Citizens' Panel on climate adaptation in the UK

Summary for policymakers
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Name	Organisation		Point of contribution
Prof. Ed Hawkins	University of Reading	Learning Workshop 1	Introduction to climate change
Dr. Richard Millar	Climate Change Committee	Learning Workshop 1	The role of the Climate Change Committee, climate change mitigation and adaptation
Prof. Richard Betts	Met Office	Learning Workshop 2	Impacts of climate change in the UK
Dr. Kate Donovan	Edinburgh Climate Change Institute	Learning Workshop 2	Introduction to adaptation in the UK
Joshua Deru	Climate Change Committee	Learning Workshop 2, Workshop 5, Workshop 6	Adaptation options, funding and estimated investment requirements
Jessica Gwyther	Office for Budget Responsibility	Learning Workshop 2	Cost and saving of climate adaptation
Prof. Anna Mavrogianni	University College London	Workshop 3	Overheating in UK homes
Owen Bellamy	Climate Change Committee	Workshop 3	Adaptation measures to prevent overheating in homes
Dr. Sandra Bogelein	Climate Change Committee	Workshop 3, Workshop 5, Workshop 7	Overview of adaptation options and estimated investment requirements
Dr. Mike Morecroft	Natural England	Workshop 3	Climate change impacts on nature and adaptation options
Kit England	Paul Watkiss Associates	Workshop 3	Nature-based solutions
Ann Carruthers	Leicestershire County Council *	Workshop 4	Climate change impacts on roads and adaptation options
Rachael Everard	Rail Safety and Standards Board	Workshop 4	Climate change impacts on rail and adaptation options
Ben Lukey	Environment Agency	Workshop 5	Flooding of UK homes and adaptation options
Jonathan Kassian	Flood Re	Workshop 5	Flood insurance
Dr. Emily Wallace	Met Office, University of Strathclyde	Workshop 6	Climate change impacts on the supply of water and energy
Rachael Stellar	Climate Change Committee	Workshop 6	Adaptation options for water and energy

- Ann Carruthers also represents the Association of Directors of Environment, Economy, Planning & Transport, but presented to the panel through her role at Leicestershire County Council.

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About this report

This report presents a summary of findings from the Citizens' Panel on climate adaptation in the UK. Detailed findings can be found in the main report, which has been published here.

1. What happened and why?

In January 2025, the Climate Change Committee (CCC) commissioned Ipsos UK to deliver a Citizens' Panel on climate adaptation in the UK. The Citizens' Panel was supported by UK Research and Innovation's (UKRI) Sciencewise programme, which helps to ensure policy and research is informed by the views and aspirations of the public.

The panel consisted of 30 panel members who were broadly reflective of the UK public and balanced for gender, age, income, ethnicity, disability, where panel members lived (urban/rural), climate concern and political views. Most panel members (22) were recruited from Greater Manchester; 8 were recruited from Scotland, Wales, and Northern Ireland. Workshops took place between September – October 2025, and focused on two questions:

- Which of the impacts of climate change are you most concerned about?
- What do you think should be done to adapt to these impacts?

Findings from the Citizens' Panel will inform the CCC's recommendations and advice to the UK Government and Devolved Administrations by feeding into the CCC's Well-Adapted UK Report (2026), which will provide policy relevant evidence on how best to address the most urgent climate change risks in the UK.

The panel considered the following climate change impacts and the adaptation options that are associated with them:

Overheating in UK homes during periods of hot weather and associated impacts on health and productivity.

Impacts of climate change on nature in the UK and the use of nature for climate change adaptation (nature-based solutions).

Impact of climate change on UK transport, considering disruptions for both the road and rail system.

Flooding of UK homes due to heavy rain (river and surface flooding), and how homes may be insured in the future.

Impact of climate change on energy and water supply for households (outages or shortages) in the UK.

Panel members were also introduced to adaptation funding, the estimated investment costs required to reduce different impacts, and the cost associated with inaction.

Panel members' geographic locations likely influenced their views on different climate impacts throughout these workshops.

2. Key themes emerging across the workshops

Panel members concerns about climate change increased markedly during the learning workshops. Many were surprised by the speed, scale, and irreversibility of climate impacts in the UK. Learning more about these led to increased concern about climate change across the panel.
Panel members viewed adaptation as important but repeatedly stressed it should not displace mitigation efforts. While accepting that some climate change impacts are now unavoidable, they wanted to see effective mitigation action to prevent further negative consequences.
Panel members wanted government investment in adaptation to start now and be done 'properly'. They prioritised proactive, durable measures (over reactive fixes) - even if they cost more upfront – to support long-term resilience.
Panel members wanted a more robust and resilient UK with infrastructure that operates more effectively than at present. When reflecting on a well-adapted UK, they frequently emphasised the need for stronger infrastructure, which maintains or slightly reduces current levels of harm and disruption through targeted investment, despite worsening future climate risks.
Panel members wanted government support to prioritise the most vulnerable and argued that those with the financial ability should take greater personal responsibility. Vulnerable households should receive grants for property-based measures and be prioritised for support during disruptions. Those who could afford it should install property-based adaptations and prepare for potential power outages or water shortages.
Panel members favoured nature-based solutions because of their co-benefits, such as biodiversity, aesthetics and recreational use. As workshops progressed, they also wanted to ensure that these solutions are effective and properly maintained.
Panel members' lived experience and perceived risk strongly influenced their concerns about climate impacts. Flooding of homes emerged as the top concern, likely reflecting the geographic composition of the panel, with most members living in areas at less risk of overheating than other UK regions.
Recognising some changes were inevitable, panel members felt resources should be focused on where they will have most impact. They preferred protecting species, habitats, and places that could be sustained in the long term and using managed approaches where this wasn't possible, such as supporting relocation from areas at risk of coastal erosion.
Panel members wanted to see a UK better adapted to the impacts of climate change but were consistently concerned about the financial cost for citizens. Panel members often agreed that contributing more via taxes or bills was unfeasible for many people in the UK. By the final workshop, this may have reduced some panel members' willingness to invest in adaptation measures.
Panel members' concerns about affordability underlined the importance of transparency and accountability in adaptation funding. They were frequently distrustful of government spending – often citing examples of inefficiency and intransparency. This led panel members to call for publicly funded adaptation spending to be transparent, accountable, and, where possible, ring-fenced.
Panel members felt educating the public is vital. They wanted their friends and family to have access to the same information that had been provided to them in the workshops. This was driven by their own limited knowledge about the climate impacts and adaptation options before the panel.

