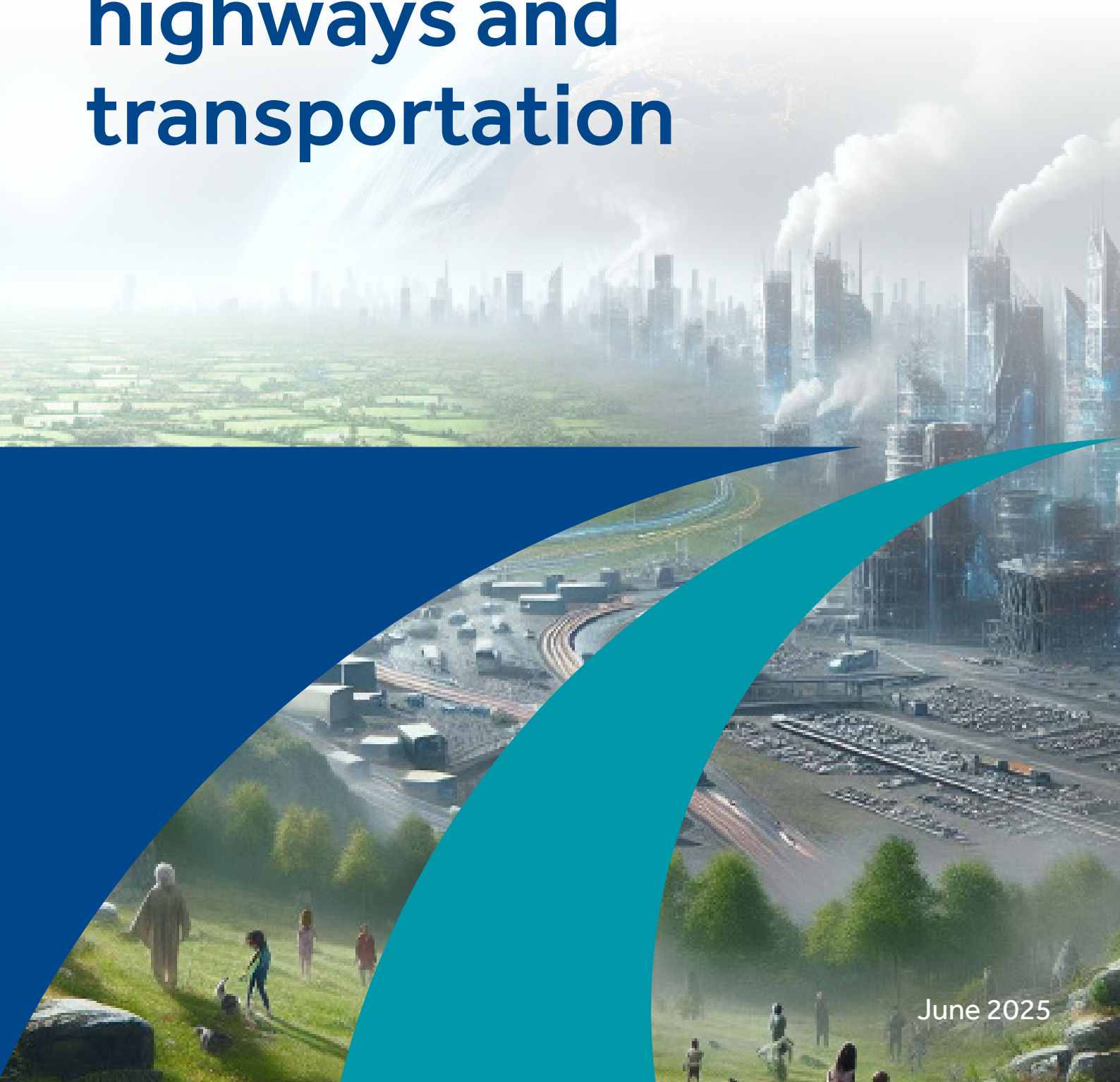
CIHT

Doubling down on climate action in highways and transportation



June 2025

Disclaimer

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Acknowledgements

The Chartered Institution of Highways & Transportation (CIHT) would like to thank the CLIMATES core delivery team, the CLIMATES Sounding Board, and the many highways and transportation professionals who have supported and taken part in the initiative. All workshop participants are listed in a more detailed Acknowledgements section at the end of this report.

Special thanks are given to Mott MacDonald and Ringway, who jointly sponsored CLIMATES.

Published by the:
Chartered Institution of Highways & Transportation

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Registered Charity in England No. 1136896
Registered Charity in Scotland No. SC040873
Registered Charity in Republic of Ireland No. 20103989

Published June 2025.

Please cite as:
Lyons, G., Crudgington, A., Jaison, J., Smith, A. and Read, E. (2025). *Doubling down on climate action in highways and transportation.* A report from the CLIMATES initiative on behalf of the Chartered Institution of Highways & Transportation, June. https://www.ciht.org.uk/climates

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Foreword

CIHT

Two major challenges will define the work of many transport professionals for decades to come. First, the need to achieve deep and rapid reductions in the carbon emissions produced by transport, including those associated with the construction and maintenance of transport infrastructure. Second, there will be a need to adapt our systems and networks to become more resilient in the face of the accelerating impacts of climate change.

To support this transformation, we commissioned CLIMATES to ensure that CIHT members and the wider sector could shape how we deliver on our commitment to positive climate action. I would like to thank the members and colleagues who contributed their time, insights, and expertise to this project. I also extend my thanks to Mott MacDonald and Ringway for their generous support, and to Glenn and the project team for their dedication and hard work in bringing this important project to life.

The scale and complexity of the climate crisis can at times feel overwhelming. It's easy to believe that individual efforts are too small to make a meaningful difference. In bringing forward the recommendations we aim to create a pathway for change.

Through sharing their experience and ideas, our members have helped to chart a way forward – one that shows how substantial, even systemic, change can be within reach. Achieving this will depend on both individual professionals and transport organisations stepping up to identify where they can have the greatest impact, and taking forward the report's recommendations.

CIHT is committed to doing just that. We will shortly develop our own action plan, which will outline how we intend to respond. Notably, the report's first recommendation – to equip professionals for climate action – underpins all others. Supporting our members to gain the knowledge, skills and confidence to deliver for society is central to CIHT's mission. I'm proud that the report recognises the progress we've already made in building competence and capability, while also acknowledging that more remains to be done.

Delivering on the full set of recommendations will require a sector-wide effort. I hope that everyone reading this report will reflect on the role they – and their organisations – can play, and that CLIMATES will serve as a clear and practical route map for concerted climate action.

Sue Percy CBE
Chief Executive, CIHT

Foreword

Mott MacDonald

In a world where the climate crisis can often leave us feeling paralysed – or even worse – complacent, CLIMATES is a wake-up call that we cannot be passive. The views from respected organisations such as the Intergovernmental Panel on Climate Change (IPCC) continually remind us that however high global temperatures rise, we must continue to act because every fraction of a degree avoids human suffering.

This sentiment is at the heart of CIHT CLIMATES – a unique initiative which has brought together over 300 industry professionals over the past year to tackle the ever-increasing threat and impact of climate change. Inspired by a collective ambition to not only do more, but to also do better, together we've sought to answer a pivotal question:

"In an uncertain world, what priority actions in highways and transportation should we double down on in the next three years to meet the unfolding challenges of climate change as we look out to 2035 and beyond?"

But why the need to do this? And why now? In 2023 direct emissions from transport accounted for 29% of all emissions from within the UK. As an industry, we are as much a part of the problem as we are the solution. CIHT CLIMATES is designed to bring transport professionals together to form a shared view on what needs to change to address the medium to long-term impacts of climate change.

And in doing so, participating in this initiative has been both sobering and inspiring. "Doubling down" on something means putting in more effort, and the enormity of the task ahead is daunting. Yet the passion, commitment, and expertise shown by the participants who have all volunteered their time has been truly uplifting. It's a testament to what we can achieve when we come together with a shared purpose.

In an age of uncertainty, this publication has been written to give a voice to today's transport sector professionals. Informed by their views, a set of seven recommendations has emerged that need to be acted on simultaneously to accelerate progress. Arising from CLIMATES are also hundreds of personal climate action pledges from the professionals who have taken part. Whilst the recommendations will require government, academia, industry and CIHT to work together, the call is for each of us to play our part.

So, I urge you to read this report, let it inspire you, and make your own pledge – whether in your workplace, your home, or your community. As a sector, we possess a powerful voice and the capacity to drive meaningful change.

I feel very fortunate to be part of this journey on behalf of Mott MacDonald as co-sponsors of CIHT CLIMATES along with Ringway, and our thanks to the Chartered Institution of Highways & Transportation for their unwavering support in making CIHT CLIMATES a reality.

Annette Smith
Head of Strategic Foresight, Mott MacDonald

Foreword

Ringway

Alongside Mott MacDonald, Ringway is proud and pleased to sponsor CIHT CLIMATES.

The scale of the workshops and involvement of so many CIHT members from the UK and across the world is a huge achievement. It underlines the importance of the research, the conversation it has provoked and the recommendations in the report.

There were a variety of answers and views, and many were addressed in the recommendations.

But what is in our immediate gift as highways and transportation professionals? Adaptation, if all other mitigating actions have been exhausted.

Looking forward, where we can influence change is by working with our stakeholders to design, plan and budget for improved resilience in our transportation networks.

Effective working between industry professionals and budget holders to prioritise climate action in national transport strategies. This requires all of us, as highways and transportation professionals, to speak in clear and simple terms to Government. The result will be a network geared towards resilience with an ability to adapt and cope with climate change.

It has been a pleasure to be involved in this initiative and we look forward to seeking ways in which CIHT CLIMATES can help drive a better outcome for the networks we rely upon to transport us between our places of choice.

Mitesh Solanki
Managing Director, Ringway Infrastructure Services and Vice-President, CIHT

Executive summary

The significance of climate change for society and in turn highways and transportation is profound. Taking action to address it has become central to professional concerns. The Chartered Institution of Highways & Transportation (CIHT) accordingly has climate action as one of its three core themes. Supported with sponsorship from Mott MacDonald and Ringway, it embarked in 2024 on an initiative called CLIMATES – Changing Landscapes for Infrastructure and Mobility: Assessing Transport and Environment Scenarios.

CLIMATES has sought to better equip professionals to determine their priorities and actions in the present in the face of future climate change possibilities, and to voice opinion across the CIHT membership that can inform how the Institution champions its climate action theme. It has done so by running 15 in-person and online workshops looking at the UK as well as Hong Kong, India, and the United Arab Emirates. This has been complemented by an online engagement survey. Over 300 highways and transportation professionals from within and beyond CIHT have taken part.

CLIMATES has been designed to take its participants on a journey with the help of futures techniques. This journey begins with sense-checking concerns about climate change and its effects and examining the climate change outlook. Participants then 'travel' to different possible futures for 2035. These are defined by: (1) the extent of progress internationally to contain global greenhouse gas emissions; and (2) the extent of progress nationally on climate action (mitigation, adaptation, and resilience). By considering the trends and shocks prevailing in the late 2020s when transitioning to such futures, participants are in an informed position to finally address their exam question:

In an uncertain world, what priority actions in highways and transportation should we double down on in the next three years to meet the unfolding challenges of climate change as we look out to 2035 and beyond?

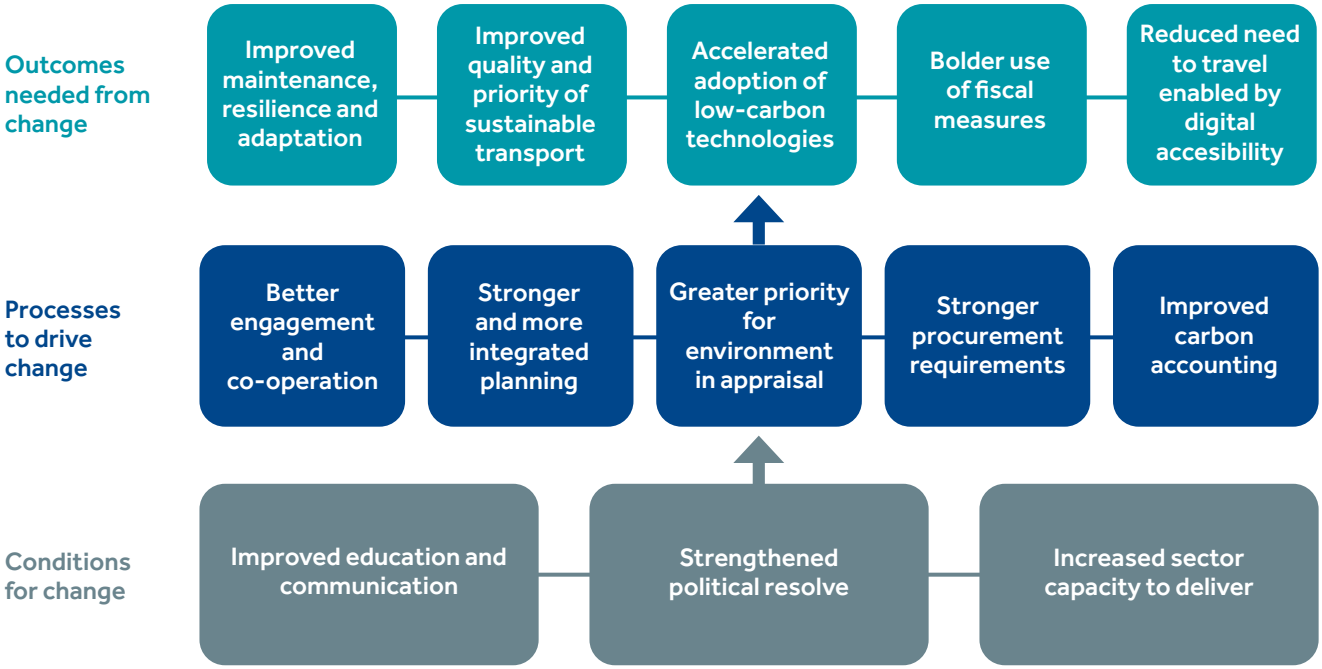
As their journey concludes, participants are asked to reflect again on their concerns about climate change and its effects and to make a pledge about (further) climate action they will take personally and professionally.

Former president of CIHT Neil Johnstone, who was so motivated by the importance of the initiative that he took part in two of the CLIMATES workshops, remarked that "*these have been some of the most honest workshops I have been in during my career; those participating were encouraged to be open and candid about their personal and professional views – views which I found to be freely expressed, sobering, refreshing, and inspiring*".

Participants were self-selecting and not surprisingly the majority were very worried about climate change and its effects. As a collective, participants had limited confidence that global emissions would be strongly contained, and views were mixed about the prospect of strong progress on climate action nationally. While the challenges ahead can appear daunting, there was a strength of resolve to play a part through climate action in responding to those challenges.

The priority actions suggested by hundreds of professionals fell into three areas:

- **Doubling down on conditions for change** (improved education and communications, strengthened political resolve, and increased sector capacity and capability to deliver).
- **Doubling down on processes to drive change** (better engagement and cooperation, stronger and more integrated planning, greater priority for environment in appraisal, stronger procurement requirements, and improved carbon accounting).
- **Doubling down on outcomes needed from change** (improved maintenance, resilience, and adaptation, improved quality and priority of sustainable transport, accelerated adoption of low-carbon technologies, bolder use of fiscal measures, and reduced need to travel enabled by digital accessibility).



Coverage of priority actions suggested by CLIMATES participants

All of these merit attention. These areas for priority action are born out of participants' careful consideration of climate change and future prospects. In response, suitable, acceptable, and feasible priorities for doubling down on climate change have been identified. These are reflected in the following set of seven recommendations arising from CLIMATES that are mutually reinforcing and in which professional capability is central to helping achieve system change:

1 - Equipping professionals for climate action:
CIHT should play a central role in building the transportation profession's capacity and capability to deliver climate action. It should double down on the enabling function it provides through continuing professional development (CPD) to improve the competency of highways and transportation professionals with the knowledge, skills, mindset and leadership required to support governments, industry, academia, and the public on climate action.

2 - Public-focused, positively-oriented storytelling:
Highways and transportation sector organisations should find new, cost-effective, and impactful ways to collaborate with bodies and individuals who have demonstrated they can build the positive and compelling case for the benefits of change that is needed to win hearts and minds for climate action.

3 - Demonstrating that transport decarbonisation is on track:
Governments should openly and robustly demonstrate and justify how their detailed plans are consistent with (or at odds with) expert advice on the pathway for decarbonising transport and on transport's contribution to the manufacturing and construction pathway; and professional bodies should offer greater scrutiny and constructive challenge.

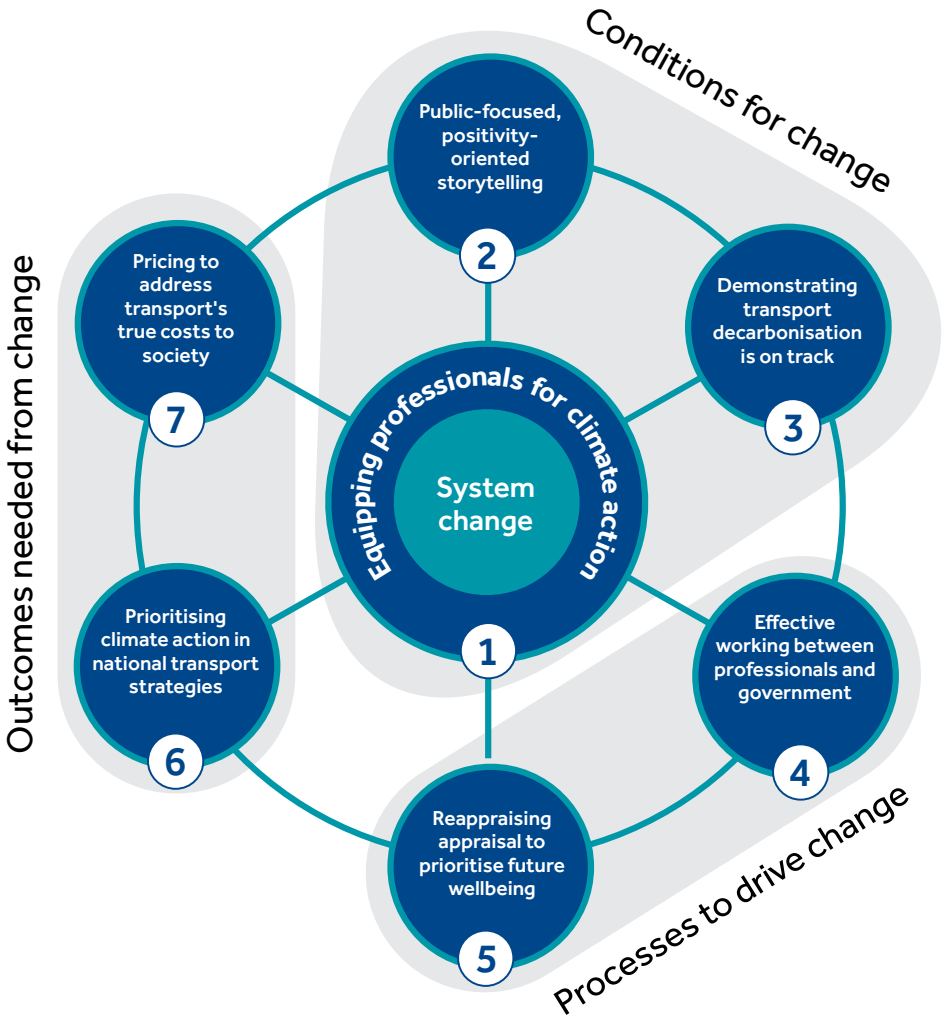
4 - Effective working between professionals and government:
Government(s) in the UK, in conjunction with professional bodies, should consider the suitability of existing convening and collaboration arrangements – both top down driven by government and bottom up, led by industry – within the highways and transportation sector in relation to climate action, and do so in the context of specific areas or goals where progress on climate action is sought.

5 - Reappraising appraisal to prioritise future wellbeing:
Transport investment priorities should be reviewed – by governments, academia, and industry – to ensure clear and appropriate priority is given in the appraisal process to low-carbon outcomes, resilience, and adaptation, all with future wellbeing in mind.

6 - Prioritising climate action in national transport strategies:
The UK Department for Transport should ensure that its forthcoming Integrated National Transport Strategy (with the breadth of issues it will need to address) has climate action as a core pillar, and it should convey how this can work positively to support economic and social prosperity.

7 - Pricing to address transport's true costs to society:
The highways and transportation sector as a whole should clarify the fiscal measures that are available and appropriate to show the true costs of transport, including external, indirect costs to society, otherwise these negative externalities of transport will continue to act as a drag on climate action; and this work should also identify how the impact of any change will affect different socio-economic and road user groups.

If the highways and transportation sector is to play its full part in helping society survive or thrive in future then we need to see a doubling down on conditions and processes for change and on securing the outcomes needed from change. This is not easy; quite the opposite – the current landscape is one of economic pressure, resource constraints, geopolitical tensions, and divisive and at times ill-informed public discourses. A sense of resolve to act upon all the recommendations is needed from public, private, and third sector bodies as well as individual professionals. This report should be seen as the end of the beginning. The true test of CLIMATES will be whether and how changes big and small, encouraged by the initiative, come about that strengthen climate action.



Doubling down recommendations illustrating their interdependencies

1. Introduction

Forty years ago, scientist Carl Sagan was invited to testify before the United States Congress on the greenhouse effect.[1] He spoke of the problem of human activity pumping huge amounts of carbon dioxide into the atmosphere "*with hardly any concern about its long-term and global consequences*". He warned that this "*is an intergenerational problem – if we don't do the right thing now, there are very serious problems that our children and grandchildren will have to face. It is also a global problem.*"

We are now dealing with that problem. At the start of 2025 the Secretary General of the United Nations, António Guterres, in his address to the annual gathering of the World Economic Forum commented as follows:

"*I recently saw an analysis that exposed a grim irony: Thirteen of the world's biggest ports for oil supertankers will be overwhelmed by rising sea levels. Rising seas, which are caused by rising temperatures. And rising temperatures, which are – overwhelmingly – caused by burning fossil fuels. Our fossil fuel addiction is a Frankenstein monster, sparing nothing and no-one. All around us, we see clear signs that the monster has become master. We just endured the hottest year and the hottest decade in history.*"[2]

The creation, maintenance, and use of transport infrastructure and vehicles is a major contributor to greenhouse gas emissions. It is part of the problem and it must therefore be part of the response to that problem. The Chartered Institution of Highways & Transportation (CIHT) in its Strategy 2022+[3] identified climate action as a key focus for the Institution, with a commitment to ***"support our members to provide the leadership required to make the big changes our sector needs and to ensure that climate action not change is central to all we do"***.

Climate action is multifaceted. Its two principal elements are:

(1) **mitigation** – efforts to reduce greenhouse gas emissions; and

(2) **adaptation** – efforts to reduce society's vulnerability to climate change. The highways and transportation sector is no stranger to climate action, and considerable effort is under way to address the problems faced.

The CIHT is a membership body and in 2024 it recognised the importance of **giving its members a voice on climate change and on climate action, as well as providing individual professionals with the opportunity to develop their understanding through engagement with others**. In response to this, the CIHT CLIMATES initiative was launched in summer 2024, made possible with sponsorship from Mott MacDonald[4] and Ringway.[5] CLIMATES stands for Changing Landscapes for Infrastructure and Mobility: Assessing Transport and Environment Scenarios.

This report sets out what CLIMATES has undertaken, what it has found, and recommendations made for how the highways and transportation sector should double down on climate action.

Three points of clarification are drawn to the reader's attention.

Firstly, this report reflects, to a large extent, the views and ideas of individual professionals who have taken part. Such content should not be assumed to necessarily constitute CIHT's formal position, both as a charity and as a membership body with many thousands of individual members as well as numerous partner organisations. However, the recommendations

[1] https://www.youtube.com/watch?v=Wp-WiNXH6hI

[2] https://www.youtube.com/watch?v=Z5CdhlZo8OQ

[3] https://www.ciht.org.uk/media/15468/ciht-strategy-2022.pdf

[4] https://www.mottmac.com/

[5] https://www.ringway.co.uk/

in this report have been signed off by the CIHT Board of Trustees.

Secondly, this report is in part shaped by, and a product of, the prevailing circumstances surrounding the initiative. Such circumstances have included extreme weather events in different parts of the world as well as changes within the political landscape and agendas globally. More detail on this is provided through a chronology of news headlines relating to climate change and climate action accumulated during the initiative.

Thirdly, CLIMATES and the creation of this report have enlisted the supervised use of artificial intelligence (AI). AI is yet another prevailing factor. Its potential to disrupt is huge. Whether such disruption is, on balance, for good or ill remains to be seen. Within CLIMATES, AI (specifically Microsoft Copilot) was used to generate pictures of the future. It has also been used to help summarise the considerable volume of material generated by CLIMATES participants.

The report covers a lot of ground. Readers may not wish or need to read all of it or to do so in one go. Different parts of its content serve different needs (see Figure 1).

Depending on your current level of knowledge about climate change, you could boost your carbon literacy by jumping to Section 4.

If you want to get some exposure to scenario development and to explore future possibilities for 2035 then please head to Section 5.

Perhaps you want to know what fellow professionals consider to be important in terms of the steps that should be taken on climate action in the highways and transportation sector. In that case Section 7 is for you.

Are you keen to grow your network in terms of others invested in understanding and addressing climate change? Why not take a look at who took part in CLIMATES in Section 11.

Would you like to experience the CLIMATES journey? Appendix 1 allows you to complete the CLIMATES survey (and you should be able to save your answers if you have the report open on screen).

