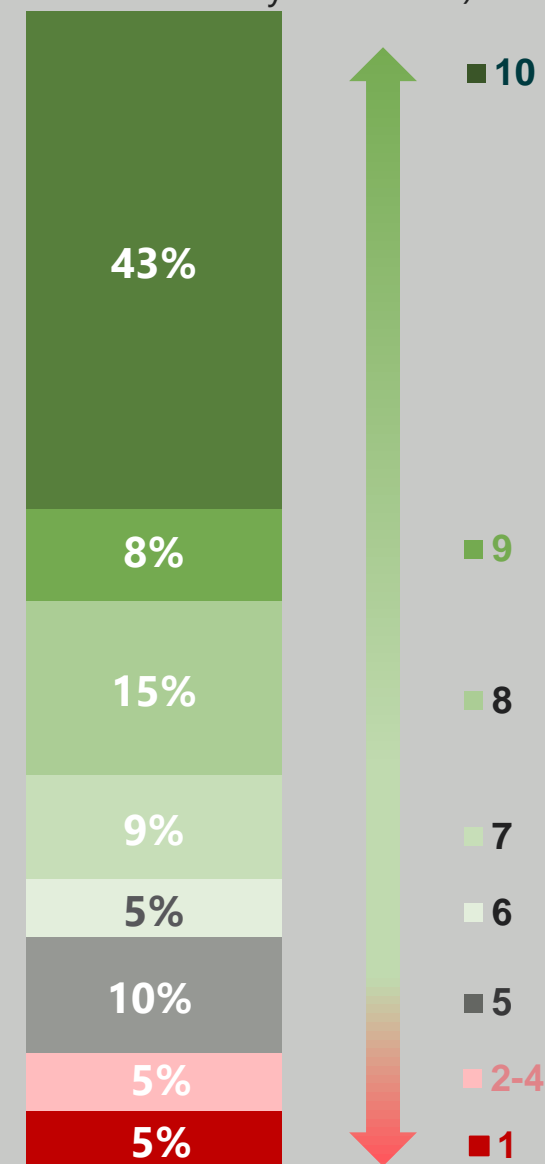
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Overall satisfaction with smart meters

- **Very satisfied**
- **Fairly satisfied**
- **Neither**
- **Fairly dissatisfied**
- **Very dissatisfied**
- **Don't know**

50%
30%
11%
3%
4%
2%

Likelihood to recommend a smart meter

(10 = definitely would recommend, 1 = definitely would not)

Value	%
10	43%
9	8%
8	15%
7	9%
6	5%
5	10%
2-4	5%
1	5%

Base: 2,015 Smart Meter Customers, Ipsos MORI, Smart Meter Customer Experience Survey