2. Key messages from panel members for policy makers

In the final workshop, panel members reflected on key messages from their discussions for policy makers. The following messages were named most frequently by panel members.

Adaptation investment and actions should be transparent and accountable.

Throughout the workshops, panel members consistently cited this as essential to build public trust and willingness to contribute to the investment needed for adaptation. This was often tied to avoiding wasteful spending and ensuring that investment goes where it is intended. Panel members saw regulation as the key driver for this, particularly to ensure private companies met their responsibilities.

Panel members felt they did not know much about the impacts of climate change and adaptation measures to address them before attending the workshops – and felt that their friends and families would have a similar level of understanding. They wanted to see public awareness raised about the 'locked in' impacts and the need to invest in climate adaptation.

Citizens should be educated on the impacts of climate change.

Adaptation needs to start now and be long-term.

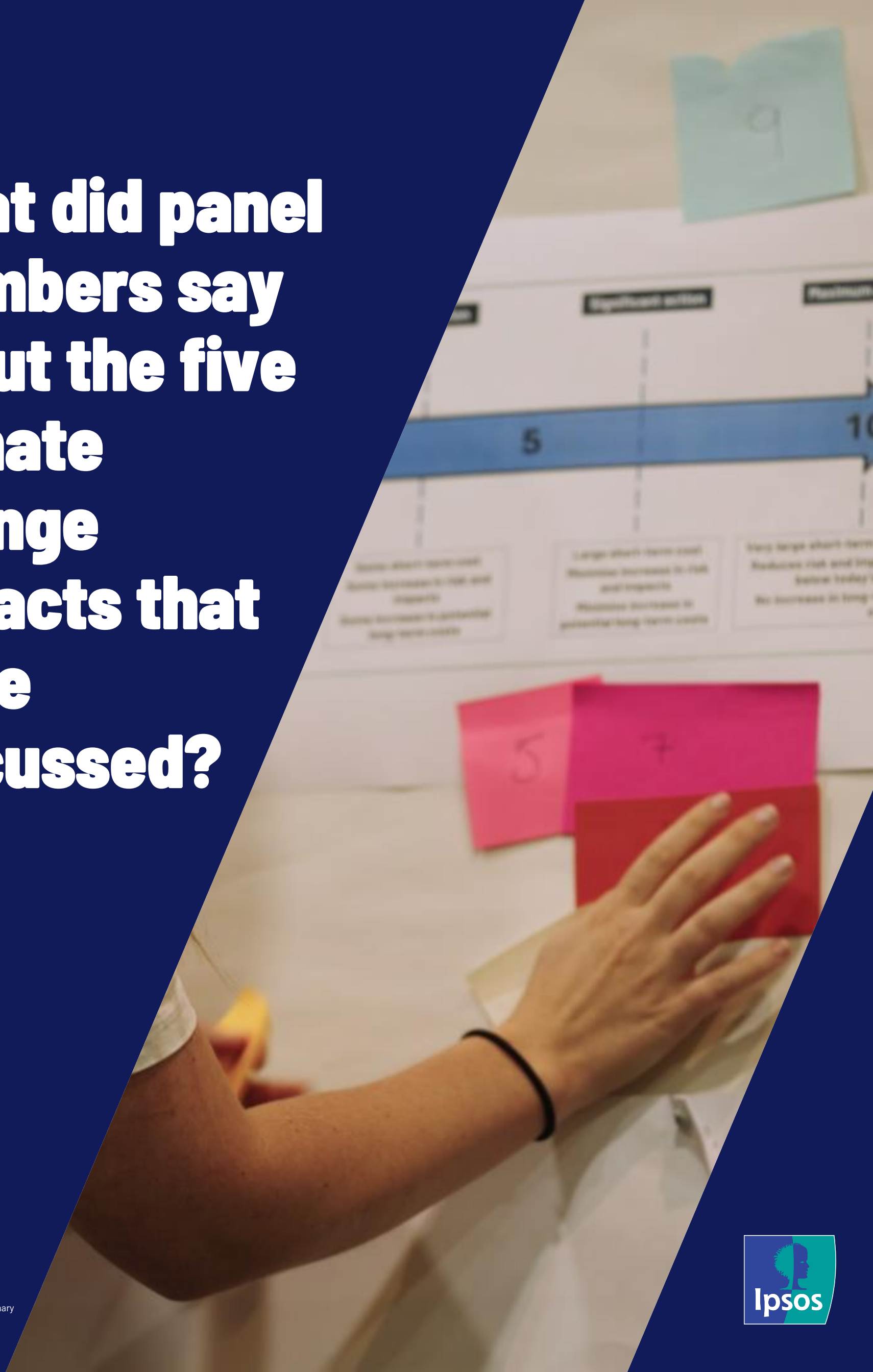
Panel members thought adaptation should be a long-term investment, focusing on longevity, effectiveness, and value for money. They suggested that adaptation measures should be a legal requirement – taking it away from party politics and election cycles.

> If people knew the cost of measures now in comparison to the cost of ongoing repairs, people might get more on board."- *Workshop 7, panel member from Greater Manchester*

> I think education is important [...]. When we started this there were quite a few people who were quite surprised at what we were talking about [...]. Many people really don't believe this is happening." ."– *Workshop 7, panel member from Greater Manchester*

> If we don't know what we actually spend our money on, then we're not going to have confidence in anything that's being done." - *Workshop 7, panel member from Greater Manchester*

What did panel members say about the five climate change impacts that were discussed?



3. Overheating in homes

What did we discuss?

Professor Anna Mavrogianni (University College London) introduced overheating in UK homes, including the current extent, future risks, and the impacts on different groups, including heat-related mortality.

Owen Bellamy (CCC) then introduced panel members to a range of adaptation measures that can be installed in homes (e.g., shutters or air conditioning) or applied to surrounding areas (e.g., trees, green spaces, or shading canopies). The presentation included information on the effectiveness of different solutions and their associated costs.

