Department for Transport

Transport Research and Innovation Grants
Department for Transport

Transport Research and Innovation Grants 2025

Challenges Specification

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1. INTRODUCTION

The Transport Research Innovation Grants (TRIG) Programme 2025 launched on the 20th May 2025. The Department for Transport (DfT) is offering grants of up to £45,000 to undertake early stage, high-risk research and development projects.

The government is committed to driving economic growth and improving lives across the UK by unlocking the full potential of Science, Technology and Innovation. It is at the heart of the government's ambitious agenda across the National Missions, the Industrial Strategy and our Plan for Change. The UK needs to continue to support grass roots innovation to develop solutions that address real-world transport challenges, create jobs, and grow high-potential businesses. Through TRIG, DfT works with innovators developing technology, products and services that aim to make the UK's transport network safer, greener, accessible and more resilient.

TRIG supports future leaders in transport innovation by:

- Awarding 100% funding for the development of new ideas, allowing innovators to either succeed or fail fast.
- Providing a collaborative space for innovators and DfT's policy teams to work together on realising shared goals.

This document provides details of the scope of the funding challenges within the 2025 TRIG competition. Applicants are advised to consider this specification to ensure the application questions are addressed appropriately.

The scope and size of TRIG competitions varies with each round of funding to remain in line with the Department's needs and the changing technological landscape. The TRIG competition is formed of an 'open call' challenge and other targeted 'challenges' in specific areas.

Proposals should clearly highlight the innovative and novel aspects of their potential transport solution. The competition is designed to offer grant funding via a low-burden application and reporting process designed to suit time-poor SMEs and micro-companies taking their first steps. Proposals should all prove an innovative concept, taking an idea typically from Technology Readiness Level (TRL) 2 (basic research) to TRL 4 (proof of concept/small scale prototype).

Solutions may take the form of entirely new ideas or approaches. We also welcome innovations or methods adapted from other parts of the transport system, or even from different sectors altogether, if they are applied in novel ways to address transport challenges.

The Department is particularly interested in hearing from organisations (or consortia) that have a clear plan for how they will further develop their innovative solution beyond the end of the funded TRIG project. This could include SMEs and academics partnering with transport operators or infrastructure owners to conduct further testing or for example, trialling in real world environments. **Organisations are particularly encouraged to demonstrate that they understand the requirements of potential customers or have important stakeholders partnering with them during the TRIG project.**

2. COMPETITION OVERVIEW

The Department for Transport (DfT) is committed to building a transport system that supports economic growth, social inclusion, and environmental sustainability.

To achieve this, the Department has identified a **set of core priorities** that drive its investments, policies, and partnerships:

- grow the economy by enhancing the transport network, on time and on budget
- improve transport users' experience, ensuring that the network is safe, reliable, and inclusive
- reduce environmental impacts by tackling climate change and improving air quality by decarbonising transport

These priorities are designed to deliver tangible improvements across the country and across modes, ensuring that the transport system meets the needs of people, communities, and businesses alike.

3. ELIGIBILITY CRITERIA

TRIG provides 100% grant funding under Minimal Financial Assistance (MFA)[1]. Applicants must ensure they will not exceed the MFA threshold, as a result of TRIG funding.

TRIG is open to all organisations (including micro, small and medium-sized enterprises), consortia and universities to support research, proof of concept and prototyping work.

In order to be eligible to apply:

- **Organisations must be based in the UK** (excluding the Channel Islands and the Isle of Man) but are able to conduct elements of work through overseas contractors.
- **Projects must be fully delivered (and deployed) in the UK.**

[1] Minimum Financial Assistance (MFA) regulations dictate that organisations can only receive up to £315,000 in grant funding within the current fiscal year and the two previous ones.

4. TRIG 2025 COMPETITION CHALLENGES

The TRIG 2025 competition is split into two main funding streams, one dedicated to specific challenges and another to a cross-cutting theme:

1. The challenges focus on specific policy and modal areas, including an open call for innovative ideas. This year, our challenge areas focus on **Maritime Decarbonisation** and **Freight Innovation**. The '**open call'** challenge encourages applications with innovative ideas across all areas of transport where there is the potential for benefit, but do not align to the other challenges.
2. The cross-cutting theme emphasises **critical technologies** such as AI, robotics, and drones, amongst others, which are **applicable across all challenge areas.**

The table below outlines the funding available for each challenge, as well as the cross-cutting funding available for the Critical Technologies theme. Applicants should apply under a main challenge call and specify in their application if they also align with the Critical Technologies theme.

Challenge area	Number of projects to be funded (up to)	Value in £ (up to)
Maritime Decarbonisation	15	£675,000
Freight Innovation	10	£450,000
Open Call	8	£360,000
Critical technologies (cross-cutting theme)	7	£315,000
Total	**40**	**£1,800,000**

The final number of projects funded in each challenge will depend on quality of applications and how they align to the policy needs of the DfT, and the value-for-money of the ideas put forward. **The final funding decision will take into consideration a broader portfolio approach across all challenges.**

Cross-cutting Theme

The DfT recognises critical technologies as a driver of transformation within the entire UK's transport sector. As mobility demands evolve and global pressures such as climate change and digitalisation intensify, the DfT acknowledges the role critical technologies play across all transport modes. For this reason, '**Critical technologies**' is a cross-cutting theme for this TRIG competition. This means that **the competition will consider funding ideas aligned to the theme and applied to any of the three main challenges: maritime decarbonisation, freight innovation, and the open call**.