Try going to Appendix 3 if you are looking for some inspiration for personal changes you can make to play your part in addressing climate change.

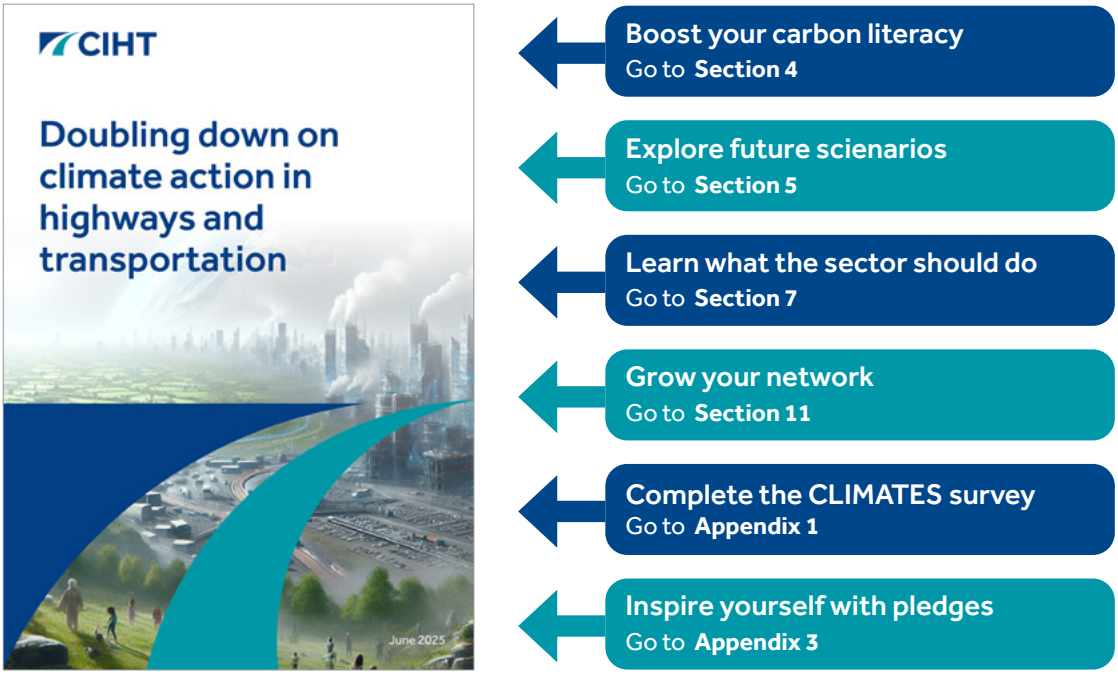


Figure 1. Different purposes served by different parts of this report

2. Motivations, participation, and approach

2.1 Objectives, guidance, and focus

CLIMATES had the following objectives:

- To better equip professionals to determine their priorities and actions in the present in the face of future climate change possibilities.
- To voice opinion across the CIHT membership that can inform how the Institution champions its climate action theme.

A Sounding Board – with representation from the CIHT Board of Trustees, emerging professionals, and sponsors – was formed at the outset to provide ideas and constructive challenge to the core delivery team (see Section 11). The core delivery team (this report's authors) includes expertise and experience in futures and foresight techniques.

At the heart of the initiative, and to focus the minds of those taking part, was the following exam question:

In an uncertain world, what priority actions in highways and transportation should we double down on in the next three years to meet the unfolding challenges of climate change as we look out to 2035 and beyond?

The question emphasises four important considerations:

(1) the future is uncertain and different future possibilities therefore need to be considered;

(2) this initiative is focused on actions within highways and transportation, notwithstanding that this forms part of a wider multi-sector approach to mitigation and adaptation;

(3) it would be surprising to discover fundamentally new forms of climate action and attention therefore centres on those areas where doubling down is considered especially important – increasing the effectiveness, intensity, urgency, and reach of action; and

(4) it considers timescales that focus the mind by looking ahead 10 years rather than to the end of this century, and in turn asks what needs further attention in the immediate future.

2.2 Scope and forms of engagement

Four forms of engagement were offered to professionals wishing to take part:

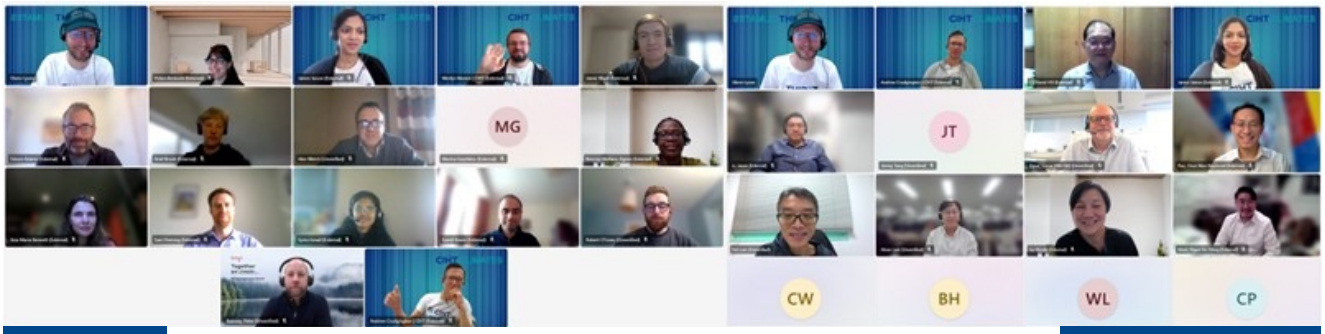
- **Full-day in-person workshops across the UK:** These took place between September and December 2024. The first workshop involved CIHT Council members. Subsequent workshops took place in Liverpool, Newcastle, London, Cambridge, Belfast, Cardiff, London (again), Glasgow, and Birmingham.
- **Full-length online workshops focused on the UK:** There were two of these (in January and February 2025) and they mirrored the in-person workshops but took place over two sessions on different days.
- **Shortened 'at speed' online workshops:** Reflective of CIHT's wider international membership, specific sessions focused on Hong Kong, India, and the United Arab Emirates took place in January and February 2025, with each lasting between 90 minutes and three hours using a slimmed-down version of the approach for the full-length workshops.
- **Online engagement survey:** To allow greater flexibility for wider engagement, an online survey was designed to emulate key parts of the workshops, requiring around 40 minutes to complete. The survey was open between December 2024 and February 2025. The survey content is included in Appendix 1.

The opportunity to take part was initially given to CIHT members only and then subsequently opened up to the wider sector. Those taking part were self-selecting.

2.3 Participants

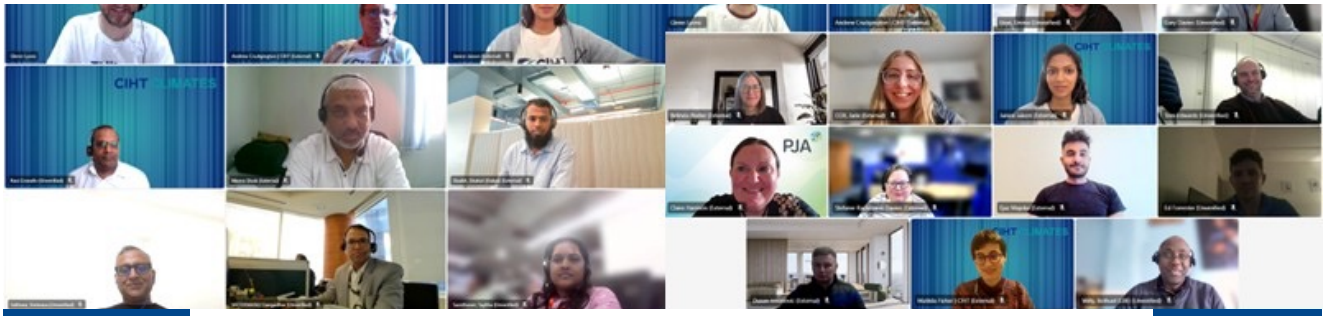
Across the forms of engagement, over 300 people took part. They may or may not be representative of the wider sector. Nevertheless, a broad range of people participated: from different areas of specialism; from public and private organisations; from across research, policymaking, consultancy, and contracting; and from different career stages and levels of seniority. Section 11 lists those who took part in workshops, with information on their roles, organisations, and whether they are CIHT members (those who engaged in the survey were not asked for such information and are not listed). Figure 2 and Figure 3 show participants from the 15 workshops. Figure 4 shows the breakdown of participation by engagement format.

Figure 2. In-person CLIMATES workshops



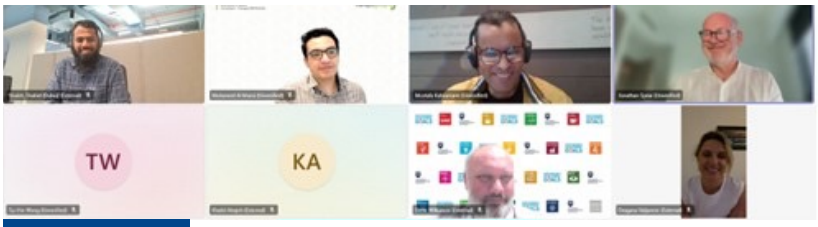
Online – UK

Online – Hong Kong



Online – India

Online – UK



Online – UAE

Figure 3. Online CLIMATES workshops

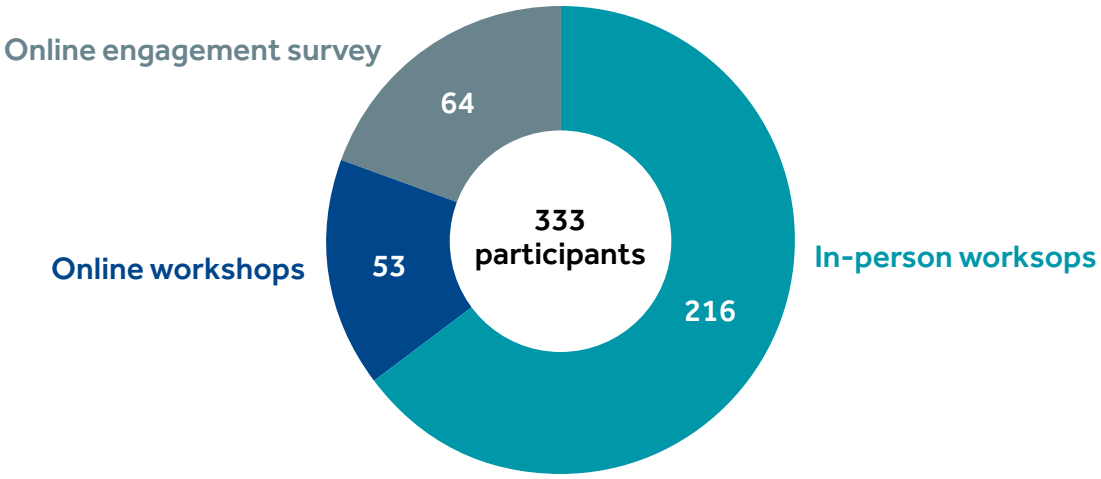


Figure 4. Make-up of individuals participating in CLIMATES

Reasons for choosing to take part in CLIMATES included: curiosity, professional development, and learning; personal concern, passion, and commitment; relevance to people's professional roles and responsibilities; opportunity to share expertise and thinking with others; seeking new ideas and inspiration for action; an opportunity to support CIHT in its climate action efforts; and encouragement from others to do so.

2.4 Engagement process

Figure 5 shows an overview of the engagement process for the full-length in-person and online workshops. Its design gave participants first-hand experience in the application of futures techniques as well as the opportunity to develop their understanding of and views on climate change and climate action. The Mentimeter app[6] was used to gather and share real-time feedback.

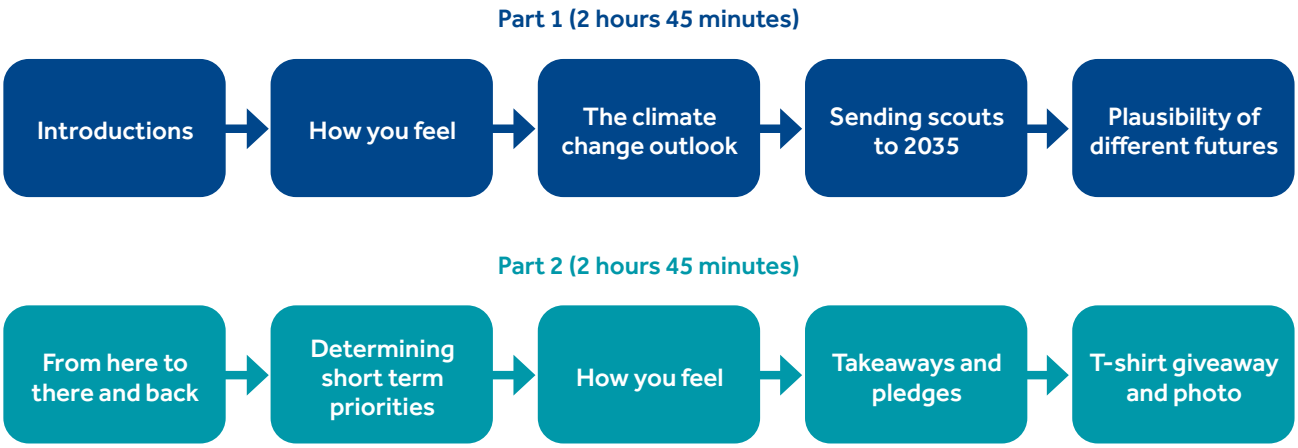


Figure 5. Workshop process

[6] https://www.mentimeter.com/

Introductions – Participants were given an overview of their journey ahead and then had the opportunity to introduce themselves.

How you feel – Participants were asked individually how they felt about climate change and its effects (see results in Section 3).

The climate change outlook – Explaining climate change and climate action over time can involve going into considerable depth. Within the workshop setting an overview was provided (see Section 4). This ended with depicting four possible futures for 2035, based upon two critical uncertainties playing out in different ways:

(1) global climate change pathway – ranging from weakly to strongly contained global emissions; and

(2) strength of national climate action (mitigation, adaptation, and/or resilience) – ranging from weak to strong progress.

Sending scouts to 2035 – Participants were put into four groups and each group was invited to explore one of the four possible futures for 2035. As they stepped out of their imaginary time machines they were tasked with finding out: what is going on globally to explain the pathway we are on; what global conditions are impacting us nationally in highways and transportation; what characterises the national transport system; and what non-transport characteristics of society stand out. They were also asked to note down news headlines they were seeing. See Section 5 for insights into possible futures.

Plausibility of different futures – With the time travellers returned to the present, each group relayed what they had learned about the visited future. All participants were asked to pay careful attention.

Participants were then asked individually to indicate the relative likelihood, in their opinion, of the different futures coming to pass. For the in-person workshops they each had eight plausibility credits to assign to the four scenarios. If they felt one scenario was plainly the most likely future they could assign all eight credits to that future. If they were completely uncertain and felt all four scenarios may have equal likelihood then they could assign two credits to each scenario, and so on. See Section 5 for the results. Based upon the collective group view on relative plausibility, two of the four scenarios were chosen to take into the second part of the workshop.

From here to there and back – The futures technique called Three Horizons was then used in newly mixed breakout groups to bring to light matters of interest in the late 2020s that would reflect the period of transition through to the two different possibilities for 2035. This is shown in Figure 6.

The approach involves addressing five questions in sequence:

(1) Where do we find ourselves by 2035 in terms of highways and transportation?;

(2) Where are we now (by comparison)?;

(3) What is already happening now that could lead us to that 2035 future?;

(4) What would be preserved from where we are now?; and

(5) What trends and/or shocks are playing out in the late 2020s as we transition to our 2035 scenario?

With two groups having considered each 2035 scenario, insights on question 5 were collated from across the four groups.

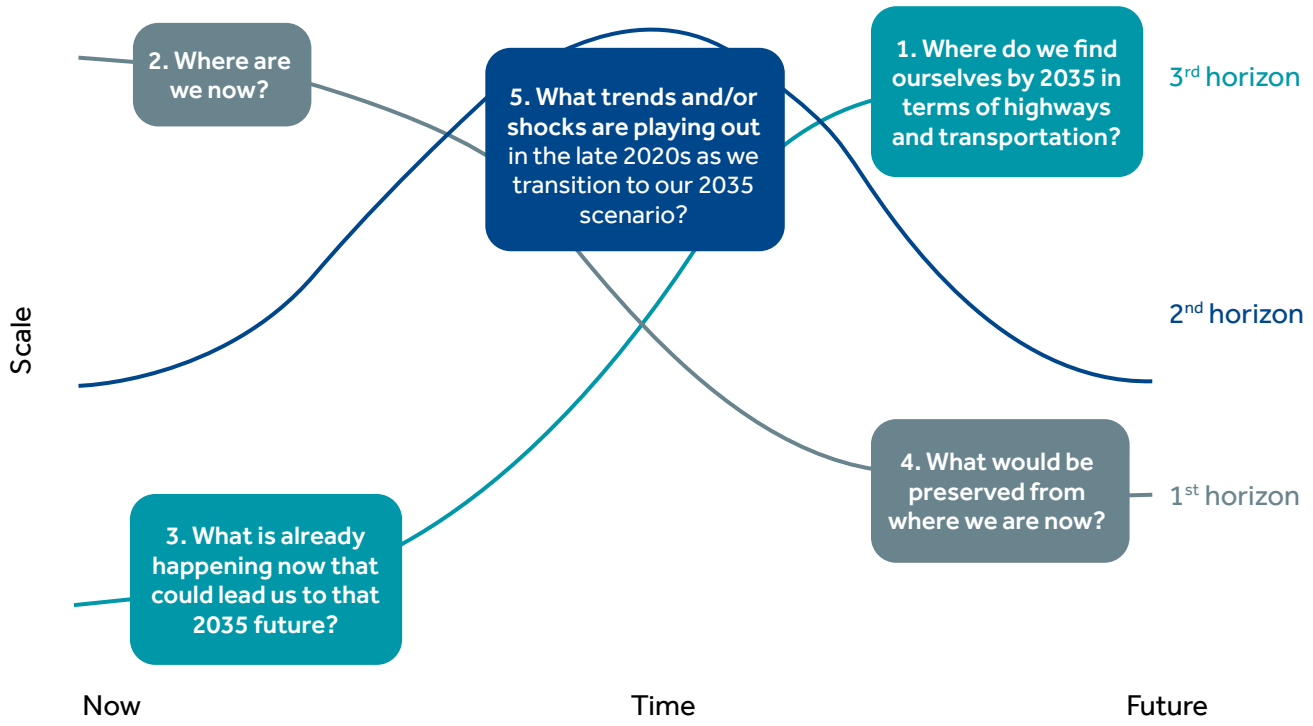


Figure 6. The Three Horizons approach for exploring change over time[7]

Determining short-term priorities – Participants were then given a few minutes of quiet time to prepare their responses to the CLIMATES exam question: In an uncertain world, what priority actions in highways and transportation should we double down on in the next three years to meet the unfolding challenges of climate change as we look out to 2035 and beyond? They were asked to consider this in light of insights from the workshop and notably from the preceding use of Three Horizons. They were encouraged to weigh up the uncertainty ahead and consider what we should be doing in highways and transportation nationally to help society survive or thrive. Each participant was invited to give two responses to the exam question, aimed at different parts of the sector (government, industry, academia, and CIHT). The responses from across the CLIMATES initiative are summarised in Section 7.

How you feel – Participants were asked once again how they felt about climate change and its effects (see results in Section 3).

Takeaways and pledges – Participants were invited to share their takeaway message from participating in CLIMATES. They were then invited to make a pledge for themselves about what they will do (differently) in 2025 as their (further) contribution to climate action (see Appendix 3 for the full list of pledges made).

T-shirt giveaway and photo – A limited number of 'tour' t-shirts for CLIMATES were printed. As well as facilitators wearing these, one t-shirt was randomly given away at each workshop, to the general delight of those involved. To conclude the workshop a group photo was taken (see Figure 2 and Figure 3).

[7] See Curry, A., and Hodgson, A. (2008). Seeing in multiple horizons: Connecting futures to strategy. Journal of Futures Studies, 13 (1), 1–20. https://jfsdigital.org/wp-content/uploads/2014/01/131-A01.pdf

Within the workshop, three short video clips, available online, were also shared with participants:

- Sir David Attenborough (as the People's Advocate) addressing world leaders gathered at COP26 in Glasgow in 2021[8] – he reminds them of a changing climate, a climate that brought an abundance of life to earth, the industrial revolution that super-charged carbon dioxide levels, and the position we now find ourselves in. "*We are already in trouble. The stability we all depend on is breaking. This story is one of inequality, as well as instability. Today, those who've done the least to cause this problem are being the hardest hit.*"

- Spoken word artist Prince Ea addressing us all in 2017[9] – he makes a powerful and emotive case for the rare existence of our planet and its conditions in 'the Goldilocks zone', and a case for turning away from humanity's destructive past to a future in which we seek to save and restore the conditions for life and the beauty we are blessed with. "*We have modestly named ourselves Homo sapiens meaning 'wise man', but is man really so wise? Smart, yes, and it's good to be smart, but not too smart for your own good.*"

- Jack Black as a dinosaur depicted addressing a United Nations gathering in advance of COP26[10] – he speaks of the opportunity for change, emerging from the COVID-19 pandemic, while reflecting upon human behaviour. "*I know a thing or two about extinction and let me tell you – and you'd kind of think this would be obvious – going extinct is a bad thing. And driving yourselves extinct? In 70 million years, that's the most ridiculous thing I've ever heard.*"

[8] https://www.youtube.com/watch?v=o7EpiXViSIQ

[9] https://www.youtube.com/watch?v=B-nEYsyRlYo

[10] https://www.youtube.com/watch?v=3DOcQRI9ASc

3. How professionals feel about climate change

In March 2024 a YouGov survey asked 2,105 UK adults a question about climate change, as shown in Figure 7: "Thinking about how you feel TODAY about climate change and its effects, which of the following comes closest to your view?" The public response was as follows: 24% were very worried, 42% fairly worried, 20% not very worried, and 10% not worried at all about climate change and its effects.

Think about how you feel TODAY about climate change and its effects, which of the following comes closest to your view?

1. I am currently very worried about climate change and its effects
2. I am currently fairly worried about climate change and its effects
3. I am not currently very worried about climate change and its effects
4. I am not currently worried about climate change and its effects

Figure 7. YouGov question and response options[11]

The question emphasises "TODAY", with the implication that feelings change. How we feel can also be relative to other worries or considerations on our minds (for example cost of living). Taken at face value, the response suggests **a public majority that may be sympathetic to positive climate action**. What this question does not reveal is how much people are prepared to trade against other priorities to address their worries.

Participants in the CLIMATES initiative were all asked this question at the start of their engagement. Across the workshops (total number of people, n=273) and survey (n=64), 59% were very worried, 37% were fairly worried, 3% were not very worried, and 1% were not worried at all. The share of very worried was the same for the workshop participants and the survey participants. About a fifth of survey participants were not very worried or not worried at all, compared with 1% of workshop participants.

All participants were self-selecting and it is not possible from this sample to know how this compares with the overall population of highways and transportation professionals. What is apparent is that **the majority of those taking part in CLIMATES are worried about climate change**.

[11] https://d3nkl3psvxxpe9.cloudfront.net/documents/WWF_Environment_240305_W.pdf

Participants' reasoning for being **very worried** about climate change can be summarised as follows (with the support of supervised AI and notionally ordered – highest to lowest – by frequency of mention):

1. **Personal anxiety and helplessness:**
   Many people feel anxious and helpless about the lack of sufficient attention and action on climate change. They worry about the future for themselves, their families, and future generations.

2. **Visible changes and extreme weather:**
   There are noticeable changes in weather patterns and an increase in extreme weather events, which disrupt daily lives, economies, and infrastructure.

3. **Global inaction and political challenges:**
   Despite decades of discussions, there is a lack of significant progress towards decarbonisation. Political and economic interests often hinder effective action.

4. **Impact on natural environment and biodiversity:**
   Climate change is already affecting natural environments, leading to loss of biodiversity and ecosystem disruptions.

5. **Economic and public health consequences:**
   The cascading effects of climate change include damage to the economy, public health, and infrastructure.

6. **Geopolitical instability:**
   Climate change can exacerbate geopolitical tensions and lead to conflicts over resources like water and food.

7. **Legacy for future generations:**
   There is a strong desire to leave a habitable and safe world for future generations, but current actions are seen as insufficient.

8. **Scientific evidence and tipping points:**
   Scientific evidence suggests that we are approaching or have reached critical tipping points, beyond which the effects of climate change could become irreversible.

9. **Lack of urgency and leadership:**
   There is a perceived lack of urgency and leadership from governments and businesses to address climate change effectively.

10. **Disproportionate impacts:**
    The impacts of climate change are felt disproportionately, with the most severe effects often occurring in the global south and among vulnerable populations.

Those indicating they are **fairly worried** also stated some of these reasons, including lack of leadership, political and economic challenges, visible changes and extreme weather, legacy for future generations, and personal helplessness. Further reasoning included:

1. **Technological and societal adaptation:**
   There is hope that technological advancements and societal adaptation will help mitigate climate change, although progress is slow.

2. **Optimism and resilience:**
   Despite the challenges, there is optimism that humanity will adapt and overcome the risks posed by climate change.

3. **Global and local impacts:**
   Climate change affects both global and local environments, with varying degrees of severity. Some regions experience more immediate and visible impacts.

