# Transport networks face urgent push for climate resilience investment amid rising risks



A newly published report highlights the urgent need to adapt transport networks to withstand escalating climate risks, presenting a compelling economic case for investment in resilience. Titled *Transport resilience in a changing climate – The case for investment*, the report underscores how targeted, forward-looking investments can safeguard infrastructure, reduce long-term costs, and create more reliable, equitable transport systems amid growing environmental challenges.

The report, a collaborative effort among the London Transport Museum, global engineering firm Arup, international law firm Gowling WLG, and Hitachi Rail, forms part of the Museum’s Interchange thought leadership programme. It draws on practical examples from the UK and internationally, illustrating innovations such as sustainable drainage systems and the use of cutting-edge tools like NatureInsight®, which harness data to design effective nature-based solutions.

The impact of climate events on transport networks is already stark. Storm Bert in 2024 caused around £350 million in insured damages, disrupted train services for 90,000 passengers at London Paddington, and left 350,000 homes without power. Repairing the consequential damage to rail lines and roads took weeks, starkly exposing the vulnerability of existing infrastructure. This fragility is not isolated; transport systems increasingly face threats from heatwaves, flooding, fires, droughts, and landslides—climate events expected to intensify.

Key barriers identified by the report include disconnected goals, fragmented decision-making, siloed data, short-term planning, outdated risk assumptions, and funding gaps. The authors advocate five critical actions to overcome these hurdles: establishing common SMART (specific, measurable, achievable, relevant, and time-bound) goals; effectively mobilising resources and finance, including expanding green bonds and public-private partnerships; harnessing data and innovation such as AI tools for prioritising nature-based solutions; fostering cross-sector collaboration exemplified by initiatives like London’s Marylebone Flyover Rain Gardens; and embedding a resilience mindset that highlights economic, social, and environmental benefits, including job creation.

Elizabeth McKay, Director and CEO of the London Transport Museum, encapsulated the sentiment, stating, “From buckled rails to flooded tunnels, climate change is rewriting the rules for transport. This report isn’t just a warning; it’s a roadmap for reinvention. By learning from case studies, we see collaboration is our greatest asset, allowing us to build systems that don’t just survive but thrive in a world threatened by climate change.”

This collaborative approach is echoed by John Fagan, Director at Arup, who noted, “Climate change reshapes how transport systems must operate. This report highlights the need to embed resilience into planning, design, and investment. Leveraging data and nature-based solutions can futureproof infrastructure and address growing climate risks. Making resilience a shared priority across sectors is essential to build networks that are reliable, adaptable, and ready for the future.”

Such calls align with other initiatives driving sustainable and resilient transport futures. A similar report, *Making Transport Fit for the Future*, produced by Gowling WLG in partnership with London Transport Museum, Mott MacDonald, and Hitachi Rail, stresses the importance of long-term planning built on strong foundations, visionary outlooks, and bold transitions. It advocates for strong leadership, adoption of technological advancements, stakeholder collaboration, and a focus on social outcomes to realise low-carbon, sustainable transport systems. Case studies from cities including Montpellier and Paris demonstrate how innovative approaches can transform urban mobility.

Arup’s updated Rail Resilience Framework further expands on this comprehensive mindset by addressing physical infrastructure, operational strategies, ecosystems, leadership, and strategic planning—all vital to pre-emptively managing and mitigating the effects of climate change on rail networks. It advances a whole-system response essential for preventing costly emergency repairs and service disruptions, encouraging rail operators to move from reactive tactics to proactive resilience planning.

Moreover, Transport for London’s Climate Change Adaptation Plan exemplifies practical steps in managing climate-induced risks such as heatwaves and flooding, aiming to maintain consistent service and network accessibility. This emphasis on adaptability and sustainability is echoed by the International Association of Public Transport, highlighting the broader necessity for transport authorities globally to incorporate climate resilience into their operations.

Hitachi Rail’s Strategy Director for the UK, Mark Garrity, highlighted the critical role of resilience in securing sustainable, inclusive growth, asserting that “climate resilience must now become a core part of how we plan, design, and deliver transport systems, supported by long-term funding certainty and stable frameworks.” He urged continuous evolution in the conversation around climate adaptation—not only responding to impacts but also shaping smarter, greener networks for the future.