Panel members also received information on estimated investment costs to support lower income households with the uptake of some of these measures.

Below is a summary of the impacts and adaptation options that were presented to panel: members:

Impacts of climate change on overheating of homes

- 90% of existing houses will face overheating in future, if nothing is done to make them cooler.
- Cities will face worse overheating
- Very young children, pregnant and older people and those suffering from ill health will be more sensitive to overheating.
- Flats, mid-terraced houses, buildings with poor ventilation and buildings with S and W-facing windows will be more likely to overheat

Home-based adaptations

- Ceiling fans
- Air conditioning
- Shutters / internal blinds / curtains
- Home insulation
- Heat-reflective windows / films
- Green walls and roofs
- Solar-reflective wall-coating

Communal adaptations

- Street shading
- Increasing tree cover
- Cool pavements
- Green and blue infrastructure

3. Overheating in homes

The majority of panel members had not experienced overheating in homes, with many attributing this to where they live. Many were surprised to learn it is an increasing problem in the UK. Typically, they associated overheating with other countries, citing experiences abroad or news stories. A small number had experienced overheating in homes in the UK.

Panel members were less concerned about overheating in their own homes than about its impact on vulnerable people and other areas in the UK. Most felt that overheating in homes only lasted a few days every year, and that it is possible to prepare for it. Often, they highlighted examples of hotter countries coping with more frequent extreme heat. Concern was higher for vulnerable groups, including those on lower income, older adults, newborns, and those with heat-sensitive health conditions.

Panel members felt that the government should provide targeted financial support to households most vulnerable to heat-related impacts. Most agreed that some form of government support was needed but wanted this to be focused on property-level measures and to be targeted to keep taxpayers' costs low. They wanted support to focus on those who were both, vulnerable to overheating or in areas particularly at risk of overheating and on a low income.

Panel members felt that households had a responsibility to implement small-scale home adaptation measures where possible. They believed households who could afford to do so had a responsibility to install small-scale, low-cost home improvements.

When considering property-based adaptations, panel members valued low-cost, easily installed options, such as ceiling fans and dark curtains, or those with co-benefits, such as home insulation. Despite higher costs, the dual benefit of home insulation (warm in winter, cool in summer) appealed to many. Panel members' reactions to air conditioning were mixed. While many saw it as an easy cooling solution, some raised concerns about electricity costs and potential health implications.

Community-level measures were also seen positively, especially when considering co-benefits. Panel members were particularly positive about increasing the amount of green and blue spaces in urban areas to help with overheating and improving access to nature. Despite this support, they were conscious of the costs of maintenance and practical considerations (e.g. space required) for community-level measures.

3. Overheating in homes

Collectively, panel members saw adapting to overheating in homes as **less of a priority for government investment**, compared to other impacts of climate change.

Panel members were overall less concerned about overheating in homes, compared to other climate impacts, but did not want it to be disregarded as an issue. Panel members typically saw flooding of homes and transport as more direct, tangible impacts on people, but recognised that overheating in homes would likely become more severe in future.

Panel members still wanted government to direct some investment for overheating in homes, targeted to support vulnerable people on low income. They recognised that overheating would likely become more significant in future and required some funding now to support preparing for this.

“Internal blinds and curtains are quite a doable thing; it is accessible to everyone. Not for a select few, a lot of people will be able to afford that.” - *Workshop 3, panel member from Greater Manchester*

“We need plans for grants for people who don’t have a lot of money to make these changes.” – *Workshop 3, panel member from Northern Ireland*

“It [green space] is good for the climate and the community. Parks bring community back. The social side, especially mental health, is powerful.” - *Workshop 3, panel member from Wales*

4. Nature

What did we discuss?

Mike Morecroft (Natural England) introduced the panel to the impacts of climate change on nature in the UK and ways people can support nature in adapting to these impacts.

Panel members also received information about the estimated investment cost to increase nature resilience in the UK.

Kit England (Paul Watkiss Associates) then gave an overview of the concept of nature-based solutions, associated benefits and complexities, and examples of nature-based adaptation projects.

Below is a summary of the impacts of climate change on nature and adaptation options that were presented to panel:

Impacts of climate change on nature

- Heat and droughts reduce river flows and threaten fish, insects and river health.
- Drought and floods damage soil and harm animals, plants and agriculture.
- Changes in weather put pollinators at risk and could reduce crops and food supply.
- Warming seas lead to changing marine life.
- Milder climate helps species thrive, including invasive species and pests.
- Coastal erosion threatens coastal habitats.

Adaptation approaches

- **Resist**: actively protecting nature against climate impacts to keep it in its current state. Includes protecting and expanding nature, restoring natural processes, targeted actions in areas of risk.
- **Accept**: allowing nature to change and adapt to new climate conditions.
- **Direct**: proactively guiding how nature changes and adapts towards a more resilient future state.

Nature-based solutions

- Using nature to prepare for climate change impacts, e.g. planting trees or providing more green spaces to reduce overheating or prevent flooding.
- They can address multiple outcomes at once – e.g. reducing risk of flooding and overheating, enhancing biodiversity and providing leisure space.
- Some complexities – e.g., may take longer to become effective, require more space.

Nature-based solutions are actions to protect, sustainably manage, and restore natural and modified ecosystems that also address societal challenges e.g., planting trees to reduce flood risk or green and blue spaces in cities to reduce overheating.

4. Nature

Most panel members recalled observing or experiencing a decline in the visibility and diversity of nature in their lifetimes and were concerned by this. They highlighted the reduced numbers of mammals, birds and insects – particularly bees – as visible indicators of nature's decline. They expressed sadness that future generations would not have access to the same nature they had known.

Most panel members were concerned about the impact of climate change on nature in the UK, particularly how these changes would negatively affect people. Panel members were especially worried about negative impacts on agriculture and food production and potentially increasing food prices.