4. **Education and awareness:**
   Better education and awareness about climate change can help people to understand the problem more fully and take appropriate actions.

5. **Adaptation and preparedness:**
   Adapting and being prepared can help us to cope with the inevitable changes brought about by climate change.

For those expressing **little or no worry** about climate change, reasoning included: limited impact on them within their lifetimes; beyond their control; optimism about human adaptation; trust in authorities; climate change as a natural phenomenon; and claimed effects being exaggerated.

Near the end of their engagement in the CLIMATES workshops, participants were asked this question again (n=235). Of those who said they had been fairly worried at the start, 26% switched to being very worried. Meanwhile, of those who had been very worried at the start, 11% switched to being fairly worried. Overall, 63% were very worried compared to 59% at the start.

The question itself is not very specific but these results indicate **shifts in people's thinking as a result of exposure to (new) information and engagement in dialogue with others**.

Reasons for a shift from fairly to very worried included: realisation of the short timeframes within which action is needed and lack of progress; scale and complexity of the problem; potential severity of societal impact; and concerns about the feasibility of adaptation and resilience for the global majority.

Reasons for a shift from very to fairly worried included: belief in the means to address climate change if they are fully applied (and encouragement from positive change already being made); positive industry leadership among CLIMATES participants and appetite for change; and motivation to act inspired by engagement in CLIMATES, even if future prospects are alarming.

These before and after insights into the degree and nature of worry among participants set a context for considering what was explored in between.

4. Insights on climate change and climate action

Participating in CLIMATES involved sharing understanding with each other about climate change and climate action. The participatory process also included giving participants: a reminder that climate change and climate action are seldom out of the news; and an overview of the climate change outlook.

4.1 In the news in the past seven days

At the start of each CLIMATES workshop, a slide was prepared showing **news headlines seen within the previous seven days.** This helped to highlight that, while the stories change, climate change and climate (in)action are always in the news headlines. Dealing with climate change is now a constant in our lives. The complete chronological list of headlines used across the CLIMATES workshops is included as Appendix 2. When seen together, the headlines offer an illustration of the nature and seriousness of the issues being grappled with.

4.2 The climate change outlook

In each workshop (and in summary form for the online engagement survey) participants were taken through the following insights (reviewed and enhanced for this report) about climate change and climate action.

Carbon dioxide levels and global emissions

Carbon dioxide (CO2) in the atmosphere is measured in parts per million (ppm) and its presence can therefore appear small. Compared to before the industrial revolution (from around 1760 to 1840), CO2 levels have increased from around 280ppm in 1750 to 420ppm in 2020.[12] The presence of caffeine in a daily cup of coffee is at about 400ppm which reminds us that "Small amounts of powerful substances have big effects".[13]

The increase in CO2 of about 50% (the majority in the last 50 years) is serious.

At the same time, annual emissions of CO2 from human activity have sharply increased – rising from around 17 gigatonnes fifty years ago to around 37 gigatonnes in 2020 (a gigatonne is one thousand million tonnes). **As the world burns fossil fuels, the CO2 levels in the atmosphere are increasing and the world is warming.** Records of CO2 level increases and annual emissions continue to be broken. Very few climate scientists would deny there must be a causative link, rather than just a parallel trend.

In 2022, the Secretary General of the United Nations (UN) warned that "To keep the 1.5-degree limit agreed in Paris within reach, we need to cut global emissions by 45 percent this decade".[14] This refers to the goal agreed at the UN Climate Change Conference (COP21) in 2015 of seeking to limit the increase in global average temperature to no more than 1.5 degrees Celsius (C) above pre-industrial levels by the end of this century. The 45% cut in greenhouse gas emissions (predominantly CO2) means against 2010 levels. **With precious little time until the end of the decade, emissions have yet to even peak, let alone reduce.** There is an awful lot to achieve in a short space of time – the equivalent to returning within the next few years to levels of emissions seen in the 1970s.[15] **Transport currently accounts, in terms of direct emissions, for around one-fifth of global CO2 emissions.**[16] Our sector carries a lot of responsibility for addressing the overall goal.

Carbon 'budgets' available for global society (amounts of CO2 that can be emitted into the atmosphere while staying within target) are determined by future temperatures we hope to stay below and the confidence level we apply. **To have a 50% chance of staying below the 1.5-degree limit, and given the current exhaustion rate, it has been estimated that our global budget would be exhausted in 2029.**[17]

[12] https://www.climate.gov/news-features/understanding-climate/climate-change-atmospheric-carbon-dioxide

[13] https://climate.mit.edu/ask-mit/how-can-such-small-amount-carbon-dioxide-atmosphere-only-around-420-parts-million-cause-so

[14] https://www.un.org/sg/en/content/sg/statement/2022-04-04/secretary-generals-video-message-the-launch-of-the-third-ipcc-report-scroll-down-for-languages

[15] https://iea.blob.core.windows.net/assets/33e2badc-b839-4c18-84ce-f6387b3c008f/CO2Emissionsin2023.pdf

[16] https://ourworldindata.org/co2-emissions-from-transport

[17] https://climatechangetracker.org/igcc/current-remaining-carbon-budget-and-trajectory-till-exhaustion

Scenarios set out by the Intergovernmental Panel on Climate Change (IPCC)

In 2021, the IPCC set out five scenarios for possible future climate change by the end of this century.[18] The range in average temperature increase (compared with pre-industrial levels) by the end of the century is (according to best estimates) from 1.4C (most optimistic) to 4.4C (avoid at all costs).[19]

As with ppm of CO2, such variation may seem small, yet the implications are significant: ***"at 2 degrees, we start getting into scenarios that make most dystopian horror movies look like children's coloring books"***.[20] The IPCC indicates how, with every increment of global warming, climate changes get larger: temperatures, drought, precipitation (rainfall), snow, and tropical cyclones.[21]

Where are we heading?

The IPCC highlights how interacting conditions created by governments, the private sector, and civil society – and the choices involved – influence the development pathway towards sustainability. Enabling conditions for individual and collective actions include: inclusive governance; diverse knowledge and values; finance and innovation; ecosystem stewardship; and behavioural change. Constraining conditions include: poverty, inequity, and injustice; siloed responses; lack of finance and barriers to finance and technology; and trade-offs with sustainable development goals. **The development pathway ahead is in our hands**.

Figure 8 illustrates how global efforts could affect the emissions pathways ahead. Under current policies, there may be warming of between 2.5C and 2.9C by 2100, whereas if the targets and pledges set by nations within the Paris Agreement were achieved, warming might be 2.1C. Significant increases in ambition would be needed to reduce this further, and "very urgent and rapid reduction in global greenhouse gas emissions" would be needed to limit average warming to 1.5C.

Notably for CLIMATES, it is apparent from Figure 8 that **even by 2035 there is significant divergence between the different pathways**. In 10 years' time we should have a good sense of the actual pathway playing out.

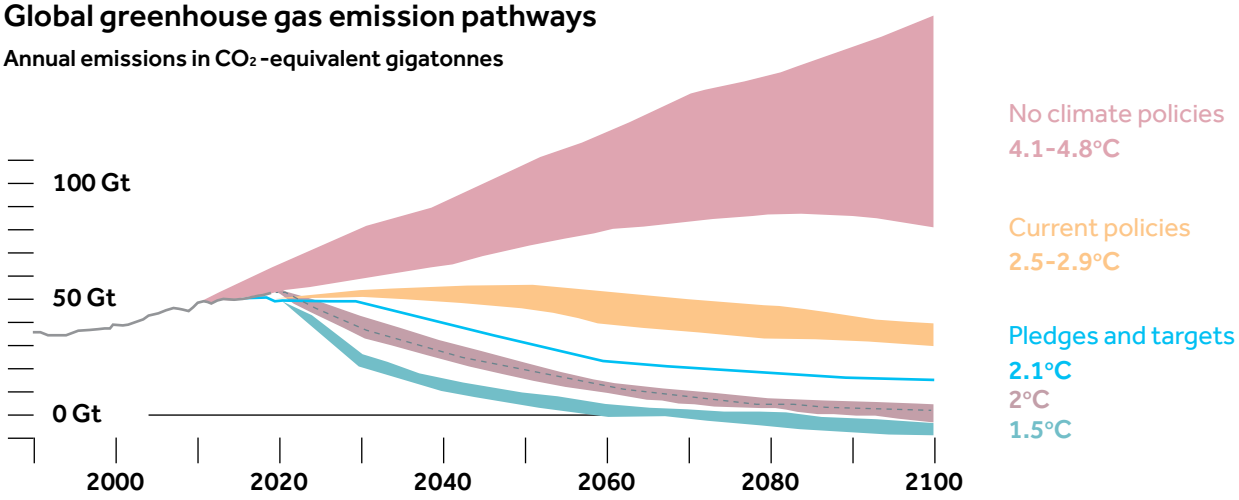


Figure 8. Possible pathways for global greenhouse gas emissions (copied under Creative Commons[22] – originally produced by Hannah Ritchie and Max Roser)

[18] https://www.ipcc.ch/report/ar6/wg1/figures/summary-for-policymakers/figure-spm-8

[19] https://acc.climateneutralgroup.com/en/news/five-future-scenarios-ar6-ipcc/

[20] https://www.climaterealityproject.org/blog/why-15-degrees-danger-line-global-warming

[21] https://www.ipcc.ch/report/ar6/wg1/downloads/outreach/IPCC_AR6_WGI_SummaryForAll.pdf

[22] https://commons.wikimedia.org/wiki/File:Greenhouse_gas_emission_scenarios_01.svg

In May 2024 The Guardian reported on responses from almost half of the climate scientists who have been "lead author or review editor of IPCC reports since 2018" to the question "How high above pre-industrial levels do you think average global temperatures will rise between now and 2100?"[23] Responses varied from below 1.5C to 5.0C or above. The most common responses were 2.5C followed by 3.0C and then 2.0C, with **more than three-quarters of climate scientists expecting a temperature rise of at least 2.5C by the end of the century**. Feelings of hopelessness sit alongside the need to continue to fight for change "because every fraction of a degree avoided would reduce human suffering".

While the challenge ahead may seem daunting, there are also signs of exponential change in terms of technological transitions. According to a June 2024 report,[24] in China solar generation has increased by 35 times within a decade, wind by nine times, and electric vehicles (EVs) and battery storage have scaled even faster. The analysis suggests "global solar generation has been doubling every 2–3 years, and battery storage capacity every year". It is suggested that **humanity's response is heading in the right direction but speed of change hangs in the balance.**

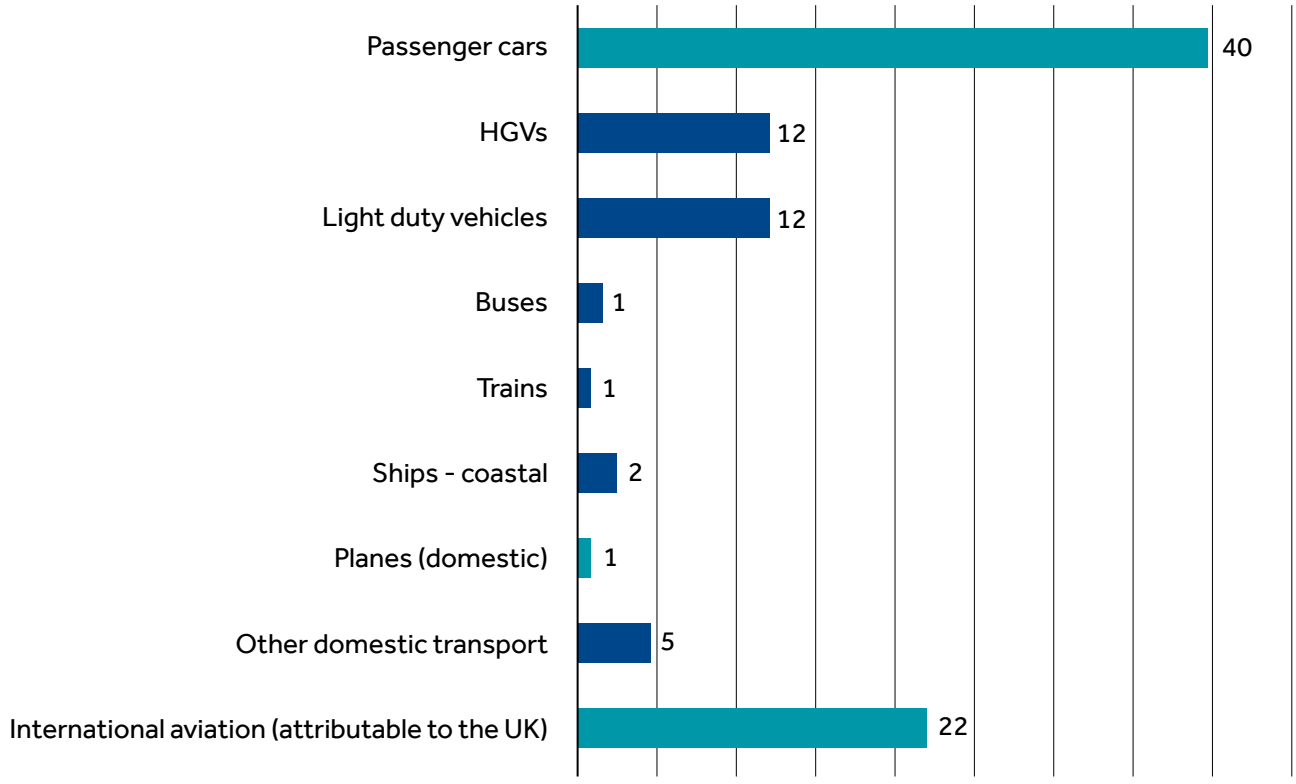


Figure 9. UK greenhouse gas emissions in 2023 for transport (percentage share of total UK transport emissions including domestic and international)[25]

[23] https://www.theguardian.com/environment/article/2024/may/08/world-scientists-climate-failure-survey-global-temperature

[24] https://rmi.org/wp-content/uploads/dlm_uploads/2024/06/RMI_cleantech_revolution.pdf

[25] https://assets.publishing.service.gov.uk/media/67a3117e039d059a1fe5fe9c/final-greenhouse-gas-emissions-2023-by-source-dataset.ods

From international to the UK

Moving from the global picture to a national level, the following can be said for the UK.

Direct ('tailpipe') emissions from transport account for 29% of overall emissions from within the UK. If emissions attributable to the UK from international aviation and international shipping are added to domestic transport emissions across modes then the overall picture for transport emissions associated with the UK is shown in Figure 9. **Passenger cars and aviation (domestic plus international) are the biggest contributors to UK transport emissions**. International aviation emissions will form part of the UK's legally binding carbon budgeting from 2033 onwards.

As of the end of April 2025, battery electric vehicles account for 21% of the market share for new cars registered in the UK (up from an equivalent figure of 16% for 2024)[26] **and there are over 1.5M fully electric cars in the UK (accounting for 4.4% of the 34 million or so cars on UK roads)**.[27]

In July 2022 the UK Government published its *Jet Zero Strategy – Delivering net zero aviation by 2050*.[28] This strategy assumes a 70% growth in passenger numbers between 2021 and 2050. With no action taken, this would lead to a 37% increase in greenhouse gas emissions per year from pre-COVID-19 levels to 2050 levels. **Based upon a 'high ambition' emissions reduction trajectory, this strategy could reduce total annual emissions by 2050 to around half the level pre-COVID-19**. The strategy meanwhile recognises that "many of the technologies needed to decarbonise the sector are at an early stage of development".

Each year the UK Climate Change Committee (CCC) delivers a progress report to Parliament assessing the actions of government and progress on emissions reduction against climate targets. The reports for the past three years have included the following:

- **2022** – "This Progress Report reveals that, despite important achievements in renewable energy and electric vehicles, the Government is failing in much of its implementation."[29]
- **2023** – "Our confidence in the achievement of the UK's 2030 target and the Fifth and Sixth Carbon Budgets [2028–2032 and 2033–2037 respectively] has markedly declined from last year."[30]
- **2024** – "Policy reversals and delays in other areas, together with inconsistent messaging, have hindered progress just when acceleration was needed. With the 2030 target only six years away, and the impacts of climate change intensifying, rapid action is needed to get things back on track."[31]

As well as addressing the reduction and removal of direct (tailpipe) emissions from transport, the highways and transportation sector must also play its part in achieving a steep downwards trajectory in greenhouse gas emissions associated with manufacturing and construction. This will need to be tackled through design optimisation (including no/low build, recycling and reuse of construction materials, material substitution, and energy efficiency and fuel switching).

In spite of the UK Government having a Net Zero Strategy, on two occasions (2022 and 2024) there has been a High Court ruling that this strategy is unlawful because of inadequate demonstration that it complies with the Climate Change Act.

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[26] https://www.smmt.co.uk/vehicle-data/car-registrations/

[27] https://www.zap-map.com/ev-stats/ev-market

[28] https://assets.publishing.service.gov.uk/media/62e931d48fa8f5033896888a/jet-zero-strategy.pdf

[29] https://www.theccc.org.uk/publication/2022-progress-report-to-parliament/

[30] https://www.theccc.org.uk/publication/2023-progress-report-to-parliament/

[31] https://www.theccc.org.uk/publication/progress-in-reducing-emissions-2024-report-to-parliament/

Other national insights

For the online CLIMATES workshops for India, Hong Kong, and the United Arab Emirates (UAE), material was shared about climate change and climate action from their territorial perspectives. This is briefly summarised below.

India is no stranger to natural disasters. In 2024 alone these included landslides, cyclones, severe monsoon flooding, heatwaves (over 35 cities surpassed 45C), and droughts. India's *National Action Plan for Climate Change and Human Health*[32] was released in 2008, with eight missions to address climate change concern and promote sustainable development. Its National Solar Mission has seen it go on to become the world's third-largest producer of solar power in 2025.[33] It is now the world's fourth-largest wind energy producer. In 2022 India committed "to reduce the 'emissions intensity' of its gross domestic product (GDP) to 45% below 2005 levels by 2030".[34] In terms of transport, there is expansion of metro systems in over 20 cities including Delhi, Bengaluru, Mumbai, and Nagpur. The Government of India aims for 30% of new car sales by 2030 to be electric vehicles.[35]

Hong Kong has faced extreme weather in recent years, with serious flooding to the city due to a typhoon in 2018 and a rainstorm in 2023. In 2022, Hong Kong produced 33 megatonnes of greenhouse gas emissions, with road transport accounting for around one-fifth of this (private car use making the biggest contribution, followed by medium goods vehicles, franchised buses, light goods vehicles, and taxis). In 2021 *Hong Kong's Climate Action Plan 2050* was published.[36] Set against average per capita annual greenhouse gas emissions of 4.5 tonnes in 2020, the target is for this to be reduced to 3.3-3.8 tonnes in 2030, with carbon neutrality achieved before 2050. In June 2021, the Government published its *Clean Air Plan for Hong Kong 2035*.[37] This includes a target of "no new registration of fuel-propelled private cars including hybrid vehicles from 2035 or earlier" and a tax incentive to car owners to replace their old private cars with electric vehicles along with subsidised provision of charging facilities in housing estates. Currently, just over 12% of cars in Hong Kong are electric.[38] The city continues to promote the use of public transport, with around half the trips in Hong Kong relying on rail.

The **UAE** experienced a serious flooding event in April 2024, with the heaviest rainfall in 75 years recorded.[39] While this was seen as an exceptional event, it is estimated by the IPCC that by 2040 there could be double this rainfall with such an event. UAE's per capita annual greenhouse gas emissions (2022) are on average 18 tonnes (compared with 14 tonnes for the US and 5 tonnes for the UK[40]), although this reflects a 25% reduction since 2000.[41] Electricity production now includes nuclear power plants and increasing solar power generation. Around a fifth of greenhouse gas emissions are from transport. UAE hosted COP28 in Dubai in 2023, which concluded "with an agreement that signals the 'beginning of the end' of the fossil fuel era by laying the ground for a swift, just and equitable transition, underpinned by deep emissions cuts and scaled-up finance". In 2023 the UAE Ministry of Climate Change and Environment published *The United Arab Emirates' First Long-Term Strategy (LTS) – Demonstrating Commitment to Net Zero by 2050*,[42] with a recognised need to see its greenhouse gas emissions peak before 2025. As part of its promotion of a shift to electric vehicles, battery electric vehicles will be given 'road privileges'. For aviation, the focus is on phasing out jet fuel by 2050 to be replaced by biofuel and e-kerosene. Other efforts include investment in metro, tram, and rail infrastructure and the goal of 100% taxi electrification by 2027.

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[32] https://ncdc.mohfw.gov.in/wp-content/uploads/2024/04/27505481411548674558.pdf

[33] https://en.wikipedia.org/wiki/Solar_power_in_India

[34] https://www.carbonbrief.org/qa-what-does-indias-updated-paris-agreement-pledge-mean-for-climate-change/

[35] https://itdp.org/2023/08/09/how-this-state-in-india-is-envisioning-a-future-for-electric-vehicles/

[36] https://cnsd.gov.hk/wp-content/uploads/pdf/CAP2050_booklet_en.pdf

[37] https://www.eeb.gov.hk/sites/default/files/pdf/Clean_Air_Plan_2035_eng.pdf

[38] https://www.epd.gov.hk/epd/english/environmentinhk/air/promotion_ev/promotion_ev.html

[39] https://en.wikipedia.org/wiki/2024_United_Arab_Emirates_floods

[40] https://www.worldometers.info/co2-emissions/co2-emissions-per-capita/

[41] https://www.iea.org/countries/united-arab-emirates/emissions

[42] https://unfccc.int/sites/default/files/resource/UAE_LTLEDS.pdf

Possibilities for 2035

To conclude the climate change outlook, CLIMATES participants were introduced to four possible scenarios for 2035, based upon two critical uncertainties (drivers of change that are important but also uncertain):

(1) **global climate change pathway** – ranging from weakly to strongly contained global emissions; and

(2) **strength of national climate action** (mitigation, adaptation, and/or resilience) – ranging from weak to strong progress. The four scenarios are outlined in Figure 10.

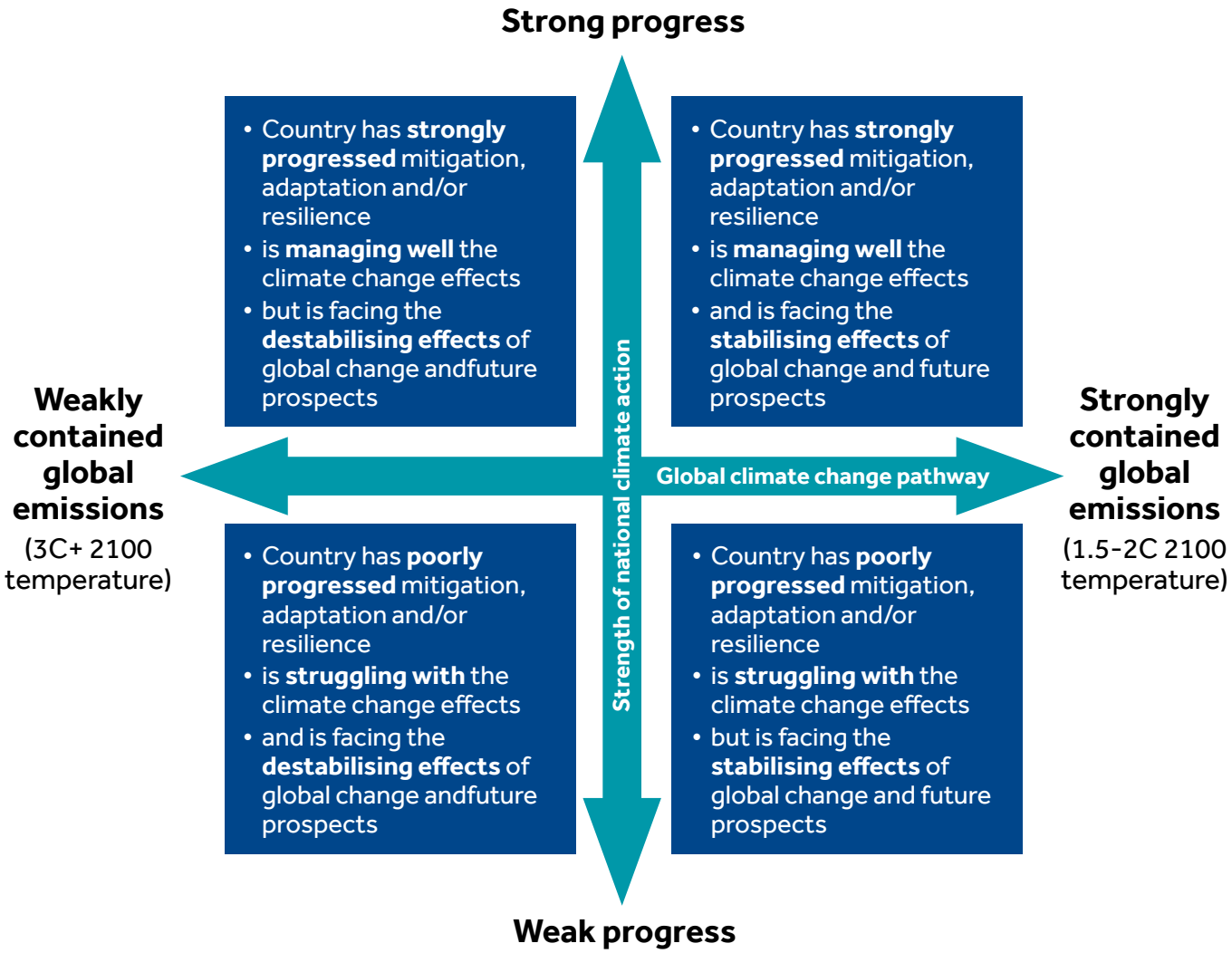


Figure 10. Possible scenarios for 2035

5. Possibilities for 2035 and placing bets

In the full-length workshops (focused on the UK), following insight into the climate change outlook, CLIMATES participants explored and reported back on the four different possible scenarios for 2035 shown in Figure 10. Each exploration was guided by four main questions: (1) What is going on globally that explains the pathway the world is on?; (2) What global conditions impact us nationally in highways and transportation? (e.g. weather changes, prices, resource availability, supply chains); (3) What characterises the national transport system? (infrastructure, use, investment, disruption, resilience, state of industry, etc.); and (4) What non-transport characteristics of society stand out?