Transport
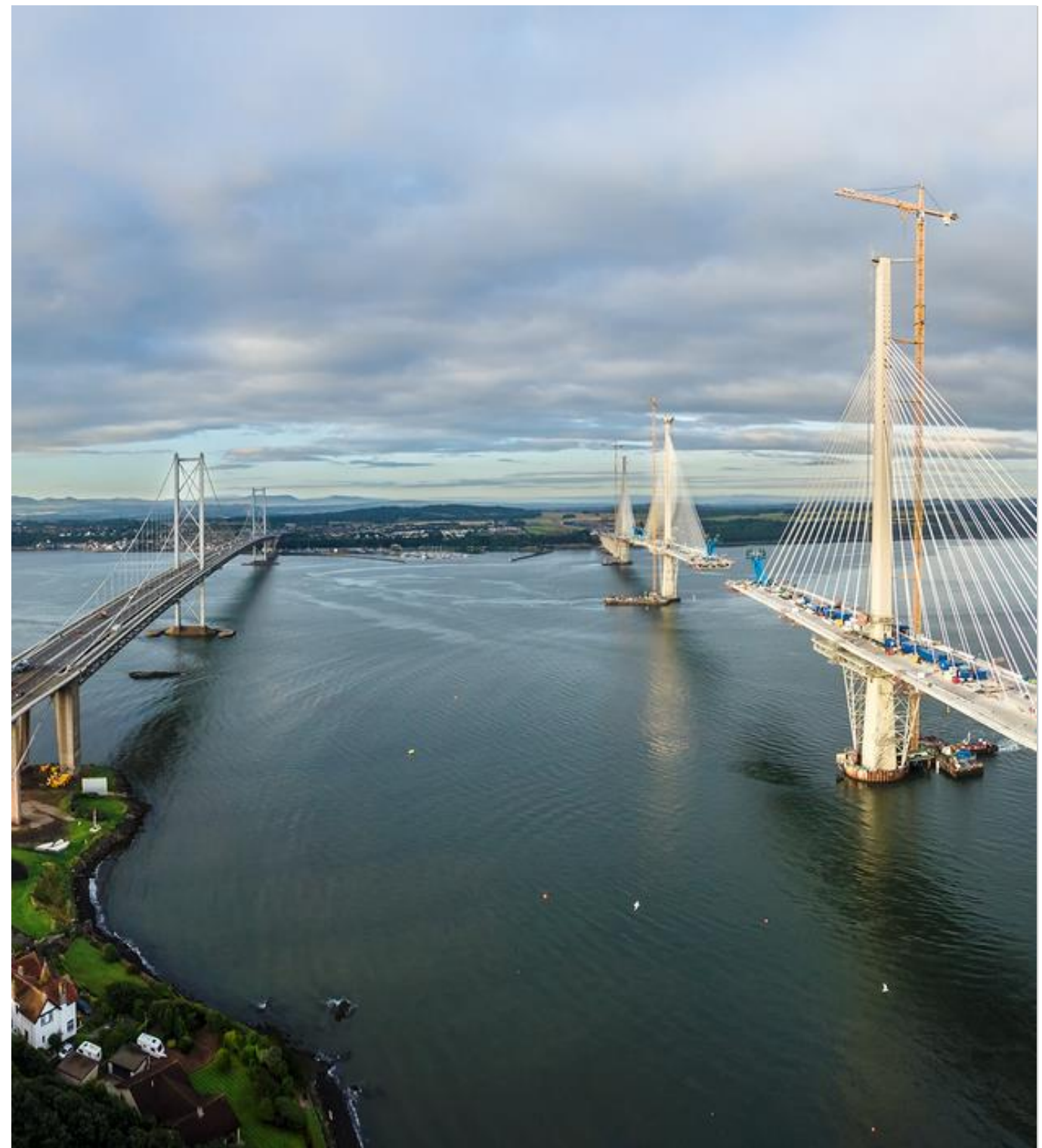
Public transport

There was widespread support for greater public transport options

- Participants supported public transport and expressed how they would be open to alternatives to driving their own car such as car sharing, park and ride, and environmentally friendly forms of transport. However, there was a palpable distinction between the existing public transport in London and other parts of the country, with participants describing the public transport in London as more extensive and better integrated, while people living outside London noted that their choices are more limited (fewer options and less frequent).

- Both Londoners and participants outside of London agreed that public transport services are expensive and they would use services more often if they were more efficient and cheaper. In particular, it was felt that there needs to be greater planning around routes and increased frequency of services to improve their reliability. The difficulties of giving up the comfort of a car and the pleasure of driving were cited by those more reticent to the idea of using public transport. It was acknowledged that greater education about the health and environmental benefits of reduced pollution could support people to give up their cars in favour of public transport.

- Participants in favour of reallocating road space for bus or tram routes argued that it might reduce traffic and could, potentially, encourage more people to use public transport options. Participants against the idea, were concerned about the space on the roads and how the practicalities for reducing traffic would work. There was a clear preference to build on the existing infrastructure, rather than building from new. In London, participants mentioned the idea of implementing car free zones in Central London, to reduce congestion and pollution.

"If you live outside of London it's not convenient. As Londoners, we are happy with public transport."
[London, older]

"I'd use it more, if it was more efficient. And cheaper!"
[Bristol, older]

"Maybe we need to build on what we have, rather than completely change the roads or build more roads."
[Newcastle, younger]

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Electric vehicles

There were questions about the range and reliability of electric vehicles

- Electric vehicles were associated with progress and a cleaner environment by those who supported them. While the benefits of moving away from petrol and diesel cars was recognised, participants had concerns about how long a single charge would last and how far they would be able to travel in an electric vehicle. These factors were seen to undermine the practicality of electric vehicles, particularly by those who rely on their car for work or to access services. Without greater reassurance that electric vehicles could be relied on for daily travel needs, participants were reluctant about their widespread implementation. The cost of electric vehicles was also regarded as a barrier preventing greater uptake. For these reasons, participants were more open to the idea of hybrids which were regarded as reducing the limitations around the charging time and battery life of electric vehicles.