Taken together, these perspectives underscore a shared imperative: a strategic, coordinated approach to climate resilience in transport that integrates innovation, collaboration, and long-term investment. Such efforts are essential to build networks capable of withstanding the growing threat of climate change while delivering economic, social, and environmental benefits.

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## Bibliography

1. <https://transportandenergy.com/2025/06/18/transport-network-adaptation-needed-to-withstand-climate/> - Please view link - unable to able to access data
2. <https://gowlingwlg.com/en-gb/insights-resources/reports/2024/making-transport-fit-for-the-future> - Gowling WLG's report, 'Making Transport Fit for the Future', published in July 2024, examines how the UK transport sector can better support low-carbon futures by encouraging sustainable travel. The report highlights the need for long-term planning through three building blocks: Strong Foundations, Visionary Outlook, and Bold Transition. It calls for strong leadership, embracing technological advancements, collaboration among stakeholders, and consideration of social outcomes in transport planning. The report is a collaboration between Gowling WLG, London Transport Museum, Mott MacDonald, and Hitachi Rail.
3. <https://www.arup.com/en-us/insights/rail-resilience-framework/> - Arup's 'Rail Resilience Framework', updated in May 2024, addresses the increasing impact of climate change on rail systems, including heatwaves, fires, droughts, flooding, and landslides. The framework provides a comprehensive approach to rail resilience, covering assets, operations, ecosystems, leadership, and strategy development. It emphasizes the need for a whole-system response to ensure enduring resilience across rail networks, aiming to prevent costly and disruptive emergency repairs by proactively preparing and adapting rail systems to cope with evolving climate threats.
4. <https://cti.ltmuseum.co.uk/corporate/interchange/making-transport-fit-future> - The London Transport Museum's report, 'Making Transport Fit for the Future', explores how transport networks can meet passengers' expectations and promote sustainable travel. Published in collaboration with Mott MacDonald, Gowling WLG, and Hitachi Rail, the report presents three building blocks for change: Strong Foundation, Visionary Outlook, and Bold Transition. It emphasizes the importance of strong leadership, embracing technological advancements, collaboration among stakeholders, and considering social outcomes in transport planning. The report includes case studies from cities like Montpellier and Paris, showcasing innovative approaches to sustainable transport.
5. <https://www.uitp.org/news/what-about-the-here-and-now-climate-resilience-and-adaptability/> - The International Association of Public Transport (UITP) discusses the importance of climate resilience and adaptability in transport systems. The article highlights Transport for London's (TfL) Climate Change Adaptation Plan, which addresses the impacts of extreme weather events such as heatwaves, flooding, and fires. TfL's plan aims to ensure consistent customer services and an accessible, financially sustainable network by proactively managing climate risks. The article underscores the necessity for transport authorities to adapt to climate change to maintain reliable services.
6. <https://www.arup.com/insights/how-should-transport-systems-approach-climate-resilience/> - Arup's article discusses the growing importance of climate resilience in transport systems, emphasizing that poor resilience is becoming increasingly evident as climate change impacts intensify. The article outlines the need for a comprehensive approach to resilience, addressing physical, organisational, and cultural factors. It highlights the benefits of a whole-system response, including improved service continuity, cost savings, and the ability to withstand a wide range of impacts. The article also mentions the Rail Resilience Framework as a tool to help rail operators and planners move from reactive to proactive resilience planning.
7. <https://www.arup.com/news/new-approach-to-climate-resilience-can-protect-rail-industry/> - Arup's news release introduces a new rail resilience framework that advocates for a proactive, whole-system approach to climate resilience in the rail industry. The framework aims to move beyond reactive measures to address the increasing frequency of extreme weather events due to climate change. It emphasizes the need for collaboration among all sections of rail operation, governments, businesses, and local communities to avoid costly and disruptive emergency repairs. The framework sets out goals and practical actions to lead to enduring resilience across rail networks.