Participants brought their own distinctive interpretations to the different possible futures and workshop groups gave their own names to the scenarios. For this report, supervised AI has been used to help create a composite description of each scenario based upon insights from all workshops. These descriptions are set out below, using the names for the scenarios originally coined in a 2021 LinkedIn post[43] (and used to introduce them at the CLIMATES workshops).

5.1 Weak national climate action and weakly contained global emissions ('Shared misery')

This scenario in overview is characterised as follows. In 2035 our country has poorly progressed mitigation, adaptation, and resilience. It is struggling with the effects of climate change, and it is facing the destabilising effects of global change and future prospects.

What is going on globally that explains the pathway the world is on?

Globally, the world in 2035 is marked by widespread denial and short-termism. Despite the visible and worsening effects of climate change, many political and economic systems continue to prioritise immediate economic growth over long-term sustainability. There is a significant lack of unity and cooperation among nations, with countries focusing on their own interests rather than working together to address global climate challenges. Consumption continues to rise exponentially, exacerbating disparities between wealthy and poorer regions. Political instability and conflicts over resources are common, driven by climate-induced migration, food and water shortages, and economic pressures.

What global conditions impact us nationally in highways and transportation?

In our country, several global conditions significantly impact highways and transportation. The increased frequency and severity of extreme weather events, such as floods, storms, and heatwaves, disrupt transport infrastructure and operations, making maintenance and repairs more challenging. The scarcity of resources and rising costs affect their availability with increasingly unreliable global supply chains, adversely impacting transport infrastructure maintenance and leading to delays, inefficiencies, and higher operational costs for the transport system. Climate-induced migration leads to increased population pressures. These global conditions collectively contribute to a strained and less resilient national transport system.

What characterises the national transport system? Our country's national transport system is suffering significant infrastructure degradation. Roads, railways, and other transport systems are in a state of disrepair due to lack of investment and increased weather-related damage. Investment is focused on essential maintenance and repairs rather than proactive improvements or new infrastructure projects. Transport costs are high, and services are frequently disrupted, leading to inefficiencies and decreased reliability. Despite efforts to promote public transport, car use remains high due to perceived safety and reliability issues with public transport. Progress in

[43] https://www.linkedin.com/posts/glenn-lyons_climateemergency-socialdilemma-scenarioplanning-activity-6868952222101831680-11LI - note that the LinkedIn post compared cities rather than countries with the global picture, so for CLIMATES the scenario named 'City outcast' was renamed 'Country outcast'.

transport technology, such as electric vehicles and automation, has stagnated, and there is a reliance on outdated systems.

The transport industry faces a skills shortage, with fewer professionals entering the sector due to its declining attractiveness and the challenging working conditions. The focus has shifted from strategic planning to reactive maintenance, with transport professionals often working in emergency response roles to address immediate infrastructure failures. The overall approach has become more disjointed rather than cohesive, exacerbating the situation faced – a situation that takes an emotional toll on highways and transportation professionals, with many feeling despondent and overwhelmed by the constant crises and lack of progress.

What non-transport characteristics of society stand out?

Society in 2035 is marked by increased inequality, with the gap between the rich and poor widening. Wealthier individuals are able to insulate themselves from climate impacts while poorer communities suffer the most. There is widespread social unrest and polarisation, with frequent protests and conflicts over resources and policies. A general sense of denial and apathy prevails, with many people resigned to the worsening conditions and feeling powerless to effect change. Health problems related to climate change, such as heat-related illnesses and respiratory issues, are on the rise. Food security is a major concern due to disrupted agricultural production and supply chains.

Communities are increasingly fragmented, with a lack of empathy and cooperation among individuals. The rise of populism and far-right political movements has further divided society, leading to increased tension and conflict. Mental health issues are prevalent, driven by the constant stress and uncertainty of living in a world with frequent climate-related disasters and economic instability. The societal focus has shifted towards survival and self-preservation, with people prioritising their immediate needs over long-term sustainability and collective wellbeing.

5.2 Strong national climate action and weakly contained global emissions ('Righteous hell')

This scenario in overview is characterised as follows. In 2035 our country has strongly progressed mitigation, adaptation, and resilience. It is managing well the effects of climate change, but it is facing the destabilising effects of global change and future prospects.

What is going on globally that explains the pathway the world is on?

Globally, economic growth continues to be prioritised over climate concerns. Major economies remain heavily reliant on fossil fuels, with political denial and ignorance about the severity of climate change. Emerging economies are generating increased emissions and environmental degradation. There are global food shortages and growing numbers of climate refugees. The world is experiencing geopolitical proxy wars, military strife, and concerns over food scarcity. These issues are exacerbated by the lack of global cooperation on climate action.

What global conditions impact us nationally in highways and transportation?

As a country we face increased flooding, high winds, and extreme heat, which impact transport infrastructure, causing road closures and disruptions. Rising prices and scarcity of resources affect the availability of materials for transport infrastructure. Supply chains are disrupted, leading to higher costs and reduced reliability. Increased migration due to climate change puts additional strain on the transport system.

What characterises the national transport system?

As a country we have developed a more resilient transport system with a focus on climate adaptation, and investment in flood defences, drainage, and improving the wind resistance of structures. Emphasis is on maintaining and adapting existing infrastructure rather than building new assets. There is an ongoing shift towards using sustainable materials and technologies in construction and maintenance. The transport industry is characterised by innovation, with a strong emphasis on developing and implementing sustainable practices and technologies.

Public transport has become popular and depended upon, with networks of buses, trains, and trams that are efficient and reliable. Walking, wheeling, and cycling are highly encouraged, supported by extensive networks of pedestrian and cycling paths. Car ownership has significantly decreased, and domestic air travel is minimised, with a strong emphasis on reducing carbon emissions.

Despite the progress, the transport system faces frequent disruptions due to extreme weather and global instability. There is an ongoing effort to improve resilience and reduce vulnerability, with regular updates to infrastructure and emergency response plans. The industry is proactive in addressing challenges, with a focus on long-term sustainability and resilience.

Strong leadership and the role of young people in driving change have been important. There was a recognition of the co-benefits of climate action, such as improved health and wellbeing, which motivated continued efforts despite global challenges.

What non-transport characteristics of society stand out?

Improvements in public health are evident due to increased active travel and the presence of green spaces. People are more physically active, leading to better overall health outcomes. However, the adverse weather conditions resulting from climate change place additional stress on adult social care and public health services dealing with vulnerable populations.

There is a noticeable shift towards localism, with communities working together and relying less on global supply chains. People are more accepting of disruptions and adapt to changing conditions, showing local leadership, resilience, and community spirit. Local food production and consumption have increased, reducing reliance on imported goods and enhancing food security.

Strong tax regimes and pricing signals are in place to further encourage sustainable behaviours. There is a focus on reducing consumerism, and growing emphasis on measuring productivity by societal wellbeing rather than wealth. This shift in economic priorities has led to a more sustainable and equitable society, although there are still significant disparities in how different communities experience the impacts of climate change and the benefits of climate action, with a simmering potential for social unrest.

5.3 Strong national climate action and strongly contained global emissions ('World as one')

This scenario in overview is characterised as follows. In 2035 our country has strongly progressed mitigation, adaptation, and resilience. It is managing well the effects of climate change, and it is facing the stabilising effects of global change and future prospects.

What is going on globally that explains the pathway the world is on?

Globally, there has been a significant shift towards cooperation and consensus on climate action. Political leaders worldwide have aligned on the importance of tackling climate change, leading to strong international collaboration. This has resulted in the implementation of global circular economy principles, high rates of recycling, and the increasing adoption of low-carbon materials. The market has been shaped by a change in consumer attitudes towards sustainability. Technological advancements and high adoption rates have further driven progress, with innovations in clean energy being widely embraced. Additionally, there is a strong focus on social justice, seeking to ensure that climate actions are equitable and inclusive.

What global conditions impact us nationally in highways and transportation?

Global efforts on decarbonisation, while slowing a worsening of greenhouse gas levels in the atmosphere, have not lessened the ongoing occurrence of extreme weather events. Our country still experiences more intense rainfall events and longer summer droughts, necessitating adaptive measures in highways and transportation.

The cost of fossil fuels has risen significantly, making renewable energy sources even more attractive and pushing forward the uptake of zero emission vehicles. There is a greater focus on local production and supply chains, reducing dependency on long-distance imports and with a strong emphasis on recycling and reuse of materials, alongside use of low-carbon materials in construction.

What characterises the national transport system?
The national transport system includes extensive and well-maintained public transport networks and active travel infrastructure. Electric vehicle charging infrastructure is widespread, and hydrogen highways for freight are operational.

There has been a major shift towards greater use of public transport and active travel, with reduced reliance on private vehicles. Public transport is affordable, reliable, and attractive. Significant investment has been made in sustainable transport infrastructure and improved integration of public transport networks. Road user charging has been introduced to further help manage demand and support investment into providing more equitable and sustainable transport choices. There has been a significant reduction in domestic air travel as a result of changing public attitudes, increased regulation, and the high cost of jet fuel.

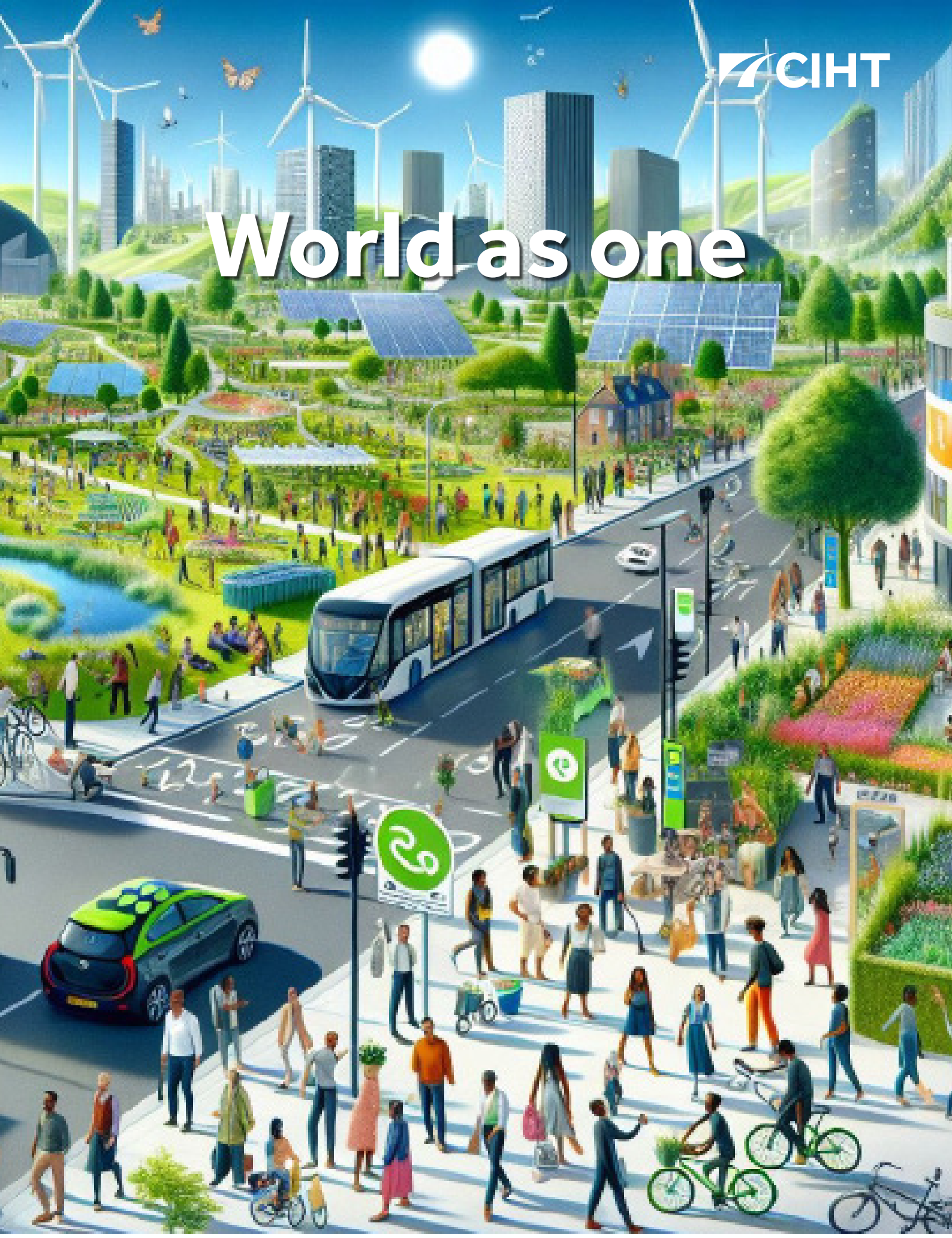
The transport system is becoming more resilient to disruption, with adaptive measures in place to quickly restore operations where necessary. There is increasing investment in green and blue infrastructure (such as green spaces, water bodies and rivers) to mitigate the effects of extreme weather events.

The transport industry is thriving, with a focus on innovation and sustainability. Public transport in particular offers a desirable career choice, with flexible and agile working conditions attracting a diverse workforce that helps ensure the sector can adapt to changing demands and conditions. The highways and transportation sector is characterised by a high level of cooperation and coordination among different stakeholders.

What non-transport characteristics of society stand out?

High levels of awareness and understanding about climate change and sustainability are prioritised within the education system. This is resulting in an increasingly well-informed public that understands the importance of sustainable practices.

Society has embraced sustainable behaviours, with a focus on reducing consumption and making environmentally friendly choices. There is a strong emphasis on cooperative local living, with people choosing to live and work within their communities where possible. Improved air quality and cleaner environments are resulting in better public health outcomes and there is a greater focus on wellbeing relative to economic growth, with policies aimed at improving the quality of life for all.


CIHT
World as one

5.4 Weak national climate action and strongly contained global emissions ('Country outcast')

This scenario in overview is characterised as follows. In 2035 our country has poorly progressed mitigation, adaptation, and resilience. It is struggling with the effects of climate change, but it is facing the stabilising effects of global change and future prospects.

What is going on globally that explains the pathway the world is on?

Globally, there has been a significant shift towards strong climate action. Major powers such as the US, China, India, and the EU have come together to implement comprehensive climate policies. These countries have recognised the urgent need to address climate change and have made substantial investments in renewable energy, carbon capture technologies, and sustainable practices. Technological advancements have become more affordable and widespread, facilitating the transition to a low-carbon economy. International cooperation has led to effective climate agreements, such as enhanced versions of the Paris Agreement, and global finance is supporting developing nations in their efforts to decarbonise. This collective effort has resulted in a substantial reduction in greenhouse gas emissions with the prospect of a more stable global climate.

What global conditions impact us nationally in highways and transportation?

Despite global progress, we, as with other countries, are experiencing an increased frequency of extreme weather events, such as flooding and storms, which significantly impact highways and transportation infrastructure. These events for us lead to road closures, damage to bridges and highways, and disruptions in public transport services.

The global reduction in fossil fuel production has led to rising costs for these resources. As we are still a country reliant on fossil fuels, transport costs have increased, affecting both personal and commercial travel. The global decline in the petrochemical industry has resulted in greater scarcity of materials like asphalt and bitumen, which are essential for road construction and maintenance. This scarcity has led to higher costs and challenges in maintaining the transportation network. Our country's political isolation and lack of investment in sustainable technologies have made our supply chains vulnerable. Transport projects suffer delays and inefficiencies.

What characterises the national transport system? Transport infrastructure is deteriorating due to inadequate maintenance and frequent disruptions caused by extreme weather events. Roads, bridges, and public transport systems are in poor condition, leading to unreliable services. There is continued reliance on private cars, with stunted adoption of electric vehicles and sustainable transport modes. Public transport options are limited and often expensive, discouraging their use. Political instability has compounded this.

Investment in public transport and climate adaptation measures is insufficient. The focus remains on traditional infrastructure projects that do not address the need for sustainable and resilient transportation systems. Disruptions to the transport system due to extreme weather affect economic activities and daily life, leading to frustration among the public. There is a lack of proactive measures to enhance the system's ability to withstand and recover from adverse conditions.

The transport industry is struggling with skill shortages and outdated practices. There is a lack of innovation and adaptation to modern technologies, hindering progress on transport system improvements.

What non-transport characteristics of society stand out?

Inequality and social division are worsening, with increased polarisation between different socio-economic groups. There is a mix of apathy, frustration, and resignation towards climate change. Many people feel disconnected from the efforts to address climate change, leading to political instability and social unrest. Growing polarisation and lack of trust in institutions exacerbates social divisions.

Public health is declining due to increased pollution and lack of access to green spaces. The prevalence of respiratory issues and other health problems is rising, exacerbated by poor air quality and environmental degradation. The UK faces slow economic growth and rising cost of living. High energy and transportation costs contribute to financial strain on households and businesses, leading to economic stagnation and reduced quality of life.

5.5 Relative likelihood of the four scenarios coming to pass

At the in-person workshops (representing over 200 people), participants had eight 'plausibility credits' to assign to the four scenarios according to their view on the relative likelihood (as opposed to attractiveness) of the scenarios coming to pass. If they were completely uncertain then two credits could be assigned to each scenario. If they felt clear that one scenario was plainly the most likely then all eight credits could be assigned. Many participants distributed their credits in between these two options across the scenarios. The results are shown as a box and whisker plot in Figure 11. In broad terms,

CLIMATES participants overall considered a pathway of weakly contained global emissions much more likely than a pathway of strongly contained global emissions. Views were more evenly split on whether national climate action would show strong or weak progress.

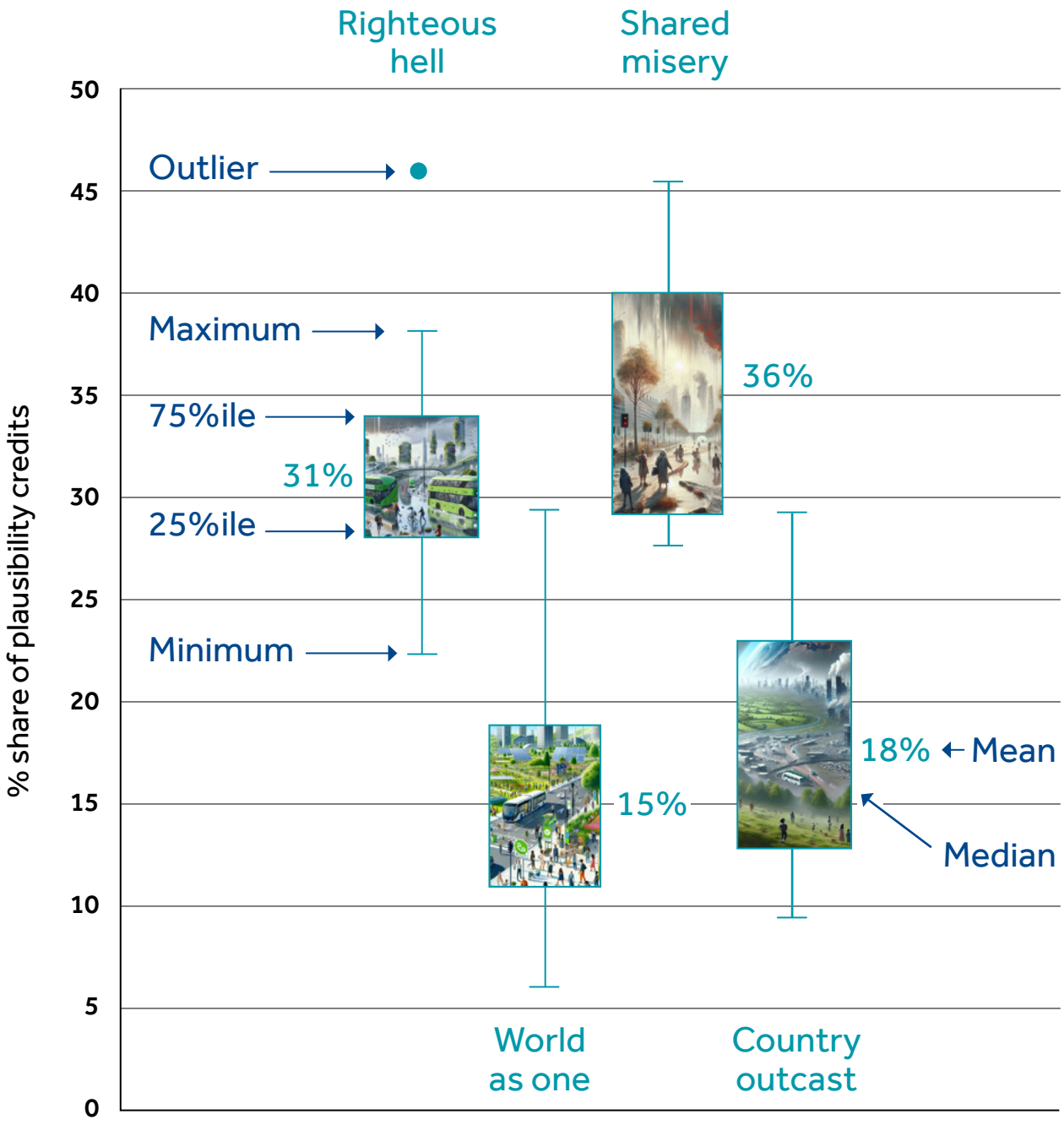


Figure 11. Box and whisker plot of relative likelihood (% share of plausibility credits), across 10 in-person workshops, of each 2035 scenario coming to pass according to participants

6. Issues faced in the late 2020s

Following exploration of future possibilities for 2035, CLIMATES participants in the workshops used the futures technique called Three Horizons (see Section 2.4) to consider the transition from the present through to these different scenarios. In particular, attention was paid to what trends and/or shocks would play out in the late 2020s as we transition to each 2035 scenario.

Supported by use of supervised AI to summarise the workshop discussions, this section highlights transitional factors of note in the more immediate years ahead – factors that can subsequently inform what priority actions in highways and transportation seem appropriate to help society survive or thrive.

6.1 Transitioning to Shared Misery

- **Policy action gap:** The gap between policy and action is growing, leading to increased car dependency and a lack of progress on sustainable transport goals.
- **Infrastructure and investment:** There is a lack of investment in infrastructure, resulting in poor user experience and declining network resilience. This includes inadequate maintenance and capacity issues.
- **Freight and logistics:** The transition in freight logistics is not mature, with no investment in rail freight and continued reliance on road transport. This exacerbates congestion and leads to inefficiencies.
- **Congestion and capacity:** Persistent congestion and lack of capacity are major issues, with investment failing to keep up with demand. This includes overcrowded public transport and road networks.
- **Siloed approach:** There is a continued siloed approach to transport and energy sectors, leading to fragmented and ineffective policies.
- **Economic instability:** Global economic instability reduces available expenditure for infrastructure, leading to further deterioration of transport systems.
- **Weather events:** Frequent and severe weather events make public transport less appealing and disrupt transport networks. This includes flooding, extreme temperatures, and other climate-related shocks.
- **Automation and car appeal:** Advances in automation increase the appeal of cars, leading to higher car dependency and reduced use of public transport.
- **Climate change apathy:** There is a lack of defined approach or interest in addressing climate change, leading to continued reliance on unsustainable transport modes.

6.2 Transitioning to Righteous Hell

- **Resilience and infrastructure:** There is a strong focus on maintaining and improving existing infrastructure rather than building new. This includes a shift towards preventative maintenance and resilience planning to handle extreme weather events and other shocks.
- **Zero emission vehicles:** The transition to zero emission vehicles is a major priority, with significant improvements in charging infrastructure. There is a political push to retire old petrol and diesel vehicles, and public education campaigns to encourage the uptake of electric vehicles.
- **Technology and manufacturing:** There is growth in technology development and manufacturing, with investments in trials and innovation. This includes advancements in autonomous vehicles and real-time passenger information to reduce travel demand and enhance mobility.

- **Sustainable behaviour and land use:** Changes in land use planning and housing reforms are aligned with sustainable transport goals. This includes promoting sustainable behaviour changes and integrating transport and housing policies.
- **Holistic approach:** Policies are developed with a holistic view, considering health, environment, and equality together. This integrated approach ensures that multiple priorities are addressed simultaneously.
- **Regional devolution:** Power and resources are increasingly devolved to regional levels, allowing for more localised decision-making and implementation of transport solutions.
- **Robust taxation and fiscal measures:** Strong fiscal measures are implemented, including pay-per-mile charges for cars, taxes on flights, and subsidies for public transport. These measures are designed to encourage sustainable transport choices.
- **Public transport subsidies:** There is significant investment in public transport, with subsidies to make it more affordable and attractive. This includes investment in sustainable transport infrastructure and services.
- **Trust and self-sufficiency:** There is growing trust in politicians and a sense of pride in self-sufficiency. This includes a focus on local solutions and regional devolution.