- Participants expressed concern for where the energy is going to come from to supply the electric vehicles and how older cars and used batteries are going to be disposed of, considering the environmental impact of this. Participants reported particular concern about the initial cost of the car, if the price of the electricity bills for the individual would go up, and whether the Government would implement caps or other strategies to help the consumer.

Most would prefer to charge an electric vehicle at home

- Participants were generally in favour of self-charging, while driving cars (e.g. charging through the road network), as well as night charge with charging points in people's homes. These options combined with petrol station-type fast charging points and supermarkets with facilities for charging an electric car, were mentioned as the ideal scenario. At home charging was favoured by survey respondents, 72% of people would consider charging at their home. The survey reveals that these decisions were influenced by both tenure and social grade, with those owning their properties outright, significantly more likely to say that charging at home would be convenient than those renting from a local authority or housing association (66% versus 49%, 46%).

- More than half of respondents would also consider charging an electric vehicle in a car park (63%), at a supermarket (62%) or at work (52%). Londoners were significantly more likely to consider charging their car on the street than all other regions (54% versus 39% overall). Information about the location of these charging points should be made available to assist people with planning their trips in advance.

"I would like more information on them. How long they last for, how they have to recharge, where your nearest station is?"
[Stoke, younger]

"A good idea, but I do think it's more of a privilege thing – it should be easier to buy one."
[Newcastle, younger]

72% of respondents would consider charging an electric vehicle at home if they owned one