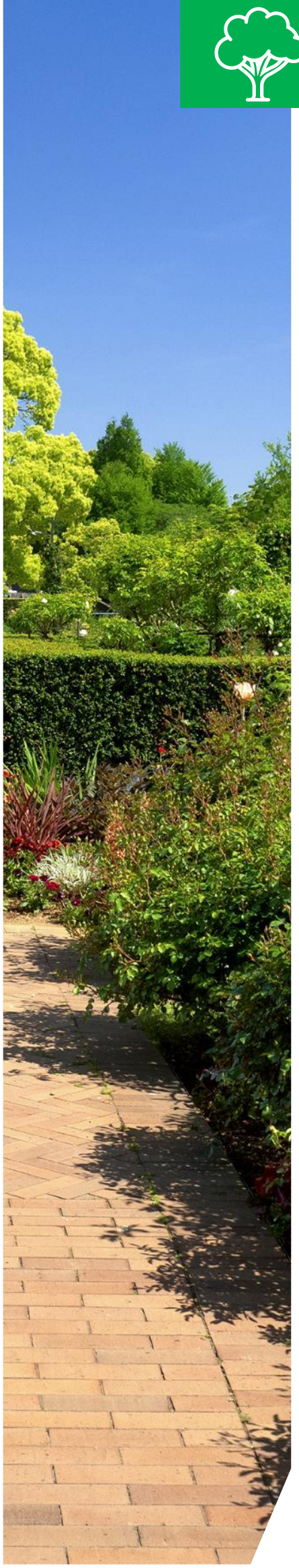
The minority of panel members who were less concerned about climate change impacts on nature had either not experienced changes or believed nature could adapt itself. Some of these less-concerned believed species could adapt to future conditions, but others on the panel argued that the speed and scale of change would not allow species time to adapt.

While most felt that nature had intrinsic value, panel members agreed they wanted to prioritise adaptation options for nature which would benefit people the most. For example, protecting pollinators to ensure food production. Whilst recognising nature as an interconnected system where losses have wider impacts, they maintained that adaptation should focus on reducing impacts on people.

Panel members overall agreed that we should accept some changes are inevitable, and we should not try to 'resist' or prevent them. They felt that investing in preventing inevitable losses would waste resources that could be better spent on more impactful adaptation to protect nature.

Panel members preferred nature-based solutions to other adaptation measures. They agreed the UK should prioritise proven and effective adaptation options that work within nature. For example, planting trees along riverbanks was often seen as preferable to flood defences.

Most panel members were willing to contribute financially to protect nature, but wanted public money spent transparently and on effective solutions. They wanted cost-effective investment directed towards reliable measures and favoured nature-based solutions that address multiple hazards (flooding and overheating) rather than having a single impact. Some wanted to see private and charity sectors to help fund or deliver nature-based solutions.

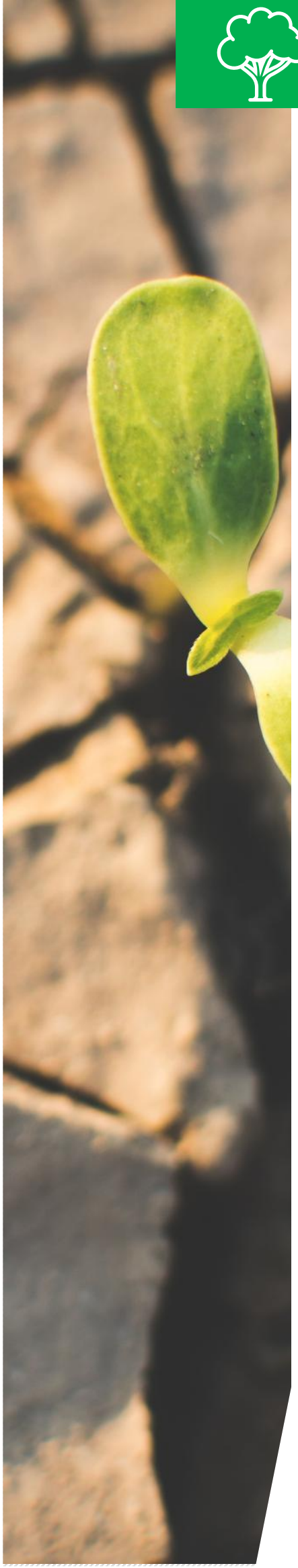


4. Nature

Most panel members were **willing to contribute financially to protect nature**, but wanted public money spent transparently and on effective solutions which could help people.

Panel members were generally less concerned about climate change impacts on nature compared to other impacts but did not want nature forgotten. They expressed the highest level of concern about flooding of homes and climate change impacts on transport – citing severe, direct and tangible impacts on people requiring immediate adaptation. In comparison, most panel members did not see investment in adapting nature as a top priority.

Investing in nature itself was typically not the top priority, but nature-based solutions for other impacts were viewed positively. Panel members appreciated that nature-based solutions could offer co-benefits that would help address other climate impacts. They also felt that without investment in nature, challenges in other areas would likely worsen.



“When I was a kid, we had lavender bushes outside our house, and there were hundreds of bees all summer. Now, I have similar bushes, rose bushes, and I barely see one.” – *Workshop 3, panel member from Wales*

“It’s the impact on human life that we’re trying to skew towards rather than just looking after the whole ecosystem of plants and the birds and the bees, whilst not neglecting their need.” – *Workshop 7, panel member from Greater Manchester*

“If we can get nature back to how it should be, then it would take a lot of our problems away.” – *Workshop 7, panel member from Greater Manchester*

5. Transport

What did we discuss?

Ann Carruthers (Leicester County Council) presented on the current and future impacts of climate change on the road transport system, with Rachael Everard (RSSB) presenting on rail. This included flooding, landslides, and the impact of extreme heat. Ann Carruthers and Rachael Everard then presented adaptation options for road and rail networks. Panel members learned that despite available adaptation options, both systems will likely experience greater disruptions in future.

Panel members also received information on estimated investment needed to adapt road and rail systems. They learned that road network adaptation will likely cost more than rail adaptation, though concrete road cost estimates are not yet available.