6.3 Transitioning to World as One

- **Travel behaviour change:** There is widespread public acceptance of the need to reduce travel and shift towards more sustainable modes of transport. This includes increased use of public transport, cycling, and walking.
- **Policy and strategy development:** Policies and strategies are developed with better timeframes and delivery, reducing the gap between policy and action. This includes more efficient planning processes and streamlined approval for transport projects.
- **Unified priorities:** There is a strong consensus on priorities across sectors and government, leading to more cohesive and coordinated action. This includes cross-sector collaboration and integrated planning.
- **Flexible and devolved funding:** Funding for transport infrastructure is more flexible and devolved, with single-source capital and revenue funding and increased local control. This allows for more targeted and effective investment.
- **Data utilisation:** There is improved access to and use of data for decision-making. This includes better data sharing and analysis to inform transport planning and operations.
- **Micromobility and road pricing:** Regulations for micromobility are mature, and there are significant developments in road pricing. This includes the implementation of road user charges to fund transport infrastructure and encourage sustainable travel.
- **Attitudes towards car ownership:** Public and political attitudes towards car ownership are changing, with a shift towards shared mobility and reduced car dependency.
- **Energy transition:** The electrical grid is fully developed, supporting a strong transition to renewable energy sources. This includes investments in energy infrastructure and technology.
- **Overcoming barriers in AI and AVs:** Barriers to the use of AI and autonomous vehicles (AVs) are being overcome, leading to increased adoption and integration of these technologies in transport systems.

6.4 Transitioning to Country Outcast

- **Driverless cars and inequality:** The adoption of driverless cars leads to increased congestion and transport inequality. This includes a focus on consumer-focused technology that benefits some groups more than others.
- **Sedentary lifestyles:** Sedentary lifestyles continue, with gender imbalances in active travel trends, and a lack of investment in active travel infrastructure.
- **Resource constraints:** There is a lack of resources to address climate concerns and maintain infrastructure. This includes budget constraints and short-term planning.
- **Pavement parking and safety:** Pavement parking worsens, leading to safety concerns, particularly for women and vulnerable groups.
- **Political extremism:** Political extremism and turbulence reduce funds for transport infrastructure and lead to volatile policy environments.
- **Public transport unreliability:** Public transport becomes increasingly unreliable, with economic growth prioritised over decarbonisation. This includes high costs and unattractive services.
- **Cost of living and sustainable behaviours:** The high cost of living prevents sustainable behaviours, leading to car-dependent housing and reduced use of public transport.
- **Short-term thinking:** Short-term policies and disaster response engineering overshadow long-term planning and investment. This includes reactive rather than proactive approaches.
- **Economic stresses:** Economic stresses lead to regressive policies and public sector investment in maintaining the status quo. This includes a focus on immediate priorities rather than long-term solutions.
- **Public distrust:** There is a growing public distrust of experts and declining belief in sustainable transport. This is exacerbated by misinformation and lack of credible leadership.
- **Energy security fears:** There is increased domestic production of oil and gas due to fears around energy security, alongside which there is reduced investment in renewable energy sources.
- **Social division:** There is an increasingly fractious society with conflicting targets and no cohesive action, and with social and spatial inequalities in transport access and services.

7. Short-term priorities for climate action in highways and transportation

Informed by examination of possible 2035 scenarios and the related transitional developments that could be unfolding in the late 2020s, participants turned their attention to addressing the CLIMATES exam question: In an uncertain world, what priority actions in highways and transportation should we double down on in the next three years to meet the unfolding challenges of climate change as we look out to 2035 and beyond?

It is important to note that UK efforts on climate action are significant (as indeed is the case in other territories) and technology transitions are in play globally. However, this is in tension with whether such developments are going far enough and fast enough. When turning attention to what priority actions are called for, it should be recognised that the political environment nationally and globally is challenging. For example, the UK Government has economic growth as its top priority. A new US administration is sending shockwaves around the world with push-back on the importance of climate change mitigation. Individual professionals are looking to find their place and purpose in this landscape.

Priority actions proposed by participants fall into 13 areas that can be organised into three successive layers: (1) conditions for change; (2) processes to drive change; and (3) outcomes needed from change. This is shown in Figure 12.

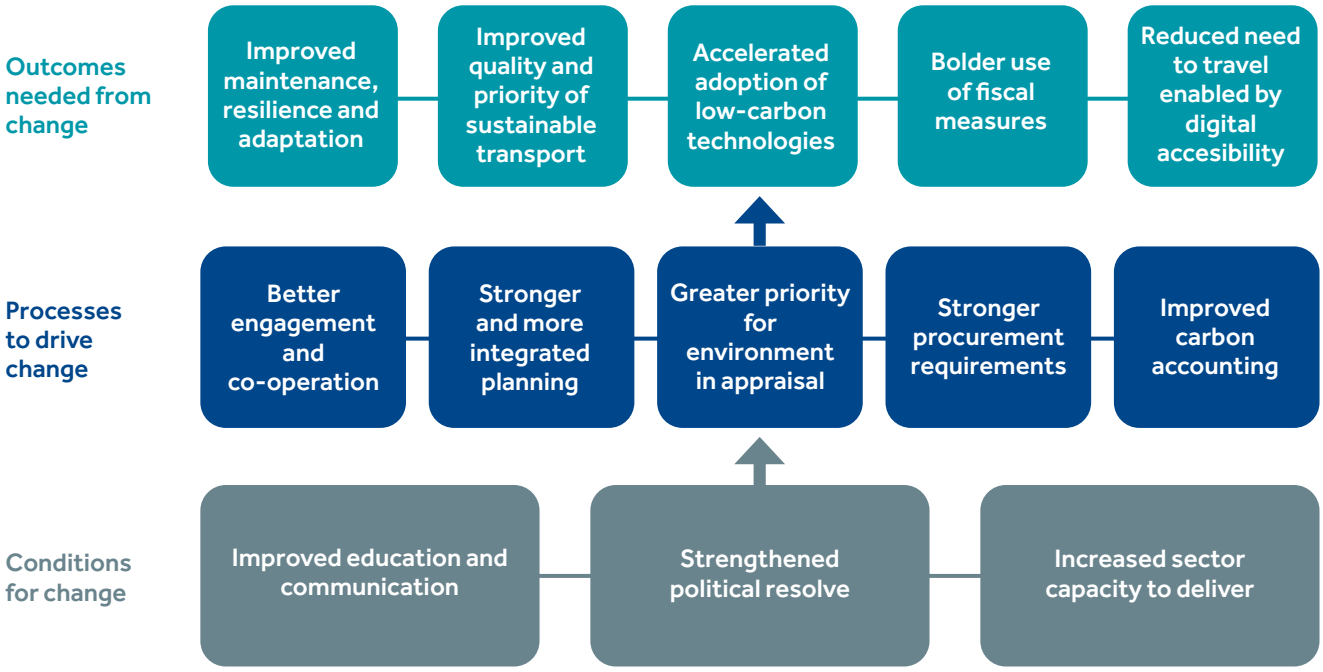


Figure 12. Coverage of priority actions suggested by CLIMATES participants

These layers and areas are examined below, followed in Section 9 by recommendations arising from the CLIMATES initiative for what should be prioritised for action within the highways and transportation sector. Building coalitions behind such recommendations will be crucial to moving them forward.

Careful thematic analysis was undertaken manually before using supervised AI to create summary accounts of the priority actions suggested by participants. The summary accounts reflect participants' own breadth of responses[44] as opposed to an expression of a CIHT position, and they arise from participants' immersion in the CLIMATES initiative and exposure to the seriousness of what may lie ahead.

7.1 Conditions for change

Improved education and communication

There is a need to **increase climate change awareness from an early age** using clear, factual evidence. Public knowledge must be enhanced to **understand the urgency of action and opportunity cost of inaction**. Engaging sceptics and fostering a culture of individual accountability and collective responsibility are crucial. Educating professionals and decision-makers on climate challenges is essential, as is **changing the perceptions of sustainable transport modes**, including emphasising the multiple benefits of active travel, such as improved physical and mental health, reduced healthcare costs, and better air quality.

The focus should be on **improving carbon literacy and positive messaging about climate action**. Public education should deepen understanding of the need for action, share success stories, and highlight the benefits of policies like the Ultra Low Emission Zone (ULEZ). Effective communication and behaviour change are key to **countering misinformation, with an emphasis on solutions**.

Strengthened political resolve

Systemic change and strong national leadership are vital. Further social inequality in access to transport should be resisted with efforts made to avoid growth in aviation and more use of fossil fuels, instead ensuring transport supports all members of society. **Giving regional authorities greater powers**, including revenue-raising, will be crucial for effective change. It is important to **keep to the deadline for banning new internal combustion engine cars** (petrol and diesel cars) and increase efforts to transition to vehicles with fewer emissions. Solutions-focused research and deliberate system 'shocks' (stark changes to transport and society that affect conditions people face) are needed to prompt and support behaviour change.

Building public and political consensus (or at least stable coalitions) on the climate crisis, with government (cross-party) leadership **setting clear and consistent strategic direction and ambitious policies**, is vital. There is a need to reconcile appetite for economic growth with the imperative of climate action ('good growth'). Government **short-termism must be countered**, with emphasis instead on putting in place adequate funding and implementing rapid behaviour change measures. National support for global climate action efforts should be unequivocal.

Increased sector capacity and capability to deliver

Stability in strategy, policy, and long-term funding is needed to prioritise sustainable transport and climate action. Funding settlements (including ring-fenced highway funding) and **capacity building within public and local authorities** are required to address serious resourcing pressures that will otherwise hamper progress.

Training and skills development are seen as essential, with a focus on **handling uncertainty and improving resilience**, with diversified skill sets for students and professionals to **more effectively garner public support** for climate-friendly policies. Bringing motivated experts back into the industry and promoting professional expertise over local political decision-making also merit attention.

[44] Proposed priority actions as summarised reflect this breadth and should not be taken individually as having consensus support across those participating in CLIMATES.

7.2 Processes to drive change

Better engagement and cooperation

There is value in establishing **a united highways and transportation sector voice to communicate effectively with government** and push the climate agenda. This will also create a convening capability to further **foster government–industry collaboration aimed at knowledge sharing and promotion of best practice**. Clients need to provide contractors and consultants with **greater clarity on the pipeline of work** to ensure they are prepared for upcoming projects.

Engagement and participation are key themes, with calls for **new models of participative engagement to help foster consensus building**. Professional institutions also have a part to play in working together for knowledge and helping to counter misinformation. Greater involvement of younger people in decision-making is encouraged. There was some suggestion that necessary participation may end up including public protest, boycott, and strike action.

Stronger and more integrated planning

There is broad support for **more sustainable and integrated vision-led planning** to help address climate change effectively. Simplification and tightening of planning policy, guidance, and regulations are required, with **an expectation of sustainable, less car-dependent development**. Better design reduces the risk of locking in less sustainable practices for the lifetime of the infrastructure. Specific examples include mandatory solar installations on new structures (and retrofitting existing ones), and expectations for electric vehicle charging infrastructure in new developments. Speeding up the planning process is also key to making timely progress.

Addressing the perennial challenge of better integration of land use and transport planning remains important. Breaking down silos between these can help **encourage local living and community cohesion and reduce the need for extensive travel**. Making the case for concepts like 20-minute neighbourhoods helps prioritise pedestrians, equality, and a sense of place.

Greater priority for environment in appraisal

Climate mitigation and adaptation should be a strong consideration in all transport schemes, with a focus on PAS2080[45] (a global standard for managing carbon in the built environment) to **minimise carbon-hungry capacity-increasing highway projects**. A moratorium on new road and airport expansions should be considered until vehicles using them are sufficiently decarbonised. Planning for the worst-case scenario (and making people aware of this) involves **prioritisation decisions that may include sacrificing parts of the transport network**.

The appraisal process, including the UK Treasury's Green Book, should **give greater priority to low-carbon and lowering-carbon outcomes, environment, public health, accessibility, and inclusion with future wellbeing in mind**. Highways are valuable public spaces, rather than just vehicle corridors, and should be managed as such, including potential removal or reallocation of road space where demand is low. Soil health and land management adjacent to transport infrastructure should be given greater attention.

Stronger procurement requirements

Integrating low-carbon solutions into procurement processes is key to helping address climate change. **Decarbonisation, lifecycle carbon assessments, and infrastructure resilience should be mandatory expectations in project tendering**, ensuring that public expenditure prioritises sustainability.

Greater emphasis should be placed on **using local materials (and in situ recycling) to reduce the carbon footprint of construction**, and ethical good practices should be incentivised through contract conditions.

Improved carbon accounting

Improvements in carbon accounting are needed including greater clarity on whole-life carbon emissions of electric vehicles (and comparison with emissions of internal combustion engine vehicles). **Greater attention should be given to scope 2 and scope 3 emissions** (scope 2 being emissions indirectly caused

[45] https://www.bsigroup.com/en-GB/insights-and-media/insights/brochures/pas-2080-carbon-management-in-infrastructure-and-built-environment/

by an entity through its activities, and scope 3 being emissions the entity has indirect responsibility for upstream or downstream in the supply chain).

7.3 Outcomes needed from change

Improved maintenance, resilience, and adaptation

Enhancing the resilience and sustainability of existing infrastructure is key to addressing climate change. **Maintaining and, where appropriate, upgrading existing infrastructure to acceptable standards is a top priority**. A distinct shift from building new to being a caretaker of the existing **will require public expectations to be managed**. An urgent and thorough assessment of climate vulnerabilities in roads and railways is needed.

Investment in resilience and adaptation is crucial, including a focus on improving highway drainage, investing in green infrastructure (such as parks, woodlands or street trees), using novel paving materials, and optimising transport networks. More research into extreme weather events is needed to inform a **greater emphasis on forward planning** and investment for resilience and the adaptability of infrastructure to maintain essential services.

Improved quality and priority of sustainable transport

Much emphasis is given to the need **for improving public transport and promoting active travel** (particularly in urban areas) to address climate change. Key themes include enhancing the quality, affordability, and accessibility of public transport (improving the customer experience), with suggestions for better funding, national ticketing, and even making it free. There should be a **strong push to transition away from car travel** towards (significantly improved) alternatives by changing the pricing structure based on carbon emissions, implementing parking restrictions, and promoting car-share schemes.

Greater investment in active travel infrastructure and in the promotion of walking and cycling offers important co-benefits beyond directly addressing carbon emissions, including public health improvements. Prioritising better active travel connectivity for schools has the particular benefit of **influencing early years travel behaviours** that can shape behaviours in later life. The role of AI in optimising public transport and the importance of rural connectivity are also noted. Additionally, there is support for nationalising buses, reducing national speed limits, and reallocating highway space to sustainable transport modes.

Accelerated adoption of low-carbon technologies

Strong support is needed for the ongoing transition to a future where most or all vehicles using the transport system are low or zero carbon with tailpipe emissions minimised or removed. This includes the importance of addressing the affordability of electric vehicles and the **ongoing development of supporting infrastructure**, while avoiding an over-reliance on electric vehicles as the sole solution. There is a need to **ensure heavy goods vehicles are part of the vehicle fleet transition**, with phase-out of new internal combustion engine vehicles and usage restrictions where appropriate. Vehicle transition must be accompanied by **rapid progress in the transition away from fossil fuels in energy production and decarbonisation of the power grid**.

Technology-enabled innovation can play a crucial role in climate action. **Governance is important, but so too is a need to remove or lessen the barriers to innovation**. The role of AI in supporting climate action is a prime example of where these two considerations can come into tension. While some technology solutions have moved into more mainstream positions, **the need to keep in play other possibilities** such as nuclear power and (green) hydrogen should be recognised.

Bolder use of fiscal measures

The need for **financial mechanisms to discourage car use and fund sustainable transport** seems inescapable. Pricing policies will be key in changing the relative cost of car use and public transport and in turn influencing travel choices. There is an **enduring conceptual appeal of having a national road user charging system** (with hypothecation to ensure funds are reinvested in sustainable transport). Other forms of fiscal measure include **increasing fuel duty** (above the rate of inflation) and further implementation of (increased) **parking charges**.

Beyond a focus on car use, consideration should be given to **a ban on internal UK domestic flights and heavier taxation on international flights**, applicable to both passengers and freight. Improved financial incentives may be needed to motivate heavy goods vehicle owners to support the transition to a low or zero emission fleet. The wider role of carbon taxing to disincentivise fossil fuel use should also be noted.

Reduced need to travel enabled by digital accessibility

Digital connectivity has an important part to play in addressing climate change. Investing in mobile and broadband infrastructure can help **make alternatives to travel more appealing**. Improvements in digital accessibility (for which connectivity is necessary but not sufficient) are seen as crucial for enabling more people to work from home (and meet other needs online), which can significantly reduce travel-related emissions. Taking such measures should be **in partnership with efforts to create greener homes**, further supporting sustainable living and reducing the overall carbon footprint of people's lifestyle behaviours.

8. Takeaways and pledges

8.1 Takeaway messages from CLIMATES

At the end of the CLIMATES workshops, participants were asked for their takeaway messages. These can be summarised as follows:

1. **Urgency and action:**
   There is a strong emphasis on the urgent need for action to address climate change. Participants feel that immediate and decisive actions are necessary to make a difference.

2. **Collective effort:**
   Collaboration and collective action are highlighted as essential for tackling climate change. Working together across industries, governments, and communities is crucial.

3. **Positive change and hope:**
   Despite the challenges, there is optimism that positive change is possible. Participants believe that, with the right tools, actions, and mindset, we can make a significant impact.

4. **Individual responsibility:**
   Everyone has a part to play in reducing carbon emissions and contributing to climate action. Personal choices and actions are important in the fight against climate change.

5. **Education and awareness:**
   Increasing education and awareness about climate change is vital. Participants feel more confident and informed after the workshops and are motivated to spread the word.

6. **Professional role:**
   There is a responsibility on professionals to highlight the threat of climate change and advocate for sustainable practices within their organisations and the sector.

7. **Adaptation and mitigation:**
   Both adaptation and mitigation are necessary to address climate change, with a range of actions and strategies needed.

8. **Challenges and barriers:**
   The workshops helped identify various barriers to climate action, including political, economic, and societal challenges. Overcoming these requires innovative solutions and persistent effort.

9. **Influence and leadership:**
   Participants recognise the importance of influencing others and leading by example. Championing sustainability and climate action within their spheres of influence is crucial.

10. **Ongoing effort:**
    The fight against climate change requires ongoing effort and perseverance. Participants are encouraged to keep pushing for change and not give up.

8.2 Personal pledges

Workshop participants were each invited to make an anonymous personal pledge. The pledges are set out in full in Appendix 3. When seen as a set, they are an inspiring reminder of the innumerable different ways individuals can take action and make small changes that could accumulate to achieve a big difference. Ordered nominally by how commonly mentioned (higher to lower), pledges can be summarised as follows (with example pledge quotes):

1. **Personal actions:**
Participants pledged to reduce their carbon footprint through various personal actions such as using public transport, cycling, walking, reducing car usage and flying, and adopting sustainable travel modes.

"Continue to travel by rail or sea when (if?) going abroad where possible."

"Move to an area where I can travel more sustainably!!!!!!"

"Make more use of my electric bike which is gathering dust in the garage."

"No flying in 2025."

"Swap out regular car journeys with train journeys, which has recently become possible due to moving house."

"I will get the train to at least one Liverpool Euro away match instead of short-haul flights."

"Sell my car ASAP."

2. **Education and advocacy:**
Participants committed to educating others about climate change, raising awareness, and advocating for climate action within their communities, workplaces, and schools.

"I'll talk to my daughter more about what we do now is having an impact on what happens in the future."

"I pledge to introduce some of the 'CIHT CLIMATES' content to schools when speaking to students as a STEM ambassador, without scaring the students of course."

"Have more conversations with friends and family about climate change and encourage others to do more to help the cause."

"Use my learnings to influence other people and other organisations I'm involved with; e.g. church, rugby club, international charity – to see the signs and change behaviour with respect to climate action."

"Have more stats ready for public speaking events and discussions with peers, friends, and foes."

"Relate to family and friends the seriousness of climate change from a transport perspective, provide a thought-provoking narrative."

"Deliver 4x school engagement sessions per year to improve climate literacy and encourage personal responsibility for the next generation."

3. **Professional influence:**
Participants aimed to integrate climate considerations into their professional roles, influencing clients, colleagues, and stakeholders to make climate-positive decisions and adopt sustainable practices.

"Work with my clients to push the climate/carbon-friendly alternative and don't take no for an answer."

"I will spend time thinking carefully about the language I use and the narrative behind the recommendations I make to Councillors and stakeholders about proposed changes in how we travel."

"Be creative in day-to-day projects to implement climate actions. It's difficult being a junior to influence clients, but will try to do that through actions."

"Challenge more senior colleagues who perhaps put client wishes before better outcomes that are supported in policy."

"Encourage my organisation to start team meetings with a brief, one-minute climate moment. And lead by example with this."
"To continue to drive the sustainability agenda through my organisation with a pledge to make it as engaging and fun as possible."

"I'll be more vocal in promoting climate action in everyday work (e.g. team meetings, project meetings) and challenging maintenance of the status quo."

4. **Collaboration and leadership:**
There was emphasis on working together at local, national, and international levels to address climate change. Participants pledged to lead by example and promote collective action.

"Seek opportunities to collaborate with others to bring about change."

"Be brave enough to challenge the norm. Individual action leads to collective action."

"I pledge to work collaboratively across the industry to push for greater consideration of our climate, decarbonisation, equity, and just transition in all of my projects from now on."

"Find my allies and work together to secure mitigation and adaptation."

"Replicate the approach to discussing climate change (via CIHT CLIMATES) with partners in Europe."

5. **Continuing learning:**
Participants committed to improving their knowledge of climate action, staying informed about best practices, and engaging in continuing learning and training.

"Push for Carbon Literacy Training for everyone in my workplace."

"Try to grow my understanding so that I can have answers required to respond to challenges from climate change deniers and can make my own informed decisions."

"Stay up to date with techniques and methods to reduce carbon emissions during and post scheme delivery."

"Carbon literacy training on CIHT Learn."

"Set up weekly calendar reminders to explicitly encourage me to share and promote sustainable actions within the industry or with colleagues."

6. **Positive messaging:**
Participants highlighted the importance of positive messaging and storytelling to inspire others and create a sense of urgency and hope.

"Take responsibility to think of some better stories."

"Tell better stories, especially to decision-makers (doubly so if they're wrong!)."

"Encourage positive messaging regarding things I can influence in my role as a civil engineer to try to effect change."

"I will work to help inform those around me, both personally and professionally, of the huge and complex challenges we face but that we can take action ourselves. We can make a difference. JFDI."

"Advocate/include climate change data/information/scenarios in conversations with stakeholders (public, members etc) in an inclusive, not preachy manner to hopefully bring them along on journey."

7. **Policy and planning:**
Participants pledged to push for climate-friendly policies and planning, advocating for changes in infrastructure, transport systems, and development to reduce carbon emissions.

"Change policy and provide infrastructure in the city to promote and support net zero targets."

"Ask clients, colleagues, public, decision-makers: why doesn't all policy + practice align to Climate Protection. Where does the money come from? Where does it go? Both should totally align to CC."

"Try to influence planning where possible."

"I will continue to advocate for climate-related policies and actions in my workplace, promoting a positive vision of the future."

8. **Sustainable lifestyle:**
Participants committed to make environmentally conscious choices in their daily lives relating to, and also beyond, travel.

"Maintain a low-carbon lifestyle, try to note frictions and use them to inform my work."

"Adopt more sustainable ways of living and travelling."

"Eat more vegan curry (that was excellent)."

"Stay vegetarian."

9. **Community engagement:**
Participants focused on engaging with local communities and grassroots initiatives to promote climate action and build trust.

"Better sell the benefits of schemes or programmes to local communities."

"More grassroots/local/everyday things to help build trust and community within my own communities – be the change you wish to see in the world."

"Are there good ideas I can support in my home town?"

"Campaign locally for a 20mph zone in my neighbourhood in order to encourage less car use and more walking and cycling."

10. **Resilience and adaptation:**
Participants recognised the importance of resilience and adaptation in the face of climate change and pledged to promote actions that enhance these aspects.

"Prioritise integrating climate resilience into all planning and decision-making for highways and transportation projects."

"I will do the effort to champion the topic of climate resilience planning of infrastructure in CIHT, so I can help educate other colleagues in this topic."

"Investigate and promote the most plausible actions which increase adaptation and resilience (because we will need it!), with some mitigation as a bonus (e.g. soil management = flood management)."

"I will reflect on industry best practice to inspire short-term / implementation-driven research and act on climate adaptation plans."

9. Recommendations

Much of what is set out in this report is an account of the views of the highways and transportation professionals who took part in the CLIMATES initiative. While these are not necessarily CIHT's official position, **these views matter and have weight**. They inform the recommendations set out below.

It should be noted that the CIHT has as its purpose "to advance for the public benefit the science and art associated with highways and transportation in all their aspects; and to promote education, training, and research and development of the said science and art". The twin challenges of mitigation and adaptation in relation to climate change demand a rapid evolution of our "science and art". These recommendations are aimed at clarifying the part that CIHT, and its members, can play in this process alongside other actors in the transport sector.