Base: All - 2238 adults from across the UK (23rd – 26th March 2018)
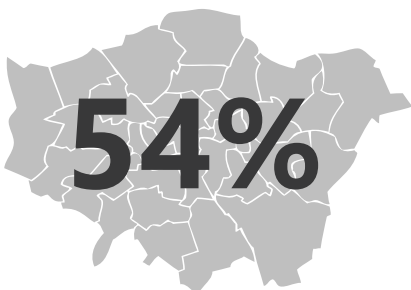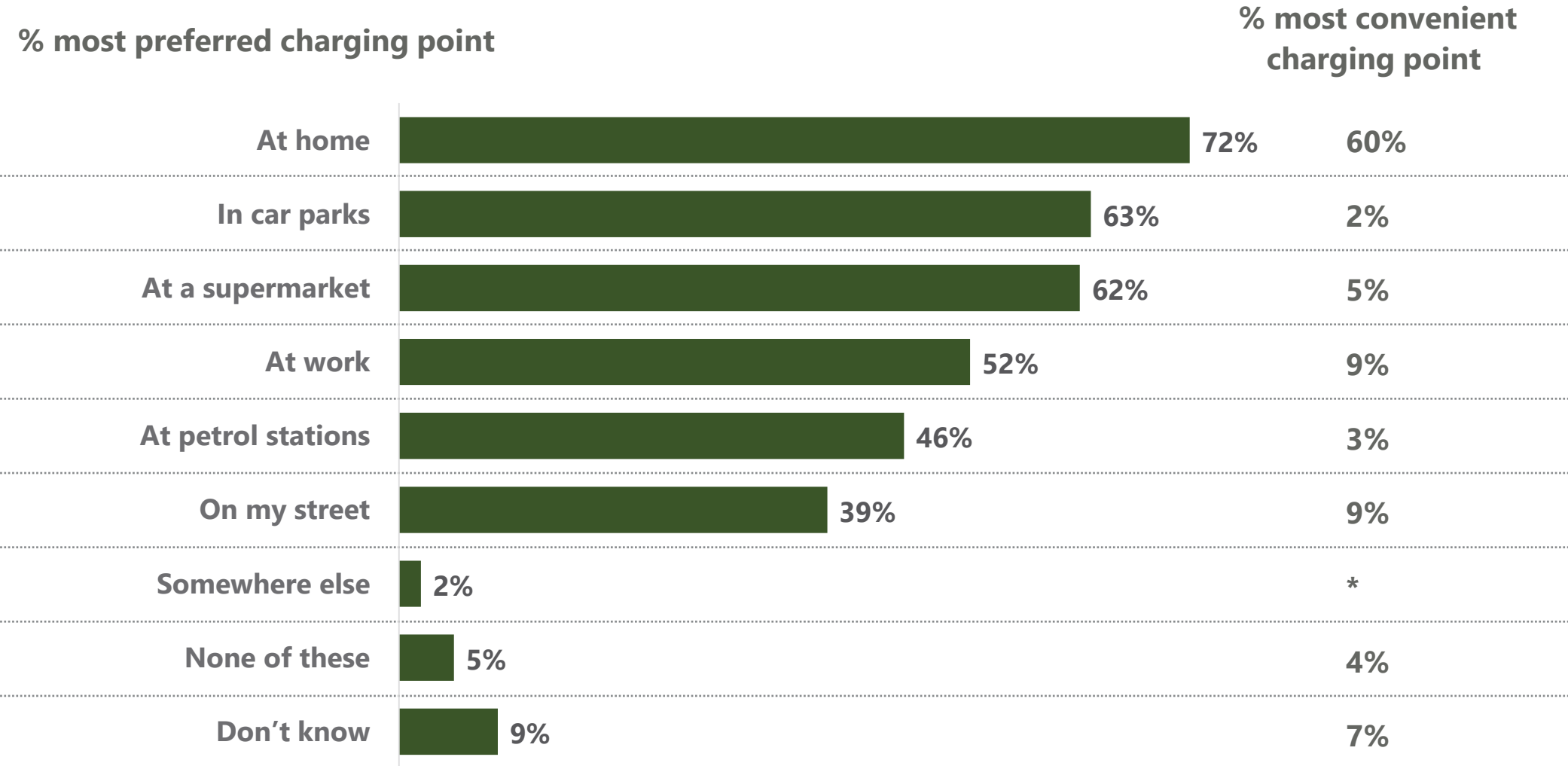
"I read about one that's on the market, that's duel electric and fuel so when you're driving with the fuel that's charging the electric battery so then you don't need electric. Everyone should be working on these hybrids until the rest of the research is done."
[Bristol, older]

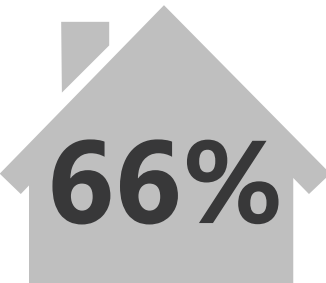**Ipsos MORI**
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Electric vehicles

Q. Regardless of whether or not you think you will ever have or use an electric vehicle, which of the following locations, if any, would you consider using to charge an electric vehicle?

Q. And which, if any, of these locations would be the most convenient for you?

% most preferred charging point

% most convenient charging point

Location	% most preferred	% most convenient
At home	72%	60%
In car parks	63%	2%
At a supermarket	62%	5%
At work	52%	9%
At petrol stations	46%	3%
On my street	39%	9%
Somewhere else	2%	*
None of these	5%	4%
Don't know	9%	7%

54% of Londoners said they would consider charging on the street

66% of those who own their property outright felt it would be most convenient to charge at home

Base: All - 2238 adults from across the UK (23rd – 26th March 2018)

Autonomous vehicles

There was significant concern about how autonomous vehicles would integrate with existing road use patterns

- There was widespread distrust of Autonomous Vehicles (AVs) and disbelief that they will become a major feature of UK driving. In particular, there was a wariness about the technology and ethics surrounding AVs as well as the potential implications of driverless cars. There were major concerns about:

    - **Protecting the safety of passengers** including security issues if a car was hacked allowing it to be controlled from elsewhere, as well as how the sensors or car would react and adapt to environmental factors (e.g. icy conditions, pot holes).

    - **Privacy of drivers,** as cars would have GPS incorporated in their design systems that would record locations and routes, and would have access to personal information.