Each challenge section below has a Critical Technologies sub-section that highlights the critical technology focus for that challenge, although it is not limited to these technologies. Funding is available for 7 projects that align with this cross-cutting theme. These projects will sit within any of the three main challenge areas, supplementing the funding already allocated to that challenge.

Enablers

New this year, the TRIG 2025 competition is introducing three key enabler concepts – **integrated transport, accessibility** and **sustainability** – to help shape a more inclusive, environmentally responsible, and cohesive transport system across the UK. These key enablers will be critical assessment criteria for all applications, although there is no set amount of funding for each enabler. Proposals should address how transport networks can drive:

- Support transport's role in creating well-connected places at a local, regional and national level; use innovative technologies or models to provide clear, accurate and accessible information across all transport modes; and drive efficiencies and better decision-making across the transport system for both passenger and freight transport.
- **Accessibility:** Remove physical, sensory, communication, and financial barriers to accessibility, empower marginalised groups to travel independently, and embed inclusive design from the outset considering stakeholder groups such as travellers, operators, logistics managers, warehouse staff, and delivery drivers.
- **Sustainability:** Deliver transport solutions, for people and freight, that are efficient, affordable, and environmentally responsible, driving long-term social and ecological benefits.

The Integrated National Transport Strategy will focus on people and integration in England, setting the vision for how transport should be better designed, built and operated to meet the needs of people who use it. The DfT aims to ensure equal access for disabled people by 2030, emphasising inclusive design in emerging technologies and infrastructure. Sustainability is also a key focus across many of DfT's initiatives supporting the Government's long-term Plan for Change. Through the development of low-carbon and environmentally responsible transport solutions, the DfT is contributing to improved daily life for working people, economic growth, and delivering long-term environmental benefits. https://www.gov.uk/government/calls-for-evidence/integrated-national-transport-strategy-a-call-for-ideas

Please read the following chapters for detailed information on each of the TRIG 2025 challenge areas. Each section is divided into two parts: **background**, which outlines the context of the challenge, and **scope**, which defines the focus areas and types of solutions we are looking to support.

5. MARITIME DECARBONISATION

5.1 Background

The UK maritime sector faces an urgent need for rapid decarbonisation to meet national Net Zero targets and help achieve the government's clean energy ambitions, and this is particularly critical following the publication of the Maritime Decarbonisation Strategy in March 2025 which sets out decarbonisation goals between now and 2050.

Through TRIG, the UK SHORE programme aims to address the crucial challenge of creating a pipeline of early-stage proof of concept, low Technology Readiness Level (TRL) clean maritime solutions that can then be further accelerated towards market readiness and commercialisation. The maritime sector is particularly challenging to decarbonise due to the wide range of vessel types and fuel options, as well as the long lead in time for building vessels.

The aim is to overcome barriers to the deployment and commercialisation of innovative technologies that will decarbonise maritime transport, enable the sector to reach Net Zero, and develop the UK’s competitive edge in clean maritime technologies.

This early-stage support is vital to build a strong foundation for a leading clean maritime industry, solidify the UK's position as a clean energy superpower, and directly advance the Department for Transport's priorities for green transport while boosting both jobs and growth.

Relevant links to strategic documents:

- Maritime decarbonisation strategy - GOV.UK

5.2 Scope

This challenge is seeking innovative solutions which contribute towards:

a) Future Fuels

- Facilitating skill development in the safe handling and risk management of future maritime fuels, considering novel uses of emerging technology in training programmes, such as AR / VR.
- Developing the logistics chains for the transition to multiple, cleaner fuels – including their transfer, storage and distribution. Adoption of simulation and modelling techniques.
- Accelerating the development and adoption of future fuels, considering new materials and composites for storage and handling. Considering how this might work cross-modally to generate economies of scale.

b) Vessels

- Enhancing energy efficiency in vessel operation, including route optimising navigation techniques, improved maintenance and engine cleaning.

- Optimising capacity planning and utilisation in maritime freight to increase efficiency and therefore reduce emissions. Consider the integration with other freight modes to ensure alignment.
- Equipping vessels for the adoption of future fuels and automation technologies: robotics; smart shipping; route optimisation and AI.

c) Infrastructure

- Easing the adoption of automation in operations to drive efficiency and reduce emissions. Considering the use of modelling and simulations, including digital twins.
- Optimising integrity across multi-modal transport and better co-ordination of e.g. trucks and rail with ports.
- Improving the management of multi-fuels energy supply and demand at ports. Including monitoring of peak times and usage cycles and the consideration of a port's role as a multi-modal energy hub.

d) Critical Technology 'focus'

The maritime sector is under growing pressure to adapt in the face of complex challenges, including decarbonisation, supply chain disruptions, port congestion, and workforce safety concerns. Critical technologies present valuable opportunities to tackle these issues by enhancing operational efficiency, improving safety, and supporting the industry's transition toward a more sustainable and resilient future.