Further context for the recommendations is as follows:

- CLIMATES has been a key opportunity for CIHT members and colleagues in the highways and transportation sector to **voice their professional opinions**. These have predominantly, but not exclusively, had a **territorial focus on the UK**.
- The multiple priority actions put forward highlight the **systemic nature of change** that is needed.
- Much of the coverage of priorities for action is **familiar territory** and yet territory that can be difficult to progress.
- Recommended change should be **suitable** in the face of the possible futures examined. It needs to be professionally, publicly, and politically **acceptable** in terms of commanding widespread or at least sufficient support. It should also be **feasible** to pursue.
- **Resource constraints** apply to individuals and to organisations, including professional institutions. Suitable, acceptable, and feasible change may be a proposition that is uncomfortable at best and impossible at worst. It is caught between **the economic and socio-political challenges faced** at the time of writing and **the seriousness of the future climate change prospects** before us.
- The recommendations for doubling down are limited in number to **focus attention**, while recognising the wider agenda of ongoing change reflected across this report. They are **mutually reinforcing** and should be treated as a set in which professional capability is central to helping achieve system change.

9.1 Doubling down on conditions for change

1. Equipping professionals for climate action

Case for change

CIHT's 2024 Manifesto[46] emphasised the need for a skilled workforce with the capacity and capability to deliver a transport network fit for all our futures. Climate action on the scale required to meet that goal demands a rapid upskilling of the highways and transportation profession. Professionals also need support to maintain their motivation and resilience in their career journeys in the face of changing and competing demands.

Recommendation

CIHT should play a central role in building the transportation profession's capacity and capability to deliver climate action. It should double down on the enabling function it provides through continuing professional development (CPD) to improve the competency of highways and transportation professionals with the knowledge, skills, mindset, and leadership required to support governments, industry, academia, and the public on climate action.

Possible considerations

The CLIMATES initiative has provided a professional development opportunity for those taking part. CIHT has already prioritised improvement of carbon literacy across its membership, set an expectation that all members commit some of their annual CPD effort to climate action, and invested in training provision through CIHT Learn. Professional competencies will be of increasing importance to the collective efforts to deliver climate action. Career paths are likely to be increasingly defined by climate change and related challenges. Professionals will need to progressively move from carbon literacy to fluency in their areas of responsibility. This means that it will be helpful if action to progress this recommendation focuses on the substance and reach of CPD, for example by providing further guidance on priority topics within the broad category of climate action. It may also be appropriate to consider extended content development for CIHT Learn aligned to a review of the climate-related competencies needed by professionals following different career pathways. CIHT should consider how its work can help professionals develop their engagement and communication skills as part of the wider skill set needed to deliver climate action.

[46] https://www.ciht.org.uk/media/c00dpivg/ciht-transport-fit-for-our-future-report.pdf

2. Public-focused, positively-oriented storytelling

Case for change

CLIMATES participants repeatedly highlighted the importance of public support for change, not least because other more immediate pressures often crowd out concerns about climate change or can prompt resistance to climate action. We also heard that while highways and transportation professionals have excellent technical understanding, we are not always the most appropriate or effective people to lead on engagement with wider non-technical audiences.

Recommendation

Highways and transportation sector organisations should find new, cost-effective, and impactful ways to collaborate with bodies and individuals who have demonstrated they can build the positive and compelling case for the benefits of change that is needed to win hearts and minds for climate action.

Possible considerations

There are individuals and organisations who have the skills required but with whom the highways and transportation sector has not traditionally collaborated (notwithstanding some examples of such collaboration). This includes those who understand and address social exclusion, those championing carbon literacy, those in the arts, and those in journalism and science communication. If successful this recommendation holds the promise of combining those skills with professional highways and transportation insight, climate science, and excellence in communication. Central government, research councils, and other sources of funding may be appropriate, and in the first instance there may be an important convening role in bringing relevant parties together to identify realisable and impactful ways forward.

3. Demonstrating that transport decarbonisation is on track

Case for change

The UK and many other countries now operate within a framework of legally binding decarbonisation commitments linked to carbon budgets in which transport plays a key role. In the UK the Climate Change Committee (CCC) is an established advisory body that provides annual progress reports to Parliament.[47] These reports include recommendations for action, to which governments of the UK and its devolved nations are obliged to respond. The CCC's progress reporting for transport has been critical in some key areas and has pointed to where there is still much to achieve in coming years. The UK Government has also lost legal cases in 2022 and 2024, resulting in High Court rulings that its overall Net Zero Strategy does not adequately demonstrate how the UK will meet its emission reduction targets. Credibility and transparency of governments' responses are important for building public support and professional and industry confidence to invest in capacity to deliver climate action. There is a role for greater professional scrutiny of climate action plans and progress.

Recommendation

Governments should openly and robustly demonstrate and justify how their detailed plans are consistent with (or at odds with) expert advice on the pathway for decarbonising transport and on transport's contribution to the manufacturing and construction pathway; and professional bodies should offer greater scrutiny and constructive challenge.

Possible considerations

Foundational steps for clarity of national leadership on climate action include commitments to phase out fossil fuel vehicles, clarity on acceptable future levels of demand for road traffic and aviation, and appropriate steps to address construction carbon. In a UK context, professional institutions and other organisations across the transportation sector could usefully consider how to encourage greater professional scrutiny and debate of CCC advice and progress against the pathways in the sixth and seventh carbon budgets. An established and clear narrative on how economic prosperity and decisive climate action can work in harmony and in accord with legally binding carbon budgets would be welcome.

[47] https://www.theccc.org.uk/publicationtype/report/progress-reports-net-zero/

9.2 Doubling down on processes to drive change

4. Effective working between professionals and government

Case for change

Highways and transportation is a broad sector with multiple constituencies and voices. CLIMATES participants emphasised that this can complicate governments' ability to engage with the sector, identify shared agendas, and drive coordinated action. It is not clear whether existing forms of convening between the sector and governments are sufficient, either top-down led by government or bottom-up led by industry or sector organisations. Identifying what change and improvement, if any, can be made to support climate action merits attention.

Recommendation

Government(s) in the UK, in conjunction with professional bodies, should consider the suitability of existing convening and collaboration arrangements – both top down driven by government and bottom up, led by industry – with the highways and transportation sector in relation to climate action, and do so in the context of specific areas or goals where progress on climate action is sought.

Possible considerations

Whether existing convening arrangements are fully meeting the governments' and the sector's needs in relation to climate action is not certain. Work could usefully assess if there are opportunities for more effective convening around specific shared challenges, drawing on examples such as the Future Highways Research Group bringing together a broad coalition of public and private players to establish a carbon accounting and reporting standard for local highway authorities.[48] Understanding governments' position on this issue, and the extent to which they view their ability to engage with the sector as a serious barrier to making progress on climate action, would be a useful starting point.

[48] https://www.adeptnet.org.uk/documents/fhrg-carbon-calculation-reporting-guidance-lhas

5. Reappraising appraisal to prioritise future wellbeing

Case for change

Appraisal is a key tool for shaping if not dictating political decisions on investment. Appraisal guidance informs how this process is carried out and in turn has a big influence on which projects and programmes get the green light. Appraisal guidance and practice are always at risk of failing to keep pace with a changing world (or a world that needs to be changed). Many CLIMATES participants expressed strong concern about this in relation to climate action.

Recommendation

Transport investment priorities should be reviewed – by governments, academia, and industry – to ensure clear and appropriate priority is given in the appraisal process to low-carbon outcomes, resilience, and adaptation, all with future wellbeing in mind.

Possible considerations

Appraisal priorities and processes are subject to periodic reviews. Examples include the HM Treasury Green Book Review (2020),[49] The Wales Roads Review and the tests it developed (2023),[50] and recent revision (for England) of the National Networks National Policy Statement (2024).[51] Across the highways and transportation sector it remains unclear to what extent appraisal appropriately addresses the imperative of climate action. Recent work by the Road Investment Scrutiny Panel (2023) suggested significant scope for reflection and possible change.[52] The devolution agenda for England further lends weight to addressing the importance of the role of appraisal in stifling or enabling climate action. This recommendation would be bolstered if review activity is sought and funded by government(s), thereby giving a mandate for and impetus to such work. With or without such direct support, it would be helpful to consider a comparative examination of appraisal guidance across the UK and its devolved nations to help reveal strengths, weaknesses, opportunities, and threats for appraisal and investment decisions.

[49] https://www.gov.uk/government/publications/final-report-of-the-2020-green-book-review

[50] https://www.gov.wales/roads-review

[51] https://www.gov.uk/government/publications/national-networks-national-policy-statement

[52] https://uwe-repository.worktribe.com/output/10295773/key-questions-for-road-investment-and-spending

9.3 Doubling down on outcomes needed from change

6. Prioritising climate action in national transport strategies

Case for change

National transport strategies can be very helpful for driving change in support of sustainable transport. If done well, they explain what governments expect from the transport system and how they would like to achieve those goals. This provides industry and the professions with a stable, strategic framework within which they can invest and innovate to deliver. Strategies have recently been produced for Scotland (2020)[53] and Wales (2021),[54] and there is a rare opportunity to guide development of the transport system in England with the forthcoming Integrated National Transport Strategy (INTS), and to continue input into its onward journey.

Recommendation

The UK Department for Transport should ensure that its forthcoming Integrated National Transport Strategy (with the breadth of issues it will need to address) has climate action as a core pillar, and it should convey how this can work positively to support economic and social prosperity.

Possible considerations

The messages in this report will be fed into the INTS development process, and they will likely come as no surprise to the Department. If strong, positive progress is to come from the INTS, it must embody bold measures for change that are clear about the imperatives for change in terms of climate action (married with 'good growth') with an authentic and inspirational message of change for the better.

[53] https://www.transport.gov.scot/publication/national-transport-strategy-2/

[54] https://www.gov.wales/llwybr-newydd-wales-transport-strategy-2021

7. Pricing to address transport's true costs to society

Case for change

A 'negative externality' arises where the social costs for others (society) of a behaviour exceed the costs for those undertaking the behaviour (the direct consumers). Transport's negative externalities are considerable, not least in environmental and public health terms. To reduce negative externalities the price of transport options should better reflect their true cost to society. Whether or not this happens, there are winners and losers. The transport sector needs to tackle the challenge of socially fair and environmentally efficient pricing in support of climate action. This has important implications for the choices people make and the nature of demands placed upon the transport system.

Recommendation

The highways and transportation sector as a whole should clarify the fiscal measures that are available and appropriate to show the true costs of transport, including external, indirect costs to society, otherwise these negative externalities of transport will continue to act as a drag on climate action; and this work should also identify how the impact of any change will affect different socio-economic and road user groups.

Possible considerations

National road pricing can be seen as a holy grail or poisoned chalice. The same could be said of confronting the true costs of aviation or the supersizing of road vehicles. Fuel duty is an existing lever that has seen little use in recent years in the UK. At a local level, multiple levers can and are being used to address pricing of transport. Meanwhile, nationally and internationally, carbon pricing is being applied. There is a need for a comprehensive exercise that draws upon work in the 1990s by the European Commission on internalising the external costs of transport.[55] This should consider the merits of different fiscal measures and how they could or should be used to (further) shape rather than dictate behaviours by better reflecting the costs on society. Allocating responsibility for catalysing and taking forward this recommendation will be key to avoid it remaining unaddressed. Recent work by the Greener Transport Council[56] pointed to the extent of adverse consequences that may arise from not changing how we pay for driving. While the Parliamentary Transport Committee in 2021/22 held an inquiry into road pricing,[57] this was motivated by considering road pricing as a viable solution to replacing loss of revenue from fuel and vehicle duty taxes with the transition to electric vehicles. Moving forward this recommendation could be well served by a new Transport Committee inquiry focused on addressing transport's true costs to society.

[55] https://europa.eu/documents/comm/green_papers/pdf/com95_691_en.pdf

[56] Paying for Driving: Is Doing Nothing an Option? – https://greener-vision.com/wp-content/uploads/2024/10/GTC-Paying-for-Driving-Briefing-Note-October-2024-Final-1.pdf

[57] https://committees.parliament.uk/work/1549/road-pricing/publications/

Concerted doubling down on these seven interrelated recommendations would provide the prospect of helping achieve significant and potentially substantial system change in support of climate action. The recommendations are depicted in Figure 13.

CIHT will be preparing and sharing its own action plan for a collaborative way forward in response to these recommendations.

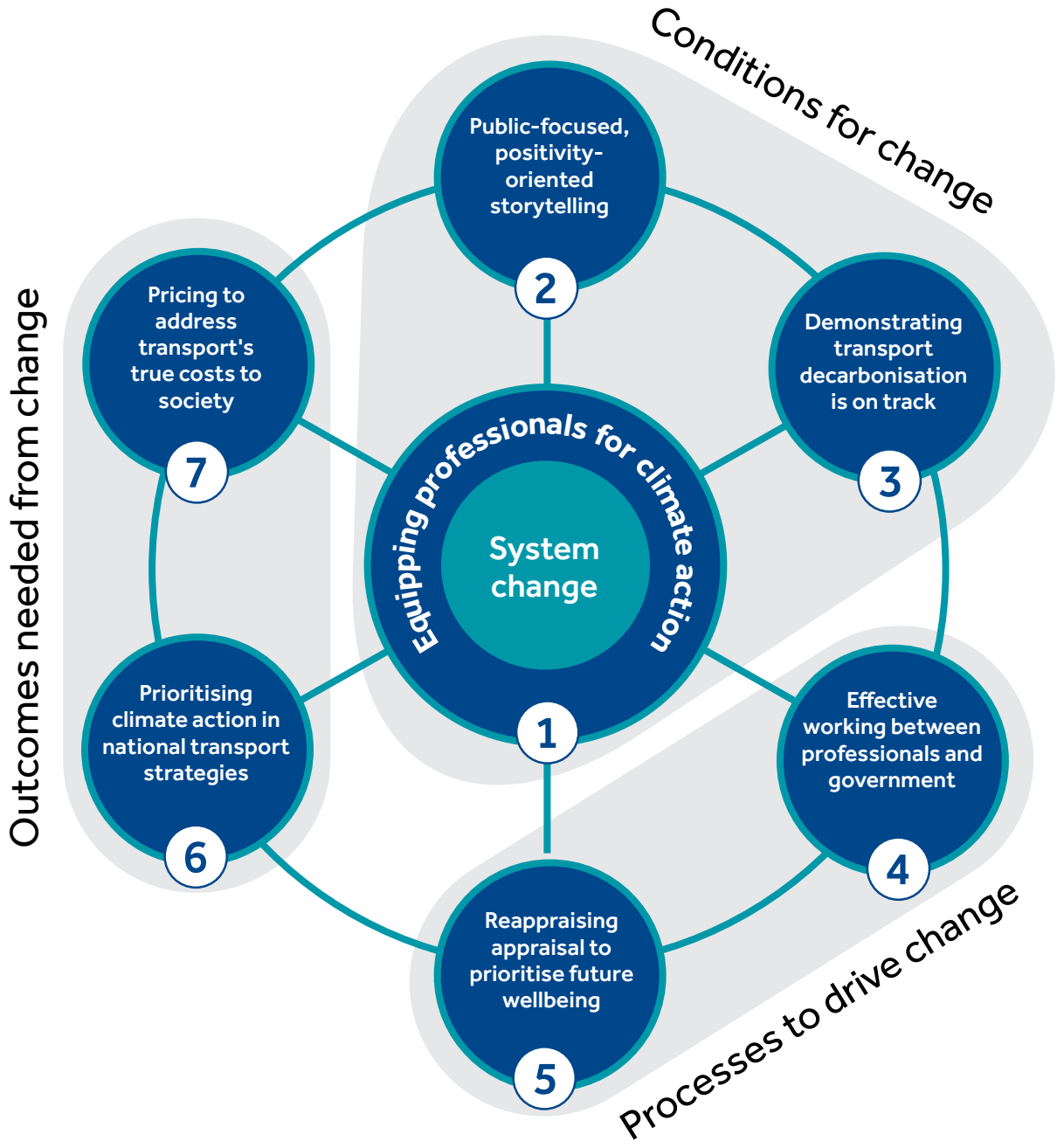


Figure 13. Doubling down recommendations illustrating their interdependencies

10. Concluding reflections and a look ahead

A representative survey across 125 countries as part of the Gallup World Poll 2021/22 interviewed nearly 130,000 people aged 15 or above.[58] The findings revealed widespread support for climate action: "69% of the global population expresses a willingness to contribute 1% of their personal income, 86% endorse pro-climate social norms and 89% demand intensified political action". However, the study authors refer to "pluralistic ignorance" and "conditionally cooperative behaviour". **Put simply, if people are not convinced that others around them are positive change-seekers and positive change-makers then they are not so inclined to play their own part in the collective action needed**.

The CLIMATES initiative offers a unique insight into the views of over 300 highways and transportation professionals on climate change and climate action. For those taking part, serious concerns about climate change and insufficiency of action are expressed with considerable appetite and urgency for more action. **Marrying up such professional opinion with international public opinion suggests a powerful window of opportunity if collective action can be galvanised**. However, such opportunity can seem hard to discern or grasp in the face of multiple competing interests and other pressures facing members of the public, industries, and government. CLIMATES seeks to keep this opportunity firmly in mind with the recommendations that have been set out and to **provide encouragement to industry leaders and politicians that appetite for action and change is there**.

Former president of CIHT Neil Johnstone, who was so motivated by the importance of the initiative that they took part in two of the CLIMATES workshops, remarked that "**these have been some of the most honest workshops I have been in during my career;** those participating were encouraged to be open and candid about their personal and professional views – views which I found to be freely expressed, sobering, refreshing, and inspiring". Darran Kitchener, a participating CIHT trustee, remarked of one of the video clips used in the initiative:[59] "Since you played it to me as part of your CLIMATES event, I've shown it to all of my immediate family and a number of others in the industry – **so powerful, so scary, so inciteful – I just hope we can all do something to correct what we have done.**"

The CLIMATES initiative seeks to make a difference. It may have engaged directly with only a small fraction of highways and transportation professionals, yet **the scope for a ripple effect and impact is apparent**. If over 300 people have been refreshed and inspired and in turn take up their own pledges on (further) climate action, and if they engage with and enthuse those around them, then 300 could become 3,000, and 3,000 could become 30,000 perhaps. The initiative now relies upon all sections of the highways and transportation sector to play an ongoing part in climate action. **Championing and lending support to the areas of priority action signalled by CLIMATES participants and to the recommendations for doubling down put forward by this report are now key**.

The hard work lies ahead, along with the inevitable headwinds and tailwinds that continue to present themselves. **Climate change is not something that can be 'solved'. It is not a simple or complex problem. Climate change is a 'wicked' problem that needs to be managed in a cooperative way**. It is wicked because it eludes consensus of interpretation, lacks sufficient empirical evidence to be able to make sense of, and is a problem intertwined with other (wicked) problems that society confronts. As one CLIMATES participant remarked: "It would be naïve to think politicians will have a Damascus moment and think long term – how can we support our agenda and feed into their

[58] Andre, P., Boneva, T., Chopra, F. et al. (2024). Globally representative evidence on the actual and perceived support for climate action. Nature Climate Change, 14, 253–259. https://doi.org/10.1038/s41558-024-01925-3

[59] https://www.youtube.com/watch?v=B-nEYsyRIYo

existential short-termism?" Herein lie the sorts of challenges we must rise to.

The recommendations aim to help do this – and their whole is likely to be greater than the sum of the parts. If **public-focused, positively-oriented storytelling** can help unlock appetite for change and overcome 'pluralistic ignorance' then political confidence on **pricing to address transport's true costs to society** could grow. By **reappraising appraisal to prioritise future wellbeing** in conjunction with **prioritising climate action in national transport strategies**, policy implementation with investment that can shape the transport system and its use in a sustainable way should lend weight to **demonstrating that transport decarbonisation is on track**. Progressing all of these will rely upon **effective working between professionals and government**, and only by **equipping professionals for climate action** across such an agenda can system change be effectively delivered.

We now look to you the reader for your professional resolve to play your part. The following quote from Ghandi can perhaps keep you buoyed in moments of doubt about the significance of your part in such a vast system that has to change:

"It's the action, not the fruit of the action, that's important. You have to do the right thing. It may not be in your power, may not be in your time, that there'll be any fruit. But that doesn't mean you stop doing the right thing. You may never know what results come from your action. But if you do nothing, there will be no result."

11. Acknowledgements

The CLIMATES initiative would not have been possible without the team of facilitators across its 15 workshops. Beyond the authors themselves, grateful thanks are given to: **Stephen Cragg** (Transport Scotland), **Matilda Fisher** (CIHT), **Merlijn Marien** (CIHT), **Robert Pellow** (CIHT), and **Sara Zuin** (CIHT).

During the initiative, constructive challenge and insight was provided by a Sounding Board. We very much appreciated this input and extend our thanks to: **Dan Isichei** (CIHT), **Sharad Kerai** (Mott MacDonald), **Swati Mittal** (Midlands Connect), **Peter Molyneux** (CIHT), **Emily See** (Amey), **Mitesh Solanki** (Ringway), **Andy Theobald** (Mott MacDonald), and **Nikki van Dijk** (Mott MacDonald).

We are also grateful to colleagues who contributed material about climate change effects and actions for the 'at speed' online workshops: **Raymond Pau** (Hong Kong workshop), **Ravi Grandhi** (India workshop), and **Stephen Wilkinson** (United Arab Emirates workshop). Our thanks also to colleagues and organisations across the CIHT regions and territories who helped in organising, hosting, and promoting workshops.

Special thanks go to **Mott MacDonald** and **Ringway** who jointly sponsored the CLIMATES initiative.

The CLIMATES initiative was brought to life through the willingness to participate of so many highways and transportation professionals. They are all owed a debt of thanks. This includes those who devoted time to engaging with the online survey. The following individuals took part in the CLIMATES workshops and their contributions are duly acknowledged:

Simon Adams MCIHT, Director Spatial Planning, Urban Flow

Farheen Ahmed FCIHT, Technical Director, Arcadis

Rahel Airriess, Trainee Solicitor, JMW Solicitors LLP

Fahad Saud Algethami MCIHT, Projects Manager,

Jeddah Municipality, Saudi Arabian Government

Mohammed Al Mansi MCIHT, Transport Planner, Transpo Group

Rachel Allison, Climate Change Specialist, HS2 Ltd

Sam Allwood MCIHT, MSc Student, University of Glasgow

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Helen Archonti, Engineer, COWI

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James Bailey GradCIHT, Transport Planning Graduate, Transport for Wales

Bert Bailie FCIHT, Retired Consultant, Inclusive Mobility and Transport Advisory Committee (IMTAC)

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Gordon Baker FCIHT, Leadership Coach, Flying in Fog

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Marina Garyfalou MCIHT, Zero Emission Bus Development Manager, Transport for London

Sarah Gayton, Street Access Campaign Coordinator, National Federation of the Blind of the UK
Tim Gent, Independent Consultant, Gentle Consulting

James Geraghty, Sustainability Manager, Kier Transportation

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Claire Harrison MCIHT, Associate Transport Planner, PJA

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Chris Harte FCIHT, Transport Consultant, Pell Frischmann

Jared Harvey MCIHT, Traffic Engineer, Mott MacDonald

Will Haynes MCIHT, Infrastructure Director, Sustrans

Adam Heanen FCIHT, Procurement Manager, Northern Ireland Department for Infrastructure

Barry Heaps FCIHT, Retired Civil Engineer

Sarah Hearn MCIHT, Urban Mobility Planner, Foster + Partners

Henry Heath MCIHT, Graduate Transport Planner, AECOM

Emma Hext FCIHT, Senior Associate Director, Jacobs

Nanette Heystek MCIHT, Sustainability Engineer, Costain

Eric Hill FCIHT, Principal Engineer, Sweco UK

Simon Hindshaw FCIHT, Commercial Director Europe, Middle East, Africa and India, AECOM

Eka Hintaran MCIHT, Innovation Delivery Manager, Transport for London

David Ho MCIHT

Andrew Hodgson, Immediate Past President & Executive Council Member, National Federation of the Blind of the UK

Kirils Holstovs, Engineer (Rail, Structures and Ground Engineering), AECOM

Adrian Hooper MCIHT, Project Manager, Sustrans

Ryan Hopkins MCIHT, Senior Transport Planner, Arup

Philip Howard MCIHT, Principal Strategic Transport Officer, Central Bedfordshire Council

Stephen Hughes MCIHT, Graduate Transport Planner, Mott MacDonald

Benson K.H Hung MCIHT, Vocational Training Council Hong Kong

Julie Hunt MCIHT, Solutions Manager, Jacobs

Matthew Hunter MCIHT, Transport Planner, Markides Associates

Amirul Islam, Sustainability Manager, Vinci Construction

Syma Ismail GradCIHT, Transport Planner, Transport for Greater Manchester

Haripreeth Iyer MCIHT, Graduate Engineer, Ramboll

Owen Jenkins FCIHT, Executive Director, Surrey County Council

Gordon Johncock MCIHT, NEC Site Supervisor, Waterman Aspen

Neil Johnstone FCIHT, Independent Consultant (Retired)

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Axel Kappeler MCIHT, Technical Director, WSP

Sumit Kaura MCIHT, Transport Planner - Active Travel, Government of Jersey

Mustafa Kahramane MCIHT, Consultant Associate, Techcity

Xenia Karekla FCIHT, Research Fellow for Sustainable Urban Mobility, Behaviour Change and Transport Accessibility, National Technical University of Athens