    - **The legal accountability in the case of an accident**, including whether the car manufacturer or the owner of the car would be held accountable if things went wrong.

    - **The loss of jobs for drivers** and how a self-driven car takes away the pleasure of driving.

- Parallels were made between cruise control, auto-pilot and AVs, with participants agreeing that even though the technology is similar, the lack of control involved in an AV was regarded as a more frightening prospect. In contrast, participants in favour of AVs mentioned that they could eliminate human error and improve road safety, could reduce traffic and remove speeding fines. Participants reacted positively to the idea of being collected from anywhere at a desired time and recognised the benefits of AVs for people who are unable to drive.

- It was widely agreed that AVs should have a separate lane and it was mentioned that having a physical barrier between the lanes would make people feel more safe. However, participants questioned the practicality of having separate lanes and how it would work, as well as how much it would cost to build the infrastructure for them. Dividing AVs from other vehicles was also seen as creating inequality between those able to afford an AV and thus travel in a faster designated lane and those unable to afford the latest technology.

"I don't think they are safe. Who has ownership if there is a fault? Who is liable for it?"
[Newcastle, younger]

"Scary for me because if somebody has a car then they can do what they want without waiting. I can control my own car myself."
[Stoke, older]

"I'm not keen on the idea, it's a trust issue in technology. For example, paperless files are gone when the system goes down. Brilliant when it works but when it doesn't, what do you do?"
[Newcastle, older]

"In central London, lots of roads are already bus lane or some other lane. It sounds like a punishment for people in their own normal cars."
[London, younger]

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How to pay for transport infrastructure

There was scepticism about congestion charging outside London

- Participants outside London agreed that although a congestion charge might stop people from doing unnecessary journeys, they did not believe that it would work in their local area, mainly because of low levels of congestion as there are fewer people living in their area compared to London. Instead of a congestion charge, they prioritised the availability of public transport and good connections to serve the population in the area as alternatives for reducing reliance on cars. The concept of choice and fairness underlined the conversation as participants outside of central London felt they did not have much control over the availability of public transport or the need to travel to work during busy hours. This meant they had less choice over the way they travel. In consequence, participants felt it was not fair they had to pay for a congestion charge when they didn't have any alternative to move from one place to another.

- Londoners were split by the idea of a congestion charge. Those who agreed that they were happy to pay for the charge, described the benefits of less pollution in central areas. Those that were less happy paying for the congestion charge argued that there is no transparency on how the money is spent making it difficult to see the benefits of having the charge. There was agreement that the charge has not reduced the traffic in Central London. The importance of seeing how the money raised through a charge went directly towards the upkeep of roads was emphasised by participants. Toll roads were referred to favourably as they felt these roads provided greater convenience and quality so they were happy to pay.

And uncertainty about how changes to paying for roads and road use would work in practice

- While participants acknowledged that a charge based on distance travelled could encourage people to use public transport more, it was felt that it would penalise people who are required to travel long distances because of where they live or work with limited choice to take alternative transport options. However, in Torquay there was support for a distance travelled charge as a way of ensuring those using the roads paid for their upkeep. They described how the area received high numbers of visitors in the summer which damages the roads but only local people fund their upkeep.

"I don't think we have that much congestion. Our issues are more around outskirts. I live three miles from work and there is no public transport. I have to get into town then go back out, so for someone like me I'd be upset about that – you're giving me no other option but to pay this."
[London, younger]

"I'm split. You can just be born into the area, and it's not a choice. It's about fairness."
[Blackpool, younger]

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Transport – literature review findings

