

Institution of Mechanical Engineers response to the Department for Transport Adaptation Strategy "Adapting the UK's transport system to the impacts of climate change"

May 2024

The Institution of Mechanical Engineers (IMechE) is a professional engineering institution, representing over 110,000 engineering professionals and students in the UK and across the world. The Engineering Policy Unit of the IMechE informs and responds to UK policy developments by drawing on the expertise of our members and partners. This response has been developed in collaboration with the Railway Division, and informed by recent Institution wide activities relating to climate adaptation including our 2023 report on adapting to rising temperatures and future heatwaves.^[1]

IMechE supports the establishment and deployment of a Transport Adaptation Strategy.

Consultation questions

16. Overall, in your view, will the actions in 'Culture: embedding climate risk' make organisations responsible for transport infrastructure more or less likely to report on climate risks?

More likely.

17. Explain your response.

We believe the actions outlined in this section will make organisation responsible for transport infrastructure more likely to report on climate risks. With clear objectives and boundaries set by the Department for Transport (DfT), and the DEFRA-led adaptation reporting process, organisations will be able to systematically integrate climate risk reporting into their planning and operations.

It will be important to get the wider balance right as some benefits will not relate directly to the organisation who carries the cost. For example in the rail sector, infrastructure monitoring devices fitted on in-service passenger vehicles. Therefore, a wider holistic cultural awareness will need to be considered once the detailed mechanisms are finalised.

Leveraging the role of the Office for Rail and Road as a regulator to include adaptation mechanisms provides a formal framework that can enforce and standardise climate risk reporting. Regulatory oversight can ensure compliance and consistency, making it more likely that organisations will report on climate risks as part of their regulatory obligations.

¹ Institution of Mechanical Engineers, (2023) 'Adapting industry to withstand rising temperatures and future heatwaves', [accessed here](#)

18. In your view, what more, if anything, could government do to further encourage reporting on climate risks?

To further encourage reporting on climate risks, the government could:

- Provide support for the development and delivery of training in climate change risk assessment and upskilling.
The government can provide funding and resources to support the upskilling of technical professionals to have a better understanding of climate change risks, how to assess them, and how to integrate them into asset management processes. This could include partnering with professional engineering institutions such as the IMechE to develop specialised and targeted training.
- Translation of Climate Scenario Data.
Providing specific guidance on how to translate climate scenario data into actionable information would be highly beneficial and make it easier for organisations to incorporate this data into their risk assessments and reporting processes. This was identified as a challenge by the National Infrastructure Commission in their second assessment where they recommended that the Met Office work with infrastructure operators and appropriate regulators to develop an accessible interface for asset owners to use relevant climate data.^[2] This is something DfT should support.
- Support the use of standards and their development.
The government could encourage the use of the ISO 1409x series of standards on climate change adaptation to improve the sectors understanding of climate change risks, as well as the development of further national (BSI) and international (ISO) standards and guidance that support the integration of climate change risk assessment into Asset Management processes and systems.
- Accelerated and Mandated Key Performance Indicators (KPIs).
In the short term, and for a UK rail application, the government could consider accelerating the implementation of mandatory KPIs related to climate risk ahead of the next Network Rail Control Period (NRC). If it is contractually feasible, these KPIs could be integrated into existing contracts or included as part of the annual review process. Carefully crafted KPIs would ensure that organisations are held accountable for their climate risk reporting efforts.
- Long-term KPI Framework for Resilience.
In the medium term, Great British Railways Transition Team (GBRTT) could establish KPIs specifically focused on resilience, similar to those for reliability and cleanliness. These KPIs would provide a structured framework for measuring and improving the sector's resilience to climate risks, thereby encouraging continuous improvement and accountability in reporting.

² National Infrastructure Commission (2023) The Second National Infrastructure Assessment, [accessed here](#)

19. Overall, in your view, will the commitments in 'Providing the tools required' support organisations responsible for transport infrastructure in taking adaptation action?

Don't know.

20 / 21. Explain how the commitments will or will not support adaptation action.

The commitments outlined in the adaptation actions are promising steps that can support adaptation, but there are challenges that need to be addressed to ensure their effectiveness. The complexity will arise from integrating these ideas into business-as-usual (BAU) operations. Many adaptation concepts are currently at the early stages of development, often referred to as RIRL1 (Early TRL). While funding at this stage exists through initiatives like the First of a Kind (FOAK) and the Project Innovation Fund (PIF), these might not be sufficient to bridge the critical gap between concept development and full implementation, often known as the "valley of death."

To overcome this, and turning early-stage ideas into practicable, scalable solutions several actions are necessary:

- Implementation of policy changes that focus on long-term resilience rather than short-term fixes. This needs to include long term strategies from government and funding opportunities to support full-scale demonstrations and deployment.
- Encourage a 'fail fast' approach where partially developed ideas are quickly tested, iterated and evolved to accelerate the development process.
- Bridging the challenges in how funding and resources are allocated between immediate repair needs and long-term resilience planning.

It is important to note, that technologies that are developed and deployed within the transport sector should be designed with the principles of sustainable net-zero design, the circular economy and resilience. It will be important to ensure that in adaptation and resilience efforts, we do not make the mitigation challenges harder.

22. Overall, in your view, will the research commitments in 'Building the evidence base' support organisations responsible for transport infrastructure to make evidence-based investment decisions on climate change adaptation?

Yes.

23 / 24. Explain how the commitments in this section will or will not support evidence-based investment decisions.

The commitments in this section should support organisations to make evidenced-based investment decisions on climate change.