David Kidd FCIHT, Technical Director, Amey

Darran Kitchener FCIHT, Managing Director, Milestone Transport Planning Ltd

David Knight MCIHT, Director Transport Planning, NRP

Haresh Kumar MCIHT, Highway Team Leader, Kier Highways

Emma Kurihara MCIHT, Sustainability Consultant, Citisense

Nicole La MCIHT, Senior Technical Director, AtkinsRéalis

Martin Laban MCIHT, Inspector, Active Travel England

Kara Laing, Technical Specialist, Vectayn

Willy Lai MCIHT, Senior Traffic Engineer, CKM Asia Ltd

Alvan Lam, MCIHT, Director and East Asia Ground Engineering Skills Lead, Arup

Pat Lam MCIHT, Senior Resident Engineer, Meinhardt Hong Kong Ltd

John Lamb FCIHT, Chair UK Adaptation, Biodiversity and Climate Change Board

Katherine Lamb MCIHT, Lead Transport Planner, Transport for the South East

Stuart Leach MCIHT, Senior Consultant, Pell Frischmann

Paul Lewis MCIHT, Sustainability Manager, Manchester University NHS Foundation Trust Group

Richard Lewis FCIHT, Director Transport and Mobility – KSA and International, Transpo Group

Jason Li, MCIHT, Associate, AECOM

Jon Lovat MCIHT, Senior Strategic Planner, Network Rail

Lindsey MacDonald MCIHT, Associate Transport Planner, BDP

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Laurent Maganga MCIHT, MSc Student, University of Birmingham

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Malcolm Matheson MCIHT, Senior Transport Planner, Mott MacDonald

Thomas McConaghie MCIHT, Active Travel Consultant, AtkinsRéalis

Alex McEwan MCIHT, Senior Transport Planning Officer, Birmingham City Council

Mark McGuigan FCIHT, Head of Rail Electrification, Translink / Northern Ireland Railways

Jill McGuire MCIHT, Graduate Transport Planner, Transport Scotland

Becci McKenna, Transport Consultant, WSP

Peter McParland MCIHT, Deputy Director for Active Travel, Northern Ireland Department for Infrastructure

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Jayne Meyrick FCIHT, Associate Partner, i-Transport

Paul Middleton MCIHT, Principal Engineer, WSP

Rory Miller, Senior Consultant Transport Planning, AECOM

Hanna Miskimmin, Sustainability Graduate, Northstone Materials

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Paul Muir MCIHT, Group Engineer, Sunderland City Council

Jon Munslow, Director, Viasulis Highways & Climate Consultancy

Paul Murray MCIHT, Active Travel Lead, Ridge LLP

Jack Newcombe MCIHT, Transport Planner, Mott MacDonald

Mark Ngan MCIHT, Senior Resident Engineer, Arup

Michael O'Kane MCIHT, Operations & Maintenance Area Engineer, Northern Ireland Department for infrastructure

Robert O'Leary MCIHT, Lead Transport Analyst, HS2 Ltd

Jordan O'Loughlin, Apprentice Transport Planner, BDP

Russell Oakes MCIHT, Active Travel Officer Liverpool City Council

Mark Osborne, Regional Growth Manager, Avanti West Coast Partnership

John Paddington MCIHT, Head of PMO, Ertico-ITS Europe

Derek Palmer FCIHT, Sustainable Transport Consultant, Independent

Rebecca Paramor MCIHT, Site Engineer, Morgan Sindall Construction & Infrastructure

Jon Parker FCIHT, Director, JPC Consultancy Ltd

Joe Parry, A55 DBFO Assistant Project Manager, Eco-Scope

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Elaine Penny MCIHT, Moray Council

Lucia Perez Ezquerro MCIHT, Consultant, Meinhardt UK and Ireland

Federico Perotta MCIHT, Principal Consultant, AECOM

Timothy Pharoah FCIHT, Transport and urban planning consultant

Andy Pickett MCIHT, Senior Consultant, Hyperion Infrastructure Consultancy

Andy Poole MCIHT, Decarbonisation Manager, Transport for West Midlands

Jessica Postance MCIHT, Climate Manager Transport, Welsh Government

Damian Price MCIHT, Transport Strategist, Mott MacDonald

Krishna Priya, Assistant Project Manager, Colas Ltd
Shaoni Purkait MCIHT, Decarbonisation Consultant (Transport), Arup

Hussain Rab MCIHT, Design and Construction Lead, Enfield Council

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Clive Rillstone MCIHT, Regional Director, Ringway Infrastructure Services

Joanne Roberts FCIHT, Area Manager, Waterman Aspen

Alan Rodgers MCIHT, Client Director, AECOM

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Vanessa Sadtori MCIHT, Graduate Transport Planner, Surrey County Council

Venkata Sai Praveen Nagarapu, GradCIHT, Graduate Transport Planner, Transport Scotland

Sajitha Sasidharan MCIHT, Consultant, WSP

Emily See MCIHT, Highway Market Director, Amey

Srinivasa Sekhara MCIHT, Head of Safety, Louis Berger International

Meera Mohiddin Shaik MCIHT, Highways Inspector, Keo International Consultants

Shahid Shaikh MCIHT, Senior Civil Engineer, Worley Consultants

Anne Shaw FCIHT, Executive Director, Transport for the West Midlands

Chris Shaw MCIHT, Retired Civil Engineer

Ramy Shaltout MCIHT, Assistant Professor, Coventry University

Daniel Sheppard MCIHT, Assistant Director, National Wealth Fund

Dhruv Shringarpure GradCIHT, Graduate Transport Planner, Transport Scotland

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Stuart Smart MCIHT, Senior Project Manager, AECOM

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Bill Smith FCIHT, Director – Transport Planning Lead UKIMEA, Arup

Grace Smith MCIHT, Associate Director, WSP

Victoria Spashett MCIHT, Active Travel & Behaviour Change Manager, Be First Regeneration Ltd

Jonathon Spear FCIHT, Policy and Strategy Advisor, AtkinsRéalis

David Sprunt FCIHT, Transportation & Infrastructure Lead, West Essex , Essex County Council

Catriona Stamper, Graduate Transport Planner, Mott MacDonald

Andrew Steeds, Senior Sustainability Consultant, AECOM

Rachael Steller, Resilient Infrastructure Lead Analyst, Climate Change Committee

Eric Stevens MCIHT, Principal Transport Planner, Harrow Council

Mabel Still MCIHT, Graduate Transport Planning Consultant, Rapport

Peter Stoner MCIHT, Data Innovation, ITO World Ltd

Stephen Swabey, Technical Director - Climate Resilience and Adaptation, AECOM

Jimmy Tang MCIHT, Project Engineer, Arup

Luke Tizzard MCIHT, Transport Planner, Mott MacDonald

Stuart Turnbull MCIHT, Director, Strategic Transport Consulting

Paul Unwin FCIHT, Regional Sponsor, National Highways

Renee Van Baar MCIHT, Principal Transport Planner, Midlands Connect

Dragana Valjarevic, Future Mobility Lead, Mott MacDonald

Louie Vaughan MCIHT, Senior Transport Planner, Transport for Wales

Jessica Wallace MCIHT, Apprentice Civil Engineer, Northern Ireland Department for Infrastructure

Jamie Ward MCIHT, Senior Transport Planner, Ramboll

Richard Ward-Jones FCIHT, Market & Strategy Director, Amey Consulting

David Webb MCIHT, Principal Consultant, i-Transport LLP

Alex Welch MCIHT, Senior Transport Planner, Arup

Phil Welch MCIHT, Senior Product Manager, 1Spatial

Peter Weller MCIHT, Managing Consultant, Mott MacDonald

Andrew Wells MCIHT, Senior Development Management Engineer, Bracknell Forest Council

Peter Whitfield FCIHT, Owner-Director, P.Whitfield Consulting Ltd

Jeremy Wiggin MCIHT, Head of Sustainable Transport, Norfolk County Council

Adam Wilkinson MCIHT, Graduate Engineer, Arup

Terry Wilkinson MCIHT, Civil Engineer, ACO Technologies

Sean Williamson MCIHT, Principal Transport Planner, Mott MacDonald

Owen Wilson MCIHT, Head of Major Roads, TfN

Margaret Winchcomb MCIHT, Deputy Executive Director, Parliamentary Advisory Council, Transport Safety (PACTS)

Melissa Winthorpe, Head of Sustainability, Ringway

Steven Wilkinson FCIHT, Director of Research & Graduate Studies, University of Wollongong in Dubai

Bethuel Willy MCIHT, Design Engineer (Highways), London Borough of Barnet

Jarurat Wititanapanit MCIHT, Ph.D. student, Nottingham Transportation Engineering Centre, University of Nottingham

Chung-Lam Wong, Student, Hong Kong Polytechnic University

Tsz-Hin Wong MCIHT, Traffic Engineer, Project Centre

Stephen Wood MCIHT, Independent Consultant

Peter Wright MCIHT, Transport Decarbonisation Lead, AECOM

Donald Yell, Strategy & Policy Manager, Transport for London

Chris Young FCIHT, Director, Waterman Aspen

James Young MCIHT, Team Leader, Gateshead Council

Appendix 1 – Online CLIMATES research survey

This appendix reproduces the content of the survey used in CLIMATES. If you are viewing this on a screen then you should be able to complete the survey yourself to experience the CLIMATES journey, entering and saving your answers for your own records. For ease of doing so, this appendix is presented in single column format.

Landing page: Introducing CIHT CLIMATES

Thank you for choosing to engage with the CIHT CLIMATES initiative. Please be prepared to spend around 30 minutes making your contribution (including reading and thinking time). Your survey responses will be treated anonymously.

The world seems in a state of flux socially, technologically, economically, environmentally and politically. We've been through a turbulent few years including a pandemic. What lies ahead over the next decade in relation to climate change? What does this mean for professionals in the highways and transportation sector and for the array of organisations involved? CIHT CLIMATES is a novel and important initiative from the Chartered Institution of Highways & Transportation that is exploring this. And we welcome your help.

Engagement of highways and transportation professionals is taking place through a series of 14 one-day workshops around the UK and internationally, and through this survey. If you haven't been able to take part in one of the workshops, this is your chance to contribute.

The initiative aims to answer the following exam question, **from a domestic (national) perspective:**
In an uncertain world, what priority actions in highways and transportation should we double down on in the next three years to meet the unfolding challenges of climate change as we look out to 2035 and beyond?

Such priority actions will inform the CLIMATES report and its recommendations. Publication is due in June 2025 and will be the basis for supporting and encouraging action and impact in the sector.

Your input to CLIMATES

The task of developing a robust response to the climate challenge is complicated by high levels of uncertainty about how the future will play out.

This survey is therefore a chance to step away from the immediacy of your day, explore future possibilities, and think through your views on priority actions – informed by the material provided.

We hope you will find your time investment worthwhile and that it helps you better understand your own climate action priorities.

Q1: Please indicate which country you are treating as 'national' in your survey responses:
(Short text answer required)

How you feel about climate change

Q2: Thinking about how you feel TODAY about climate change and its effects, which of the following comes closest to your view?
(Multiple choice – one answer required)

- ☐ I am currently **very worried** about climate change and its effects
- ☐ I am currently **fairly worried** about climate change and its effects
- ☐ I am **not** currently **very worried** about climate change and its effects
- ☐ I am **not** currently **worried** about climate change and its effects at all

Q3: Please briefly explain your answer.
(Long text answer required)

Setting the scene: climate change outlook

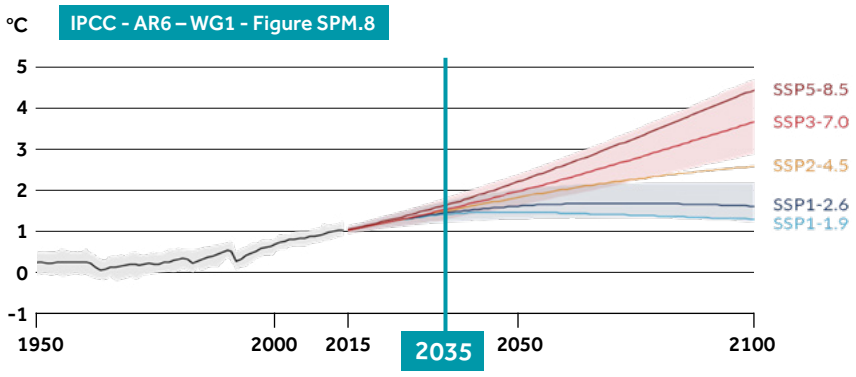
Short of denying the legitimacy of climate science, the observed increases of carbon dioxide concentrations in the atmosphere, and the increasing frequency and intensity of extreme weather, climate change is the elephant in the room that we have to address.

The Intergovernmental Panel on Climate Change (IPCC) has considered five possible scenarios for what could play out over the next 75 years. These range from global temperatures having increased compared to pre-industrial times by less than 1.5C by 2100 (if we achieve net zero emissions by 2050) to over 4C (emissions doubling by 2050). Based on all current policies globally, it seems we may be heading to a 3+C future by 2100. Scientific consensus is that this would be likely to have catastrophic consequences in many parts of the world.

To help inform your subsequent survey responses, over the next three pages a brief overview of the climate change outlook is provided for you to digest and reflect on.

Possible futures for 2100 range from temperature increases (relative to 1850-1900) below 1.5C to above 5C

(a) Global surface temperature change relative to 1850-1900



Best estimates (C):

4.4	'avoid at all costs'
3.6	'dangerous'
2.7	'middle of the road'
1.8	'next best'
1.4	'most optimistic'

See also:
https://www.carbonbrief.org/in-depth-qa-the-ipccs-sixth-assessment-report-on-climate-science/
https://www.climateneutralgroup.com/en/news/five-future-scenarios-ar6-ipcc/

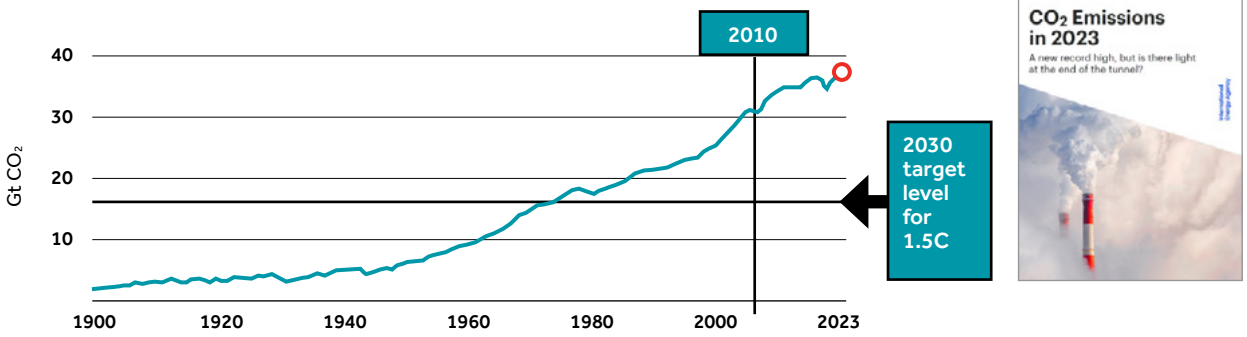
"at 2 degrees, we start getting into scenarios that make most dystopian horror movies look like children's colouring books"

The climate change outlook

- As the world burns fossil fuels, the carbon dioxide levels in the atmosphere are increasing and the world is warming – and global annual emissions have yet to peak.
- The warmer it gets, the worse it gets. Climate science indicates we need to reduce global carbon dioxide levels by 45% compared to 2010 levels, by the end of the decade (equivalent to returning to 1970s levels).
- The further amount of carbon dioxide that global society can afford to emit into the atmosphere is determined by the future temperatures we hope to stay below. And the climate change effects become more severe with every increment of global warming.
- Which future we head towards will be significantly determined by what is done by governments, the private sector and civil society.

Getting back to the 1970s by the end of the decade

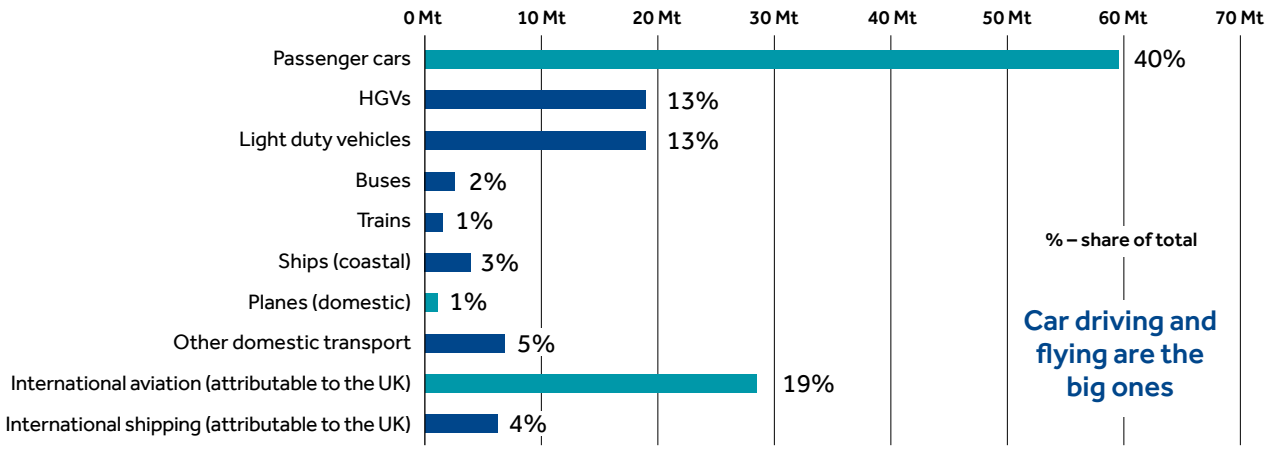
Global energy-related CO2 emissions and their annual change, 1900-2023



The climate change outlook (continued)

- Climate change will have worsened anyway by 2035 but by then we will have a growing sense of which longer-term future we are heading towards.
- Exponential change in societal response (including renewable energy and low or zero emission vehicles) is possible and by its nature may start slowly before progressing rapidly. Speed of future change hangs in the balance.
- Transport accounts for around one-fifth of global carbon dioxide emissions.
- For 2022, direct (tailpipe) emissions from transport account for around 27% of total emissions for the UK economy. Car driving and flying contribute most carbon dioxide emissions.
- Battery electric vehicles currently make up between 3 and 4% of the UK car fleet and the UK's 'Jet Zero' strategy may get aviation's emissions down by 50% (not 100%) by 2050 compared to pre-pandemic levels (in the context of 70% growth in passenger numbers assumed).

2022 UK greenhouse gas emissions (final figures) by mode of transport (millions of tonnes)



The climate change outlook (continued)

- The UK's Climate Change Committee has provided critical annual assessments of UK Government's progress on decarbonising the economy. The Government's Net Zero Strategy was for the second time in May 2024 found wanting by the High Court. Stronger, faster progress is needed.
- As well as tailpipe emissions, the carbon dioxide emissions from manufacturing and construction in the highways and transportation sector need to fall substantially. There are four important fronts to address: design optimisation (build nothing, build less); recycling and reuse of materials; material substitution (e.g. low carbon concrete), energy efficiency and fuel switching in construction processes.
- The critical uncertainties of what path the global economy is on and what path is taken at a national (or city) level paint very different pictures of the future.

The Climate Change Commitee's school reports for the UK Government are not glowing

"this Progress Report reveals that, despite important achievements in renewable energy and electric vehicles, **the Government is failing in much of its implementation**"

"**Our confidence** in the achievement of the UK's 2030 target and the Fifth and Sixth Carbon Budgets **has markedly declined from last year**"

"policy reversals and delays in other areas, together with inconsistent messaging, have **hindered progress just when acceleration was needed**. With the 2030 target only six years away, and the impacts of climate change intensifying, **rapid action is needed to get things back on track**"

Q4: What overall impression do you have from the climate change outlook above?

(Long text answer required)

Introducing four possible scenarios the highways and transportation sector could face in 2035

A 'scenario' is like a story or a situation that we imagine happening. It's a way to consider different possibilities for the future and what might unfold.

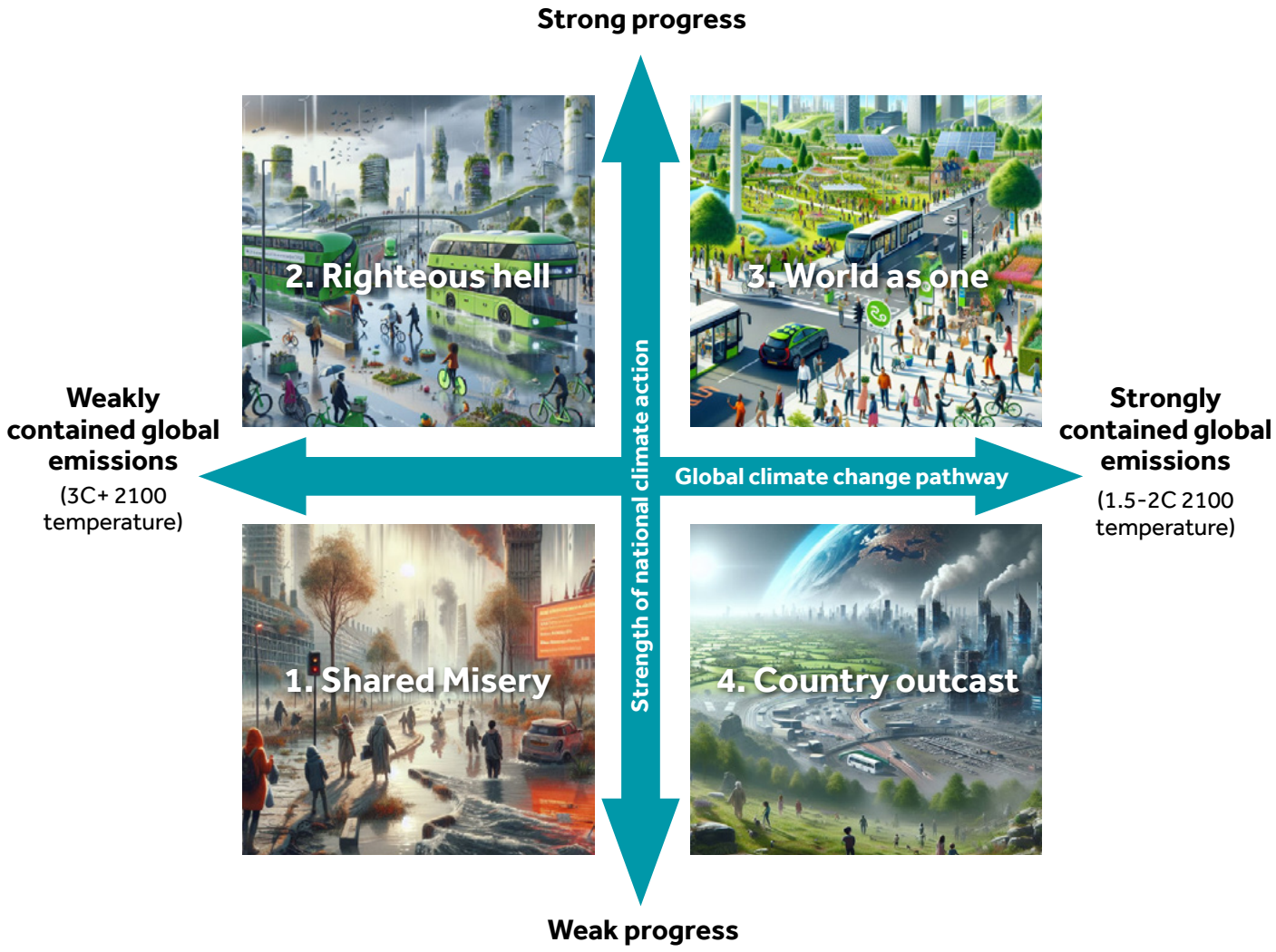
Scenario planning is a technique that helps organisations anticipate and prepare for various potential futures, accommodating uncertainty. By exploring what might happen in the future, we can inform our actions now.

There are many different uncertainties affecting the future of transport and society. However, CIHT CLIMATES considers two 'critical uncertainties':

- **global climate change pathway** – ranging from weakly to strongly contained global emissions
- **strength of national climate action** (mitigation, adaptation and/or resilience) – ranging from weak to strong progress

Please open your mind to the possibility of four different future scenarios we could face

Depending upon how the two CLIMATES critical uncertainties play out, we could face four different futures in 2035 as shown below (the images are generated by AI as a thought provocation).



The critical uncertainties of what path the global economy is on and what path is taken at a national level

Exploring these scenarios

Please consider each of the scenarios in the following slides and allow **your mind** to paint its own picture of what this might look like (including thinking about highways and transportation). Reflect on the **relative likelihood** in your view of these different scenarios pointing towards our actual future.

Shared misery

In a 'Shared misery' 2035 future, progress nationally and internationally has been weak and the world is heading towards a global temperature increase by the year 2100 of 3+ C.

The UK (or your country, if not the UK) has **poorly progressed** mitigation, adaptation and/or resilience. It is **struggling with** the climate change effects. And it faces the **destabilising effects** of global change and future prospects.

Righteous hell

In a 'Righteous hell' 2035 future, progress nationally has been strong but internationally it has been weak and the world is heading towards a global temperature increase by the year 2100 of 3+C.

The UK (or your country if not the UK) has **strongly progressed** mitigation, adaptation and/or resilience. It is **managing well** the climate change effects. But it faces the **destabilising effects** of global change and future prospects.

World as one

In a 'World as one' 2035 future, progress nationally and internationally has been strong and the world is heading towards a global temperature increase by the year 2100 of 1.5 to 2C.

The UK (or your country, if not the UK) has **strongly progressed** mitigation, adaptation and/or resilience. It is **managing well** the climate change effects. And it faces the **stabilising effects** of global change and future prospects.

Country outcast

In a 'Country outcast' 2035 future, progress nationally has been poor but internationally has been strong and the world is heading towards a global temperature increase by the year 2100 of 1.5 to 2C.