Concerns about charging electric vehicles are putting consumers off purchasing them. Studies show that only 5% of the public are thinking about buying an electric car or van (DfT 2016). Lower running costs (30%), lower initial costs (29%), extended battery range (27%) and greater availability of charging points (25%) were the most likely factors to influence drivers to purchase a pure electric vehicle (RAC 2017).
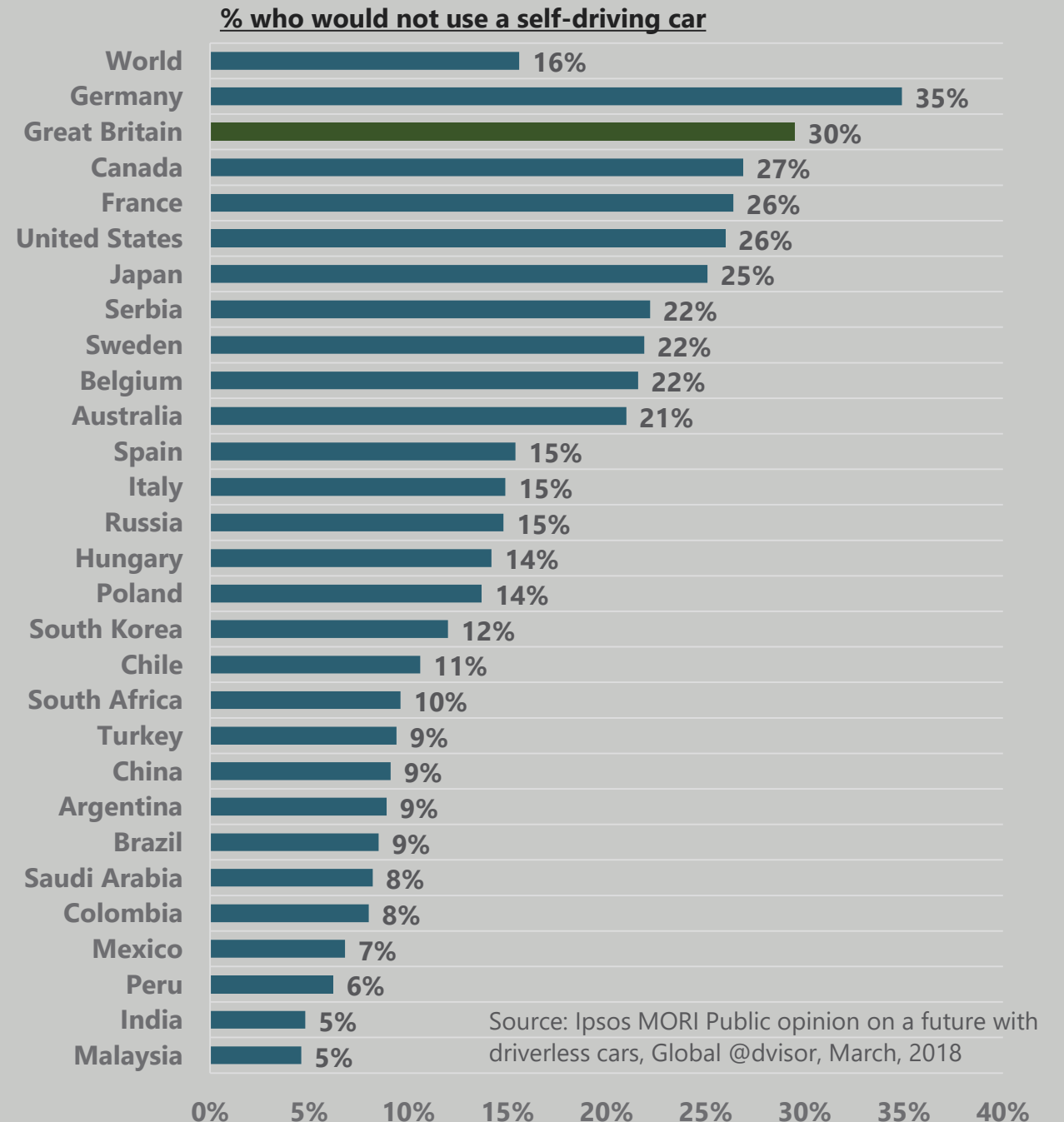
Britons are amongst the most resistant to the idea of driverless cars. A 2018 Ipsos MORI, Global @dvisor study found 30% of Britons would not use a self-driving car. An RAC Foundation study (2017) also found that while people agree driver assistance technologies have improved their overall driving experience (52%), concerns remain about these technologies taking too much control away from the driver (50%).