Furthermore, considerations should be given to highlighting the costs of inaction. By making shareholders and stakeholders aware of climate-related costs through mechanisms like the Task Force on Climate-related Financial Disclosures (TCFD), these commitments ensure transparency about the risks and benefits of resilience investments. This awareness will help stakeholders understand the necessity of such investments, ultimately supporting more informed and strategic decision-making that prioritizes long-term resilience and cost-effectiveness.

25. Overall, in your view, will the actions in 'Incentivise action' support organisations responsible for transport infrastructure to embed adaptation into:

Yes - Projects and Policies

The commitments in this section will support evidence-based investment decisions by expanding on demonstrated good practices such as that by Network Rail in cases like Conwy Valley, Dawlish, and the lessons learned from Carmont. These examples show how proactive investment in resilient infrastructure leads to better outcomes, preventing future damages and associated costs.

By incorporating Climate Change Risk Assessment (CCRA) into business cases and ensuring it cascades into project remits, contract specifications, and governance, long-term resilience remains a priority and is not compromised for short-term cost savings.

26. Overall, in your view, will the commitments in 'Measuring progress' help organisations responsible for transport infrastructure in measuring progress on adaptation?

Yes

27 / 28. Explain how the commitments will or will not assist in measuring progress.

The commitments will assist in measuring progress as there is currently a lack of comprehensive metrics to unify and track progress effectively. By systematically weighing the positives against real-world challenges and incorporating lessons learned from trial resilience concepts, organisations can gain valuable insights into what works and what needs adjustment. This iterative process of evaluation and learning ensures that progress is not only measured but also used to inform and refine future actions, leading to more effective and resilient infrastructure development.

29. Overall, do you support or oppose the actions in the strategy aimed at standardising the approach to climate adaptation?

Support.

30. Which aspects, if any, do you support or oppose?

| | Support | Oppose | Don't know |
|---|--------------------------|--------------------------|--------------------------|
| Consistent approach to climate scenarios and climate risk assessments | X | <input type="checkbox"/> | <input type="checkbox"/> |
| Implementation of UK Government Resilience Framework commitment | <input type="checkbox"/> | <input type="checkbox"/> | X |
| Adaptation standards | X | <input type="checkbox"/> | <input type="checkbox"/> |

The use of climate scenarios in the rail sector, as discussed in workshops involving Freight Operating Companies (FOC), Train Operating Companies (TOC), Network Rail (NR), and the DfT, allows for a unified approach to projecting and responding to climate change. By agreeing on expected climate change projections at a national level, the sector can tailor these projections to specific areas, such as coastal regions or particular operational areas like NR Wales. This approach, as well as the use of adaptation standards, not only helps standardise business case metrics and assessments but also ensures that limited funds are allocated efficiently and effectively.

31. What role, if any, would you like government to take in setting adaptation standards, including why?

The government should set the long-term policy and strategic landscape, defining the overall goals and priorities, creating a consistent framework for resilience across all transport modes and wider society.

Moreover, the government should facilitate cross-departmental groups and budgets to support these resilience initiatives. For example, by recognising the broader societal benefits of a more resilient railway, such as reducing road congestion in built-up areas, housing or school developers could contribute to strengthening railway infrastructure. Additionally, improvements in air quality from enhanced transport resilience could align with local NHS initiatives, allowing access to health-related funding. By coordinating across departments, the government can maximise the impact and funding efficiency of resilience measures.

32. Do you support or oppose a review of transport regulators' remits regarding climate change adaptation?

Support

We support a review of transport regulators' remits regarding climate change adaptations. While regulators traditionally focus on mandates such as safety, reliability, and cost, it's crucial to recognise the growing importance of resilience in ensuring the sustainability and continuity of transportation systems. Resilience serves as a secondary check and loop, complementing existing mandates by enhancing the system's ability to withstand and recover from climate-related shocks.

33 / 34. Overall, in your view, will the actions in 'Working in partnership' support organisations responsible for transport infrastructure to expand their capability on climate change adaptation?

Yes.

35. Explain how the actions in this section will or will not support organisations to expand their capability on adaptation.

The actions outlined in this section have the potential to significantly support organisations in expanding their capability on adaptation, particularly within the context of the UK's multi-modal transportation landscape.

The approach utilised by the railway sector to shift passengers from delayed or failed lines to alternatives represents a valuable model that can be applied more widely across various transportation hubs. By adopting similar strategies and leveraging existing

infrastructure and resources, organizations can enhance their flexibility and resilience in responding to disruptions or failures.

Moreover, there is an opportunity to rethink operational strategies in situations where traditional modes of transport are impeded, such as during road blockages due to flooding or subsidence. Instead of halting services, organisations can explore alternative solutions, such as utilising railways to transport people or goods when town roads are inaccessible. This shift in thinking requires the implementation of appropriate safeguards and mobile technologies to ensure safety and efficiency.

35. Overall, in your view, will the actions in the strategy help organisations to understand their interdependencies across different infrastructure?

Yes.

The measures outlined in the strategy have the potential to assist organisations in grasping their interdependencies across different infrastructure. By raising awareness of elements such as road closures and upcoming rail works, organisations can efficiently guide passengers between various modes of transport. This approach fosters a more comprehensive understanding of the connections between different infrastructure systems.

However, the success of the strategy in enhancing understanding of interdependencies across different infrastructure will depend on several factors. Firstly, the approach to implementation must prioritise collaboration between sectors, ensuring smooth information sharing and effective coordination efforts. Additionally, adequate resources and capacity must be provided to support the strategy's implementation and encourage collaboration across sectors.