Below is a summary of the impacts of climate change on transport and adaptation options presented to panel:

Impacts of climate change on transport

- Flooded roads and rails
- Blocked roads and rail through landslides and fallen trees
- Buckled tracks and cracked or melting roads from overheating
- Inability to get to work, buy food and supplies and access essential services
- Disruption to emergency services
- Community isolation – bigger issue in rural areas

Road adaptations

- Vegetation and trees near roads for shading and to prevent flooding
- Flood defences
- Improved road water drainage
- Permeable pavements
- Heat resistant materials
- Reflective material to keep roads cool
- Dusting roads to prevent the road surface from melting

Rail adaptations

- Flood and landslip defences
- Drainage improvements
- Painting tracks white to keep them cool
- Targeted vegetation management (for cooling or cutting back trees near lines)
- Slope and earthwork stabilisation
- Air conditioning on trains and stations
- Speed restrictions during extreme weather
- Extreme weather action teams

5. Transport

Panel members could easily relate to the impacts of climate change on transport through past experiences of disruption.

Panel members expressed a high level of concern about the impacts of climate change on transport. They felt that transport disruptions would impact everyone and all areas of life but were particularly concerned about vulnerable people and those unable to work flexibly or from home.

Panel members expressed frustration over the badly maintained transport system and the existing repair backlog. They were concerned that this would only get worse as climate impacts became worse.

Panel members wanted transport adaptation to be well-funded and done properly rather than through short-term fixes, even at higher initial cost. Most supported significant upfront investment to break the cycle of ongoing repairs. They also supported research where good solutions do not currently exist, with investment prioritised for the highest-risk routes and regions.

Panel members accepted that transport adaptation would lead to some increased costs for them, but worried about adaptation spending being poorly managed or wasteful. Panel members were willing to accept some increased cost to households to fund transport adaptations but wanted transparency and accountability for how this was spent.

Panel members were split on whether transport adaptation costs should be borne by service users or shared collectively. Some wanted services users to contribute directly (e.g. through taxes applied to car users, or increased rail prices). Others thought costs should be shared collectively since all citizens benefit from roads and rail through freight, deliveries and emergency services.

Panel members wanted to see more financial contribution to adaptation from private companies that operate and/or use the transport network.

Panel members generally prioritised adapting the road network over rail, whilst recognising the need for investment in both. They thought disruption to roads would have more severe impacts on people, businesses, services, and the economy and highlighted that emergency services use the roads.

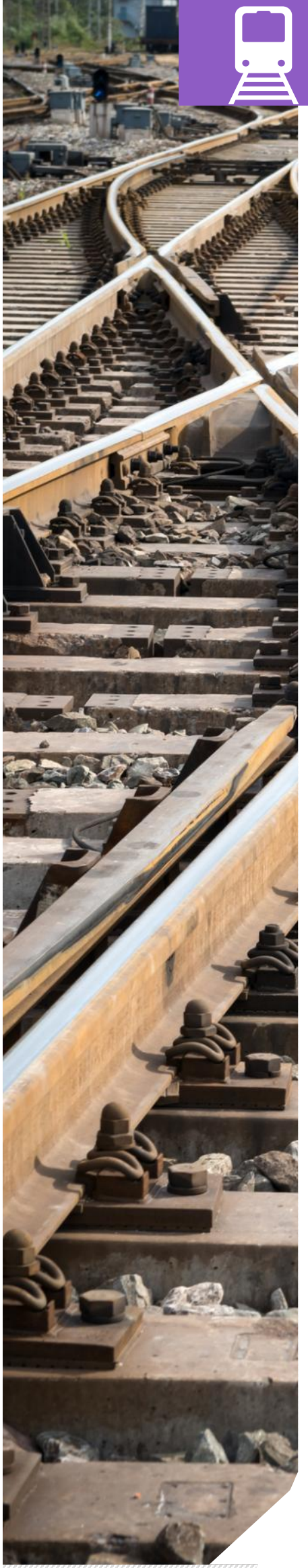
Panel members were split over whether to prioritise adaptation and recovery of strategic routes or 'lifeline routes' serving remote communities. Regardless, panel members often proposed building rural self-reliance through local hubs or plans for when an area becomes cut off from main transport lines.

5. Transport

Collectively, panel members **prioritised government investment** in transport adaptation over investment in adapting to most other climate change impacts.

Transport was one of the most concerning areas of risk for panel members, alongside flooding of homes. They regularly highlighted the importance of the transport system in a connected UK, with disruptions impacting businesses, the economy, accessing food and medicine, and enabling emergency services functioning.

Panel members wanted to see government investment in transport adaptation as a priority and generally had higher acceptance of increases in costs for households to pay for transport adaptations. This prioritisation and higher tolerance for costs often reflected panel members' perception of the scale of investment need, and their reliance on functioning transport networks.



> [An adapted road network] is something we all need to deal with, even for people that don't drive because it moves food and produce. Everyone should be paying; everyone uses the roads." - *Workshop 5, panel member Scotland*

> "My investment would be into research and future proofing rather than quick fixes. We need to do research on new tarmac; that's yesterday's problem not tomorrow's." – *Workshop 4, panel member from Greater Manchester*

> "The infrastructure is inadequate, and it will get more inadequate. When one of those structures break down the others take the load and they are already at capacity. You need to listen to the experts, and I wonder why we didn't do something years ago." - *Workshop 4, panel member from Greater Manchester*

6. Flooding of homes

What did we discuss?

Ben Lukey (Environment Agency) presented on the current and potential future extent and impact of flooding of homes, and panel members were introduced to different adaptation options to reduce the risk of flooding. They also viewed a video documenting the experience of a household being flooded.

Josh Deru (CCC) introduced panel members to the estimated investment requirements for reducing the risk of flooding in the future.

Jonathan Kassian (Flood Re) introduced panel members to the concept and outcomes of the Flood Re scheme (*see below*).

Below is a summary of the impacts of flooding of homes and adaptation options presented to panel:

Risks to flooding of homes

- Currently, **6.3 million** properties are in areas at risk of flooding. In the future, this could increase to **8 million** properties.
- Recovering a flooded property can take anything from six months to two years. Flooding can destroy precious belongings, pose a risk to life and have long-term wellbeing impacts.

Adaptation approaches

- Building new flood schemes and repairing/maintaining existing ones: E.g. flood defences, improving drainage systems, and installing pumping stations.
- Nature-based solutions: e.g. wiggling rivers, trees and green spaces.
- Property-level measures included air brick covers, vent covers, raising appliances, hard flooring, flood barrier or flood doors, water butts, and sump and pump systems.