The cost of road pricing is off-putting for the public. A 2011 RAC study found the public was largely against road pricing due to concerns about cost (17%), needing more detail (13%), and feeling they pay too much tax already (12%). Participants felt they would be willing to pay tolls if there were equivalent reductions in existing taxes. There has been a shift by 4% (2016-2017) in motorist resistance to the idea of paying per mile to drive on certain roads (RAC 2017). There is also evidence that the public is becoming more accepting to the idea of in-car monitoring (only 33% opposing), and that drivers of environmentally friendly cars expect to pay less even though they're not willing to reduce their travelling for the sake of the environment (NatCen/DfT 2017).

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Developed economies are more resistant to driverless cars

% who would not use a self-driving car

Country	%
World	16%
Germany	35%
Great Britain	30%
Canada	27%
France	26%
United States	26%
Japan	25%
Serbia	22%
Sweden	22%
Belgium	22%
Australia	21%
Spain	15%
Italy	15%
Russia	15%
Hungary	14%
Poland	14%
South Korea	12%
Chile	11%
South Africa	10%
Turkey	9%
China	9%
Argentina	9%
Brazil	9%
Saudi Arabia	8%
Colombia	8%
Mexico	7%
Peru	6%
India	5%
Malaysia	5%

Source: Ipsos MORI Public opinion on a future with driverless cars, Global @dvisor, March, 2018

Conclusions

- **Responsibility needs to be shared**
  Individuals are prepared to do more, but only if government, manufacturers, private companies and other citizens also contribute. For example, there was widespread support for individuals increasing the amount of waste they recycle, while recognising that supermarkets and manufacturers also contribute through the type of packaging they use on products and the amount of food wasted before it is bought.

  E.g. recycling & food waste

- **Equality of access was a priority**
  Particularly where proposals required customers to pay more. More should be done to remove barriers for households on lower incomes to ensure they are able to support environmentally friendly behaviours and are not disadvantaged by the high cost of new technologies or adaptations. For example, there were concerns that separate lanes for autonomous vehicles could result in a "fast lane" that only those on higher incomes could afford, or that the high upfront cost of home adaptions could prevent households from making environmentally friendly changes and lose out on long-term cost savings.

  E.g. home adaptations

- **Demands for a basic standard of infrastructure**
  That individuals can then "top up" if needed. This should be the government's responsibility to ensure everyone has access to an equal standard of service. For example, participants felt broadband access was a necessary part of modern life, and therefore a basic standard should be available to everyone in the country regardless of cost or location.

  E.g. broadband access

- **Support for small, realistic changes**
  There was a preference for small-scale incremental changes to improve familiar forms of infrastructure that participants used on a regular basis. For example, participants felt easy improvements could be made to recycling processes that would result in significant benefits or that the UK could reduce the amount of water wasted by storing water more effectively (both within homes and at a national level).

  E.g. water storage options

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Technical report

- Quantitative research was conducted via a nationally representative online omnibus survey. Fieldwork was between 3 March to 26 March 2018. Each participant spent approximately seven minutes completing the survey.

- The survey comprised responses from n= 2,238 adults (18+), though on any filtered questions the base size can be lower. For questions with low base sizes, results should treated with appropriate caution. The data is based on all participants completing the survey unless otherwise stated.

- To ensure the results are nationally representative, they have been weighted by location, age, gender and social class. A breakdown of the sample profile is provide on the next page.

- Results are subject to statistical tolerances. Indicatively speaking, the margin of error for the survey is +/- 5 percentage points at the 95% confidence interval, though this assumes a perfect random sample.

- Where percentages do not sum to 100 this may be due to computer rounding, the exclusion of 'don't know' categories, or multiple answers. An asterisk (*) denotes any value of less than half a per cent, but greater than zero.