The UK (or your country, if not the UK) has **poorly progressed** mitigation, adaptation and/or resilience. It is **struggling with** the climate change effects. But it faces the **stabilising effects** of global change and future prospects.

Q5: In terms of the actual future you expect, please indicate the order of likelihood of the scenarios (1 = most likely to 4 = least likely)

(Ranking required)

- ☐ Shared misery
- ☐ Righteous hell
- ☐ World as one
- ☐ Country outcast

Q6: Please briefly describe why you have chosen your most likely scenario

(Long text answer required)

Q7: Please also comment on your level of confidence

(Multiple choice - once answer required)

- ☐ Very Confident
- ☐ Fairly Confident
- ☐ Not Confident

Q8: What characterises the national transport system in this 2035 scenario you consider most likely?
(Long text answer required, 50–100 words encouraged)

Moving towards the exam question

Please now consider the sorts of changes (relating directly or indirectly to the highways and transportation sector) that might be taking place socially, technologically, economically, environmentally and politically if we were heading from 2024 out to the 2035 scenario you thought most likely.

In other words, imagine what might need to be true for things to change from how they are now to how they could be in 11 years' time.

Q9: For the scenario you consider most likely, what trends and/or shocks do you think may have occurred during the late 2020s in transitioning towards this 2035 scenario?
(Long text answer required, 50–100 words encouraged)

The exam question

Informed by the scenarios you have examined, please consider what actions would best help society to survive or thrive, given the uncertainty we face.

The CLIMATES exam question is as follows:
In an uncertain world, what priority actions in highways and transportation should we double down on in the next three years to meet the unfolding challenges of climate change as we look out to 2035 and beyond?

You have two chances below to answer the exam question from a domestic (national) perspective.

Q10: Please provide a priority action (with supporting arguments and reasons) you consider relevant to your area of the transport sector (e.g., something in the scope of your current role)
(Long text answer required, 50–100 words encouraged)

Q11: Please provide (with supporting arguments and reasons) a priority action for either Government or CIHT
(Long text answer required, 50–100 words encouraged)

How you feel about climate change (revisited)

Q12: Thinking about how you feel now about climate change and its effects compared to the start of this survey, which of the following comes closest to your view?

(Multiple choice - one answer required)

- ☐ Neither more or less worried
- ☐ Less worried
- ☐ More worried

Learning a little about you

Q13: Are you involved with CIHT?

(Multiple choice - one answer required)

- ☐ Apprentice Member
- ☐ Student Member
- ☐ Graduate Member
- ☐ Associate Member
- ☐ Member
- ☐ Fellow
- ☐ Not a Member)

Q14: Please describe your professional role as briefly and clearly as possible

(Long text answer required)

Q15: Why have you chosen to participate in this survey?
(Long text answer required)

Your survey responses will be treated anonymously. However, if you would like to be kept in touch about the initiative, its outputs and further activities, **please provide us with an email address**. It will only be used to communicate with you about CIHT CLIMATES news. We will also randomly select people for whom we have email addresses to receive a limited edition CIHT CLIMATES tour t-shirt.

Your closing remarks

Q16: Is there anything else you would like to say about the CIHT CLIMATES initiative that may be relevant to how to prepare its report, conclusions, and recommendations?
(Long text answer required)

Thank you very much indeed for taking part in CIHT CLIMATES and helping inform its findings and recommendations.

Appendix 2 – In the news in the last seven days

Set out below are the news headlines (with dates) each of which were selected on the basis of having occurred within the previous seven days of the workshop for which they were shown.

September 2024

13 South America surpasses record for fires
16 Climate scientists troubled by damage from floods ravaging central Europe
16 Trump plans invite environmental disaster. Harris takes climate change seriously, but lacks detail
22 Archbishop says God is green and pleads with leaders to: 'Act now before it is too late to save the world'
23 People must understand: we in Malawi are paying for the climate crisis with our lives
25 Europe's deadline floods are glimpse of future climate

October 2024

2 Data centre emissions are soaring it's AI or the climate
4 Ski resorts warn they face 'existential threat' from climate crisis
4 Parts of Antarctica are turning green at an 'astounding' rate
4 Will carbon capture help the UK tackle climate change?
7 BP abandons target to cut oil production
7 Climate warning as world's rivers dry up at fastest rate for 30 years
8 Deal on climate aid hangs in balance at UN COP29 summit
19 Jenrick: I would tear up unconservative climate change act as Tory leader
20 UK facing calls at Commonwealth summit to pay billions for role in climate crisis
21 Climate Change Is Killing Buildings in Slow Motion
21 Storm Ashley latest: Rail and flight delays continue due to 80 mph winds as UK put on high alert for flooding
23 COP29 host Azerbaijan set for major fossil gas expansion, report says

November 2024

16 COP29: Digital tech and AI can boost climate action, but curbing the secto's emissions is key
18 Donald Trump picks climate change sceptic Chris Wright as US energy secretary
18 COP29 live: ministers told to 'cut theatrics', 'move faster' and 'get down to business' amid growing frustration at slow progress
26 Backroom deals and betrayal: how COP29's late $300bn deal left nobody happy
27 Climate denial a unifying theme of Trump's cabinet picks, experts say
27 Storm Bert: How climate change causes wetter winters

December 2024

4 Fury as US argues against climate obligations at top UN court
8 UK 'not ready' for extreme weather like Storm Darragh
9 Climate crisis deepens with 2024 'certain' to be hottest year on record
9 A 'doom loop' of climate change and geopolitical instability is beginning
10 UK low-carbon renewable power set to overtake fossil fuels for first time
10 Costs Pile Up As Climate Change Adds $600 Billion In Insurance Losses
10 Arctic tundra is now emitting more carbon than it absorbs, US agency says
12 It's still 2024, but scientists are already confident 2025 will be in top three warmest on record
12 EU's climate chief warns of 'geopolitical winter'

January 2025

6 Earth shattered heat records in 2023 and 2024: is global warming speeding up?
6 Repression of climate and environmental protest is intensifying across the world
7 From Trump to 'game-changing' lawsuit: Seven big climate and nature moments coming in 2025
8 EU warns of 'serious blow' from Trump on climate change
11 The Left no longer getting away with blaming climate change for wildfire disasters
16 Trump energy chief pick says linking wildfires to climate crisis is 'hype'
20 Donald Trump likened to a 'wrecking ball' for climate action but the damage may be less than feared
21 The real message behind Trump's withdrawal of US from the Paris climate agreement
22 Hong Kong's Paul Chan vows to bridge climate financing gap after Trump pull-out
22 With US no longer reliable, India must step up on climate action
26 India among world's 13 leading nations spearheading fight against climate change: WEF
27 Global GDP Faces 50% Loss Without Climate Change Action, Study Finds
31 Trump orders USDA to take down websites referencing climate crisis
31 Miliband vows to halve UK emissions days after Reeves backs Heathrow third runway

February 2025

3 Eco-anxiety rife among children as 78% found to be worried about climate change
14 UAE Ministry of Climate Change and Environment calls for global cooperation to strengthen ocean ecosystems at WGS 2025
15 World's sea-ice falls to record low
16 Trump Ends Climate Work Inside Agency That Responds to Disasters

Appendix 3 – Personal pledges

This is a list of all the personal pledges made by CLIMATES participants across the workshops that took place:

"Stay hopeful but concerned!"

"Look at reducing my CO2 emissions e.g. site visits, Public Transport usage and recycling."

"I'll talk to my daughter more about what we do now is having an impact on what happens in the future. We'll work on being more aware of our impacts on climate change across all parts of our lives, particularly travel & provenance with local food produce."

"To work together at local, central and international levels to address the global issue. To educate upcoming professionals that climate change is an ongoing situation."

"Reinforce my commitment to helping CIHT continue to increase awareness and to be more bold in its actions."

"I pledge to introduce some of the 'CIHT CLIMATES' content to schools when speaking to students as a STEM Ambassador without scaring the students of course."

"To think more about CC in my everyday work, to do more in educating those around me."

"CIHT learn – look to create a CPD session on appraisal good / best practice"

"Continue to be an advocate for promoting CC and making it the forefront of my teams minds when designing solutions and during construction "

"How do we help drive collective leadership + insightful education, emerging professionals"

"Raise awareness of climate change with friends and family, encourage colleagues to consider climate objectives when undertaking projects"

"Ask clients, colleagues, public, decision makers: why doesn't all policy + practice align to Climate Protection. Where does the money come from? Where does it go? Both should totally align to climate change."

"Improve my Climate action knowledge, improve my climate action vocab, make my clients aware of the importance of the decisions they make and the impact which that could have."

"Push more within CIHT in relation to reducing its climate impact, think even more about my personal consumption and see if there are other ways to reduce my energy consumption"

"More lobbying and influencing on the subject, focus on building the climate agenda more into outcome / success measures to shift the dial"

"Better sell the benefits of schemes/ programmes to local communities"

"I will bring positive climate action into all my project work and will push harder to bring about change."

"Take responsibility to think of some better stories."

"Continue to build community professionally and in my local area."

"Continue to travel by rail or sea when (if?) going abroad where possible."

"Take a more proactive role in promoting sustainable travel in those areas where I'm not currently as active as I could be."

"Focus on environmental protection issues, including both direct effects and secondary effects of infrastructure investment."

"(Even in non-highway projects)"

"Promote the opportunities for climate action in each decision made, from long-term, core project objectives to those seemingly peripheral choices with assumed short-term outcomes."

"Where possible cycle and take train rather than drive."

"Work with my clients to push the climate/carbon friendly alternative and don't take no for an answer"

"Focus on storytelling our climate journey. Making sure actions and steps taken are clear and useful across the transport sector. (Still acknowledging the long to do list of course!)"

"Encourage positive messaging regarding things I can influence in my role as a civil engineer to try to affect change."

"Tell better stories, especially to decision makers (doubly so if they're wrong!)."

"Engage with others more positively, ensuring I promote the best narrative and get maximum buy-in."

"I will pass the knowledge and awareness to as many people as possible in order to act now for the environment, before it is too late."

"Advise clients to make climate-positive decisions in their schemes. Encourage colleagues to do likewise."

"I will spend time thinking carefully about the language I use and the narrative behind the recommendations I make to Councillors and stakeholders about proposed changes in how we travel."

"Look at every car journey and assess other travel modes, from both a personal and professional POV"

"Be more vocal both in work and personal life about tackling climate change"

"Are there good ideas I can support in my home town?"

"Try to influence planning where possible"

"Move to an area where I can travel more sustainably!!!!!!"

"Seek opportunities to collaborate with others to bring about change."

"Be more optimistic and challenge others who believe sustainability isn't worth it"

"Make use of public transport more to reduce reliance on car"

"I will always try to think about the issue, how I can influence others to think about the issue and drive to seek small solutions at each opportunity that presents itself."

"Try to grow my understanding so that I can have answers required to respond to challenges from climate change deniers and can make my own informed decisions"

"20,000 steps per day"

"Make more time to engage in educating people about this"

"Cycle with my kids"

"Make more use of my electric bike which is gathering dust in the garage"

"Drive less and walk more"

"Challenge whether projects are aligned to our climate goals"

"Keep my mind open to different approaches and be positive"

"I won't lose hope."

"Have more conversations with friends and family about climate change and encourage others to do more to help the cause"

"Take full advantage of the opportunities that are available to me. Take action to create change, rather than waiting for others to do it."

"Carbon literacy training on CIHT Learn"

"Reduce car use significantly, and use much more active travel"

"Advocate professionally in every project I work on to bring about more structural change and encourage early engagement"

"No flying in 2025"

"Be brave enough to challenge the norm. Individual action leads to collective action."

"To do some CPD on carbon measurement and understand ways to reduce emissions."

"Make climate conscious decisions."

"Partake in school bike bus."

"Provide input to child's school with Climate job related opportunities."

"Be creative in day-to-day projects to implement climate actions. It's difficult being a junior to influence clients, but will try to do that through actions."

"Bear in mind the multifaceted 'wicked challenge' we face. Remember the wider challenge we are tackling and not always get bogged down in the detail / numbers of carbon quantification on a micro-scale."

"Take it back to basics. Focus on what I can influence."

"Push more meaningful discussion on climate with colleagues and clients"

"Tell a client to think again"

"Stay vegetarian. Swap out regular car journeys with train journeys which has recently become possible due to moving house."

"Maintain a low-carbon lifestyle, try to note frictions and use them to inform my work"

"I will support and provide leadership I as best as I can to deliver tangible net zero results."

""Push for what's needed"

"Shout about what we (CIHT) can do"

"More grassroots/local/every day things to help build trust and community within my own communities – be the change you wish to see in the world"

"Push for the case for low carbon solutions from Inception to delivery. Get stakeholders to buy in so they don't gey value engineered out!"

"Encourage learning and knowledge of climate scenarios like today with others at work/home to affirm their understanding and sense of their future I"

"Challenge more senior colleagues who perhaps put client wishes before better outcomes that are supported in policy"

"Investigate and promote the most plausible actions which increase adaptation and resilience (because we will need it!), with some mitigation as a bonus (eg soil management = flood management)."

"Encourage my organisation to start Team meetings with a brief, one-minute, Climate moment. And lead by example with this."

"Campaign locally for a 20mph zone in my neighbourhood in order to encourage less car use and more walking and cycling."

"I will do more to educate and inform, to raise awareness of the pressing issues and of climate actions that can be taken in the short term"

"Produce and publish an internal sustainability roadmap and ensure it's accepted, understood and at the core of how we act"

"Try to push for more climate change-related training at my workplace"

"I will do the effort to champion the topic of climate resilience planning of infrastructure in CIHT, so I can help educate other colleagues in this topic."

"To continue to drive the sustainability agenda through my organisation with a pledge to make it as engaging and fun as possible"

"Push for Carbon Literacy Training for everyone in my workplace."

"I pledge to work collaboratively across the industry to push for greater consideration of our climate, decarbonisation, equity and just transition in all of my projects from now on."

"Personally, drive and recycle more."

"Professionally, try and incorporate more sustainable solutions into projects and encourage my team to think beyond the conventional solutions and think outside the box"

"Push for more sustainable approaches in my organisation"

"Integrate consideration of climate risk into as many projects as possible"

"Try to reduce my carbon footprint by making more sustainable decisions in regards to how I will be travelling domestically and internationally."

"Set up weekly calendar reminders to explicitly encourage me to share and promote sustainable actions within the industry or with colleagues"

"Prioritize integrating climate resilience into all planning and decision-making for highways and transportation projects."

"I will continue to focus my professional efforts on behaviour change: mode shift and the adoption of sustainable transport to reduce car use"

"Keep a record of at least one sustainable action taken each day throughout 2025"

"Think more deeply about my decisions and their unintended consequences and impact on sustainability"

"I will use my voice at work to offer constructive feedback about prioritising climate action wherever possible"

"Use my learnings to influence other people and other organisations I'm involved with; e.g. church, rugby club, international charity – to see the signs and change behaviour wrt climate action."

"Keep banging that drum!"

"Have more stats ready for public speaking events and discussions with peers, friends and foes"

"Read transport news with more critical thinking"

"Do more awareness raising of climate change both professionally and in my private life and potentially take part in more activism"

"Swap my 10 year old diesel (non-ULEZ) for something greener"

"Challenge more."

"Educate."

"Inform/influence myself and others."

"Make more effort to encourage those outside of the transport planning tent to deliver change"

"Adopt more sustainable ways of living and travelling."

"Be more vocal within my workplace on the things that can be changed which will have a positive outcome for the future."

"Read up on the true sense of activism to bring more perspective & optimism in my actions"

"I will bring up climate change in conversation with colleagues, family and friends more often."

"Promote consultations as feedback rather than referenda on developments"

"Travel Choice Priority – 1. Active Travel, 2. PT, 3. Car"

"Deal with the elephants."

"Eat more vegan curry (that was excellent)"

"Not completely give up on rail – however poor it gets"

"Challenge myself on my decisions – big or small"

"Consider taking different transportation modes, rather than drive by default."

"Educate everyone where possible for behaviour change around climate change. Adopt sustainable ways of living as everything we do has its impact on environment"

"Remain positive and try to use my platform to continue to promote climate action"

"Challenge people, including myself, to do every in our power to create a more sustainable society"

"Believe in myself!"

"Look at my impact in my business-as-usual day to day and try to use my influence to improve others and elements in projects."

"Stop flying for pleasure and hope others will engage with us to learn more why the underlying guidance changing streets is not working for blind people."

"Become more personally resilient and strong so I can advocate and lead better in this field."

"Try to think more positively, take courage from being able to influence change, seek to inspire action on others"

"Help make the social, environmental and economic case for mass rapid transit."

"Relay key messages from today to my colleagues and embed into my work"

"Try to change one action which can effect environment negatively by educating people"

"I'll act more consciously because it's the need of the hour"

"Educate and Agitate!"

"I will promote within CIHT West Midlands, an active debate about the climate change priorities for our industry and will help to capture the findings to feed into the development of national strategy"

"Use my influence on LinkedIn to better promote ideas that have co-benefits of climate with health."

"Hardened my resolve in doing better in my day-to-day. I will not choose extinction."

"Push a bit harder on sustainability issues."

"Hold firm over promoting active travel projects."

"Discuss the impact of projects on climate change with clients and colleagues to minimise the risk of making things worse."

"Relate to family and friends the seriousness of climate change from a transport perspective, provide a thought-provoking narrative."

"Change policy and provide infrastructure in the city to promote and support net zero targets."

"Stay up to date with techniques and methods to reduce carbon emissions during and post scheme delivery. Push clients to implement more ambitious shcheme to further reduce impacts."

"I will get the train to at least one Liverpool Euro away match instead of short haul flights."

"Use Climate change as a key reason for my key role and the case for my industry."

"Ensures my graduates consider climate change in their projects."

"Take it personally, champion the cause, at home, at play and at work. Enough snowflakes can make a snowball."

"Stick my neck out, let's not choose extinction."

"Empower and encourage the younger members of our team to share and channel their passion for climate action in the work that we do."

"I will not ignore what is happening around me and hope that someone else will fix it."

"There is something everyone can do to combat climate change – this does nor just need to be left to those in power i.e. Government. Think about other ways you can promote sustainability to encourage people to take it seriously."

"Don't choose extinction! Choose life!"

"This has happened my resolve in trying to do better in my day-to-day. I will not choose extinction."

"Double, triple check venue & e-mails from organisers. Worry more the future. Keep trying in my own nee world and way."

"Try and break decarbonisation into smaller, achievable goals so that motivation is sustained."

"Find my allies & work together to secure mitigation and adaptation."

"Though the problem at hand is huge and involves multiple stakeholders, there is something that we can do as transportation engineers to pave way towards a more sustainable & inclusive transport. I will try to keep this at the centre of my actions as an academic researcher."

"Lead effective change across Sustrans' infrastructure work to more actively consider, and reduce, the carbon impact of our work."

"I will continue to advocate for climate-related policies and actions in my workplace, promoting a positive vision of the future."

"I will embed climate as an agenda item in meetings in a similar to that of HS&W. This will ensure that it is regularly discussed enabling people to act on it!"

"Do at least 1 action each day to reduce the impact of climate change."

"Ensure that I think carefully about the climate impacts of my personal and professional decisions and communicate that to people around me. Also try not to fly."

"I will challenge issues which blockage climate action, whoever the instigator."

"To contribute an approach to enhance a change to a better world as an individual to collaborate with CIHT to reinforce the issue while finding innovative solutions to make the world a better place."

"Try to think about the bigger picture in a work context and the impact of decision making."

"Personally, explore closer to home – what is outdoors, and what is on our doorstep."

"Incorporate these kinds of foresight methods in all work to get everyone thinking about what is possible, and how we can get there."

"Talk more positively about, if possible."

"Develop a climate change culture, both personally and professionally."

"Stay on the path...but keep the juice."

"I will recognise that the best time to take action on climate change is now."

"Replicate the approach to discussing climate change (via CIHT CLIMATES) with partners in Europe."

"Act it's now or never for ourselves, family, work, Government and world."

"Be more proactive in understanding what I can do to help with the climate crises. Use this understanding to try and energise and uplift people into positive action."

"Use more public transport more."

"Challenge the construction of design decisions towards achieving a reduction in transport emissions."

"I will write (again) to my MP about road pricing."

"Hearts x Minds – more walking & cycling."

"Consider my own travel choices and include sustainability / carbon with cost / time, and roll that out across the business."

"Try to fly less, where possible, and convince others of the need to do so."

"I will reflect on industry best practice to inspire short-term / implementation-driven research and act on climate adaptation plans."

"To share knowledge of transport issues related to climate change with next generation and to lobby clients to adopt sustainable choices."

"To take a long-term cycle hire or buy a bicycle (I last had a bicycle one aged around 13) and cycle often."

"Commit time and effort in my personal/professional life to effect positive action. Focus on initiatives I can deliver at work or encourage others to deliver through campaigning and communication."

"Continue learning and keeping up to date with knowledge on climate change. Improve training in effective communication and engagement"

"I will work to help inform those around me, both personally and professionally, of the huge and complex challenges we face but that we can take action ourselves. We can make a difference. JFDI."

"I will think about the consequences of climate change when taking decisions at work and in my personal life"

"To take action daily on a personal and professional level to reduce my impact on climate change and help others to do so, including educating and empowering my daughters to make changes in the future"

"To commit to getting the climate action message outside of the transport 'bubble'. Through: my actions at work, personal habits (leading by example), influencing key stakeholders (councillor)"

"Advocate/include climate change data/information/ scenarios in conversations with stakeholders (public, members etc) in an inclusive, not preachy manner to hopefully bring them along on journey."

"Deliver 4x school engagement sessions per year to improve climate literacy and encourage personal responsibility for the next generation"

"Not fly within UK or for viable trips to Europe"

"Be a leader for the generations behind me"

"Raise awareness in the workplace and outside. We are not helpless and we can mitigate some of the disaster by acting together"

"I will ensure that climate action is built into ALL my projects and will work with clients to extend their knowledge base."

"To learn more about both the impacts of climate change and what can be done to tackle them in my professional and personal life and to add this to my skill set"

"Keep Climate top of our business agenda, like health & safety. Climate key to the annual business plan."

"Fly less and cycle more!"

"Play a more active role as a STEM ambassador to help guide and empower the next generations who face the huge challenges ahead."

"I will endeavour to pick the most sustainable options in my everyday life. Travel being a priority."

"Work harder to promote transport decarbonisation, sustainability and climate change in my role to influence change."

"Being more vocal with family, friends and colleagues on climate change"

"Continue to be an advocate for positive change in my field."

"Give transport greater profile, by highlighting its importance and connections with other industries, and why transport needs to change/decarbonise"

"be more vocal within my organisation. push ideas. be prepared for resistance"

"I'll be more vocal in promoting climate action in everyday work (e.g. team meetings, project meetings) and challenging maintenance of the status quo"

"Use my car less."

"Educate myself more and take the necessary actions to follow in contributing to the agenda"

"being more persistent in sustainable solutions while driving new development"

"No plane flights"

"Continue to be a public transport depended person – Educating or Inspiring others to make bold actions!"

"Promote climate change and how our behaviour can affect this"

"Start considering the carbon impacts of all projects"

"Keep advocating about climate change"
"Finally persuade my wife that an EV is workable option in rural areas!"

"Move clients from 'predict and provide' to 'vision and validate' mindsets"

"Do more"

"Share carbon knowledge with transport planning colleagues"

"Trying to find new solutions that can optimize the climate change in projects involved"

"Switch to EV"

"try to raise the awareness of the climate change around me"

"Share the possible scenarios to my family and friends if we do not contribute to control carbon emission"

"explain around me climates challenges"

"Drive less"

"Drive less and take less taxis"

"Sell my car ASAP."

"I would like to educate others about the importance of climate action and move to sustainable transport."

"I would like to adopt sustainable lifestyle."

"I do try to decrease my carbon footprint on a day basis based on the decisions I make for myself and my family"

"I will reduce my personal vehicle usage by 60% and use public transport instead."

""Change the Street Lighting to be Solar. "

"Increasing the % EV vehicles and incorporate EV vehicles requirements in the Infrastructure design"

"Start using public transport and limiting use of personal vehicle to absolute necessary."

"Work on area of affordable public transport with effective and innovative design."

"Increasing the shade area through more landscape"

"Influencing others. I think I need to get better at talking about it. At one point i was talking too much about it and putting people off. I need to learn to get better at that"

"I will vocalise more strongly the need to put climate change front and centre of the decisions we make locally."

"As my paternity leave ends, I'd like to still find the time to volunteer with my local charity to make a difference in my community"

"Think about the small steps I can make and the influence I can have for others to do the same"

"Keep talking about. Challenge myself and others in day to day to make sure best balanced choices are made."

"I want to walk more. Leave the car at home. Continue to deliver messages to others about climate change."

"Start more conversations with peers/ continue to be a voice for climate action."

"Integrate sustainable travel mode as part of mental wellbeing and healthier lifestyle."

About CIHT

CIHT provides strategic leadership and support to help our members develop, deliver, and maintain sustainable solutions for highways, transport infrastructure, and services that:

- **Address the challenges of climate change**
- **Support the economy**
- **Help address societal inequalities**
- **Reduce environmental degradation**
- **Respond to a changing world**

We bring members together to share, learn, and feel confident about addressing these challenges through the application of good practice, by embracing innovation and by acting with integrity. It is through this and the values that CIHT can demonstrate and deliver on thought leadership and shaping the highways and transportation sector for the public benefit.

Whether you are a student, apprentice, work in the private or public sectors or are a company director, CIHT has a place for you and a commitment to fulfilling your professional development needs throughout your career.

www.ciht.org.uk