Flood Re scheme

- Flood Re is an initiative to make home insurance affordable for properties at high flood risk. All home insurance holders pay a small additional amount on their premiums, which funds the scheme.
- As part of Flood RE, 'Build Back Better' helps homeowners make their properties more resilient after experiencing flooding. It provides grants of up to £10,000 for property-level measures.

Flood Re is a joint initiative between the government and companies that sell home insurance. It was established to make home insurance affordable for properties at higher risk of flooding. All home insurance policyholders (householders) pay a small additional amount on their premiums which funds the scheme, significantly reducing premiums for those households at highest risk, ensuring they can access affordable cover. Only homes built before 2009 are eligible. **Build Back Better (BBB)** is part of Flood Re and pays up to £10,000 towards Property Flood Resilience as part of repairs after a home floods.

6. Flooding of homes

Panel members consistently saw flooding of homes as one of the most concerning climate risks. They expressed immediate emotional reactions, driven by the toll of dealing with flood damage to the home, the financial impact and their sense that floods were difficult or impossible to stop.

Panel members had good awareness of flooding as a hazard, and a few had experienced flooding of their homes. This may reflect the location of the workshops, with most panel members living in Greater Manchester.

When prompted, most panel members said they would not remain in a home that had flooded once, citing safety, cost and insurability concerns - even for minor flooding. They typically assumed flooding would recur and said they would feel too anxious to stay. A few said if flooding was minor and infrequent, they may consider staying.

Panel members thought that government investment in flooding should be a priority and were willing to contribute via taxes. They broadly supported funding to either maintain current risk levels or reduce future risk.

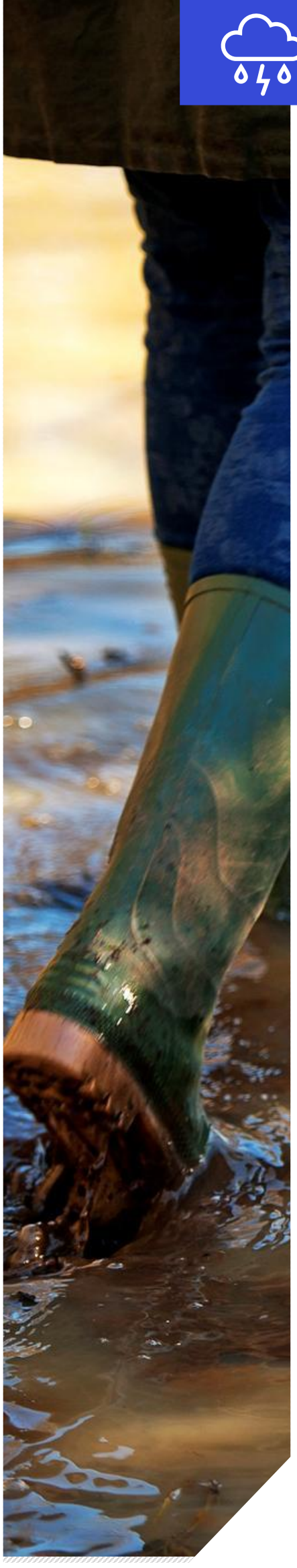
Panel members wanted government to invest in proactive community- and infrastructure-based measures and public education. They favoured government investment in large-scale flood prevention, such as flood defences, sea walls, and nature-based solutions like re-wiggling rivers.

Panel members felt households who could afford to do so should take personal responsibility to prepare for flooding, through installing property-level measures to reduce the impact of floods. They suggested government grants for households on lower incomes or renting.

Panel members mostly agreed it was fair for those unaffected by flooding to help fund adaptation measures for higher-risk areas through general taxation. Some, however, argued funding should come from local taxes in flood-prone areas instead.

Panel members were highly positive about Flood Re, though some raised concerns about future costs and coverage gaps. They welcomed knowing that an insurance scheme was already in place with ring-fenced funding to support households at high risk of flooding.

Panel members unanimously agreed that Flood Re should continue, but felt Build Back Better should be mandatory when someone receives a Flood Re payment, to prevent repeated flooding and reduce future costs.

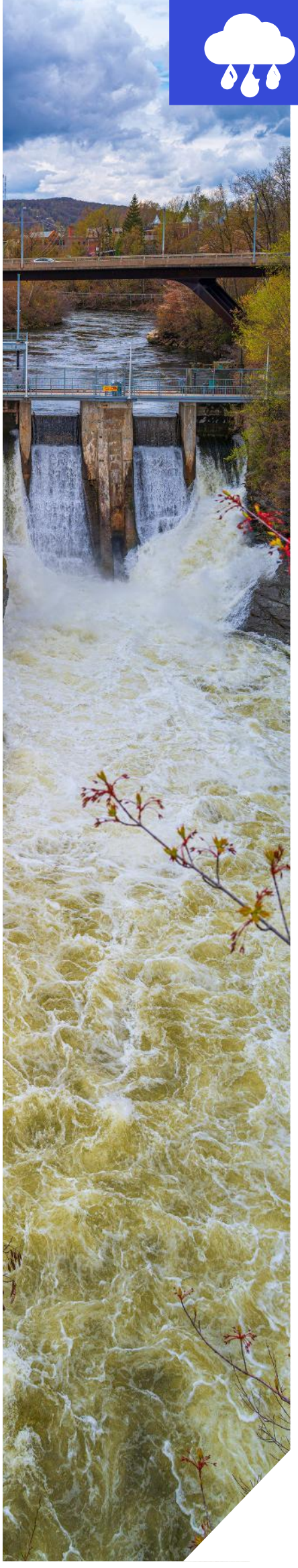


6. Flooding of homes

Collectively, panel members **prioritised government investment** in adaptation to flooding of homes over investment in adapting to most other climate change impacts.

Panel members often highlighted flooding of homes as the most concerning climate impact. They viewed it as the most widespread impact in the UK, with the greatest emotional toll on those affected.