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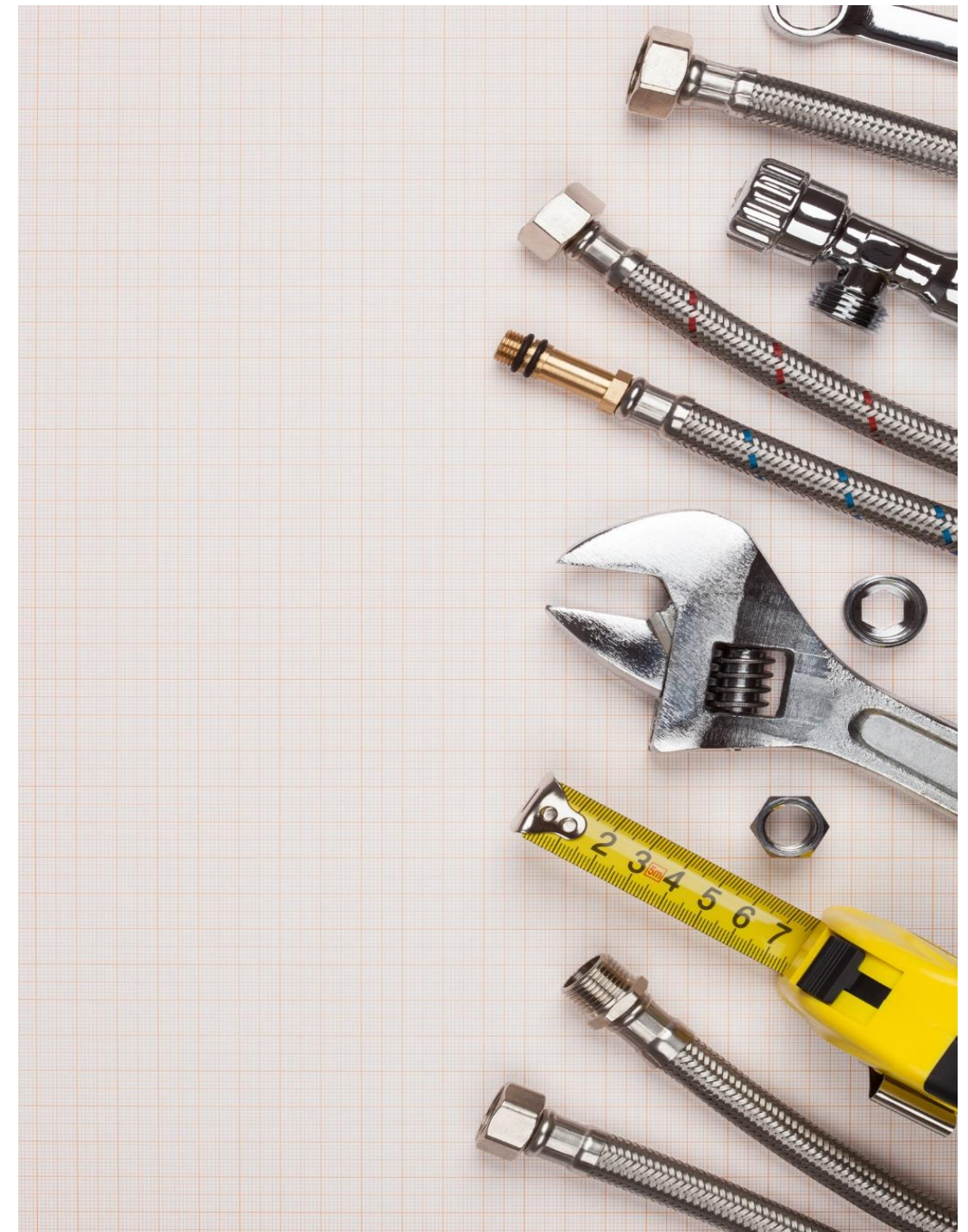
Technical report: Sample profile

		Unweighted		Weighted	
		Base	**%**	**Base**	**%**
Gender	Male	1095	49	1108	50
	Female	1143	51	1130	50
Age	Aged 16 - 34	753	34	758	34
	Aged 35 - 54	818	37	827	37
	Aged 55 – 75	667	29	653	29
Region	North East	92	4	94	4
	North West	248	11	250	11
	Yorkshire and The Humberside	189	8	196	9
	West Midlands	197	9	198	9
	East Midlands	163	7	165	7
	East of England	201	9	204	9
	South West	189	8	190	8
	South East	299	13	293	13
	Greater London	300	13	287	13
	Wales	109	5	109	5
	Scotland	191	9	185	8
	Northern Ireland	60	3	67	3
Social grade	AB	644	29	591	26
	C1	667	30	625	28
	C2	434	19	497	22
	DE	493	22	525	23

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