Panel members in the final session saw flooding prevention as a vital investment because it affects both homes and wider infrastructure. They wanted government to prioritise investing in flood prevention infrastructure due to flooding's severe negative impacts. Panel members highlighted that flooding affects not only homes but also nature, transport, and water and energy services. Consequently, they viewed flood adaptation as essential for protecting households whilst reducing risks to transport networks and essential services.



> Flooding to me is just the most horrific thing. It's a trauma, an absolute trauma, for everyone involved." – *Workshop 7, panel member from Greater Manchester*

> "I think it [adapting to flooding] requires a lot of money and I would be happy to put in a little bit more money, so I feel like I've done my part and feel a little bit more mentally secure that there is money available to the government so that they can invest in the infrastructure." – Workshop 5, panel member from Greater Manchester

> [Build Back Better] is a no-brainer, why wouldn't you? If you've got this money to fix your property." – *Workshop 5, panel member from Greater Manchester*

7. Water and energy

What did we discuss?

Dr Emily Wallace (Met Office) presented on the impacts of climate change on the supply of water and energy, including scarcity and disruptions to supplies.

Rachael Stellar (the CCC) then introduced adaptation options for water and energy supply and the support available for vulnerable households. Josh Deru (CCC) presented the estimated investment requirements to reduce the risk of climate change impacts on household water and energy supply.

Below is a summary of the impacts of climate change on water and energy supply and adaptation options presented to panel:

Risks to water and energy

- Supply lines can be disrupted through flooding, land movement or storm damage. This can lead to short-term water and energy outages, which impacts everyday use of water and energy.
- Heatwaves and droughts can lead to longer term water shortages.

Adaptation approaches

- **National and regional approaches** include: wastewater treatment, seawater desalination, national leakage targets, infrastructure upgrades, large reservoirs, utility-scale storage, weatherproofed electricity grids, and flexible energy generation.
- **Local and individual approaches** include: rainwater barrels, drought-tolerant gardens, community leak-fixing groups, local energy advice, smart systems, and efficient homes and appliances.

7. Water and energy

Panel members were less concerned about impacts on water and energy supply for households than other impacts. Most had not experienced recent outages or shortages, remembering these as more common in the past. They typically assumed outages would last about a day and considered this manageable for most households. They also attributed current disruptions to poor infrastructure maintenance rather than climate impacts.

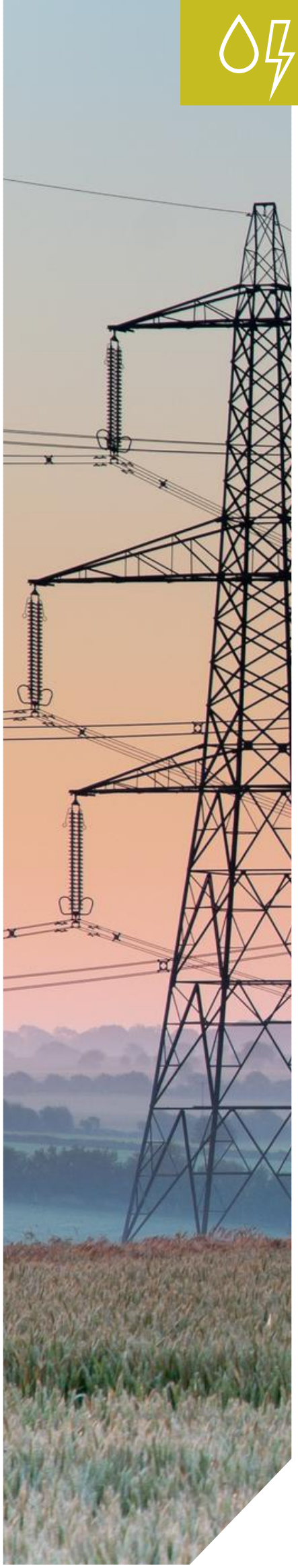
Although concern was lower compared to other impacts, panel members still expressed worry about potential impacts on water and energy supply. These concerns ranged from access to drinking water, flushing toilets and heating homes, to wider impacts on the economy.

Panel members' concern about outages mainly focused on those who may be most vulnerable, and they felt that emergency response and direct support should prioritise these groups. This included older people, those with young children, people with medical needs and disabilities, and those experiencing mental health challenges. This was reflected in their strong support for the Priority Services Register (a free register for extra support from energy/water companies for vulnerable customers).

Panel members emphasised the need for households to become more self-reliant and prepared to cope with outages, supported by public communications. They felt most people can cope with more frequent outages by, for example, stocking up on items like candles and bottled drinking water, or purchasing equipment like camping stoves.

Panel members thought that at a national level, the priority was fixing poorly maintained and inefficient existing infrastructure ahead of building new facilities like additional water reservoirs. Property-level measures (such as rainwater barrels for water-saving, efficient homes and appliances for energy shortages) were seen as potentially helpful but not a priority for adaptation.

Panel members had very limited willingness to fund water and energy adaptation measures through increased bills or taxation, citing existing financial struggles and anxiety about affording further increases. They felt that utilities companies had failed in their responsibility to maintain systems and should pay for adaptation measures. Any bill increases were only acceptable with strong safeguards ensuring money is spent on adaptation and evidence that companies were paying their fair share, too.

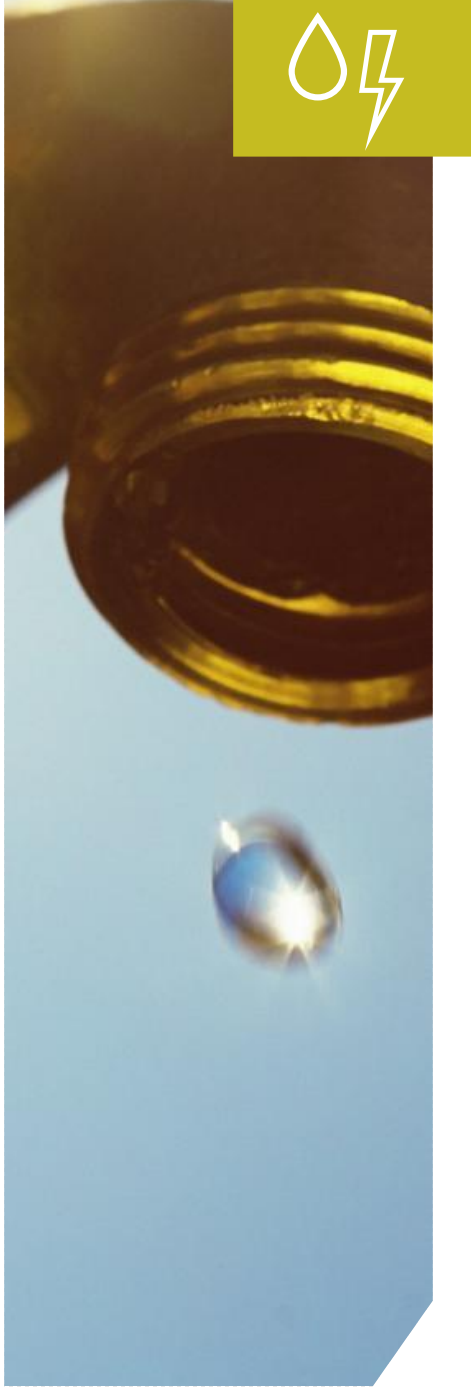


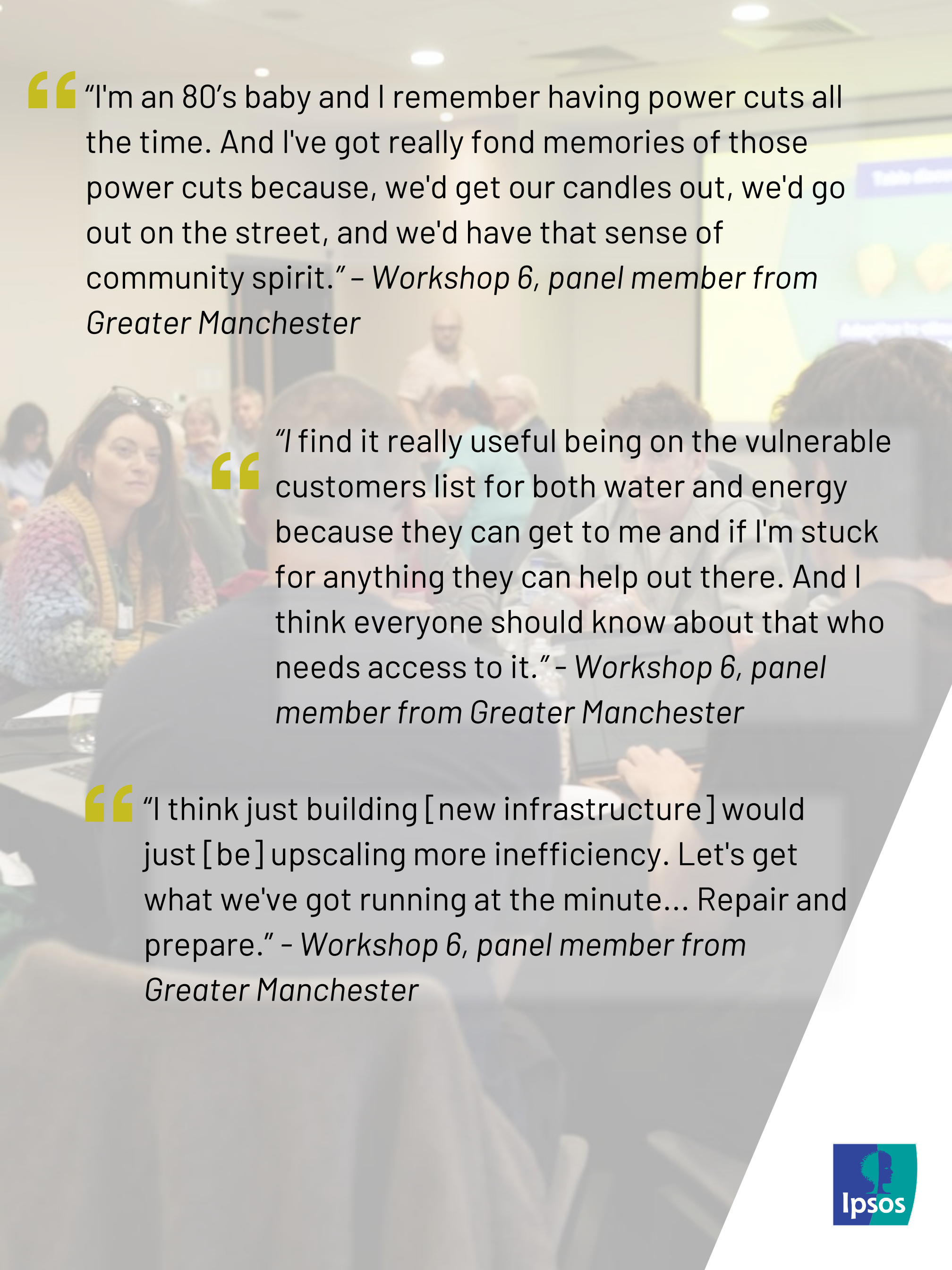
7. Water and energy

Collectively, panel members were **less willing** to pay for adaptation measures for water and energy utilities, compared to most other impacts.

Panel members were less concerned about the impact of climate change on water and energy supply for households than some of the other impacts. This impact did not inspire the same strength of feeling as other impacts, particularly flooding of homes and transport disruptions, and panel members saw adaptation for this as less of a priority.

Linked to their strong feelings around water and energy companies, panel members strongly felt that households should not have to pay for improvements. They expressed clear anger towards the management of utilities, particularly by water companies, and often attributed this to the privatisation of the sector.





“I'm an 80’s baby and I remember having power cuts all the time. And I've got really fond memories of those power cuts because, we'd get our candles out, we'd go out on the street, and we'd have that sense of community spirit.” – *Workshop 6, panel member from Greater Manchester*

“*I* find it really useful being on the vulnerable customers list for both water and energy because they can get to me and if I'm stuck for anything they can help out there. And I think everyone should know about that who needs access to it.” - *Workshop 6, panel member from Greater Manchester*

“I think just building [new infrastructure] would just [be] upscaling more inefficiency. Let's get what we've got running at the minute... Repair and prepare.” - *Workshop 6, panel member from Greater Manchester*