Examples of Critical technologies which could be applied to maritime include:

<u>Future Fuels</u>

- Supporting the safe handling and risk management of new maritime fuels - such as during loading, storage, and transfer within port environments, as well as vessel operations - through enhanced training programmes that use technologies like augmented and virtual reality (AR/VR).
- Developing logistics chains to support the transition to multiple, cleaner fuels, including systems for fuel transfer, storage, and distribution. This involves adopting simulation and modelling tools, including predictive modelling to estimate future fuel demand under various energy transition scenarios.
- Accelerating the development and adoption of alternative fuels by exploring new materials and composites for safer, more efficient storage and handling.

<u>Vessels</u>

- Improving vessel energy efficiency through technologies such as route optimisation, better maintenance practices, and engine cleaning; integrating maritime routing models with weather prediction systems to identify routes that are not only efficient but also safer.
- Enhancing maritime freight capacity planning and utilisation to reduce emissions. This includes integrating maritime with other freight modes, ensuring data interoperability across rail, road, and sea transport.

- Equipping vessels for the adoption of new fuels and automation technologies, including robotics, smart shipping systems, machine learning, and AI for real-time decision-making at sea and route optimisation.

Infrastructure

- Enabling greater automation in port and terminal operations to improve efficiency and reduce emissions, supported by tools like modelling, simulation, and digital twins.
- Improving coordination across multi-modal transport systems, such as synchronising trucks, rail, and port operations, using innovative digital solutions to strengthen overall network integrity.
- Enhancing energy management at ports by improving monitoring of peak usage and supply cycles, and positioning ports as multi-modal energy hubs capable of managing different types of fuels.

e) Out of scope

- Strengthening of cybersecurity in maritime operations
- Enhancing the reliability and efficiency of offshore facility or vessel inspections

6. FREIGHT INNOVATION

6.1 Background

Freight and logistics play an integral role in all aspects of life in the UK. DfT aims to support the freight sector in growing the economy, delivering value for money and reducing environmental impact. A new plan for freight is currently being developed. This will be a collaborative effort with industry and publication is currently planned for late 2025.

The new plan will set out how government will work with industry in the coming years to help the freight and logistics system rise to the challenge set by the Government's missions and Plan for Change. This will focus on the system's role in Kickstarting Economic Growth and Making the UK a Green Energy Superpower. The new plan will build on the progress made in recent years, take stock of the changing global landscape of opportunities and threats, and align and coordinate with the government's wider plans, including the Integrated National Transport Strategy (INTS).

Through TRIG, DfT aims to foster a dynamic innovation pipeline and help promising early-stage concepts grow into scalable solutions, which then have opportunities to be trialled and commercialised through other targeted support mechanisms, such as the Freight Innovation Fund (FIF).

TRIG will focus on innovations which:

- can reduce emissions.
- can reduce congestion and subsequent improvement to the transport user's experience.
- builds resilience and apply circular design across supply chains.
- improves operational efficiency to promote economic growth.
- facilitates a modal shift from road to more environmentally sustainable alternatives e.g. rail, cargo bikes and inland waterways.
- helps plug the skills gap and workforce challenges prevalent within the sector.

Relevant links to strategic documents:

- The Government's Plan for Change, December 2024
- Future skills needs across the transport sector report, Department for Transport, September 2024
- Invest 2035: the UK's modern industrial strategy, Department for Business and Trade, October 2024

6.2 Scope

This competition is seeking innovative solutions which contribute to driving efficiency and resilience in a multimodal freight system, to unlock its full potential.

We are particularly interested in ideas that help us:

a) Streamline Multimodal Freight Journeys to improve efficiency:

- Strengthening collaboration across the freight network to improve the reliability and efficiency of journeys.
- Leveraging smart multimodal logistics and digital tools to optimise network performance.
- Consolidating last-mile logistics to reduce congestion, emissions, and inefficiencies.
- Exploring reverse freight models to increase backhaul efficiency and reduce empty running.

b) Accelerate Technology Adoption to Reduce Emissions:

- Developing interoperable energy infrastructure to support zero-emission freight across a multimodal network.
- Building the evidence base and business case for the widespread adoption of low- and zero-emission technologies.

c) Enhance Resilience Across Multimodal Freight Networks:

- Improving safety, inclusivity, and accessibility in logistics employment, ensuring the sector is welcoming and viable for all, regardless of gender, physical ability, or personal circumstances.
- Creating scalable, resilient cold chain solutions that operate effectively across all modes of freight.
- Supporting skills development and welfare programmes to future-proof the freight workforce.

d) Critical Technology focus:

Critical technologies have significant potential to improve the efficiency of multi-modal freight journeys, enable more effective collaboration across the freight network, and enhance safety in depots and intermodal handling. A wide range of digital technologies are relevant to addressing these challenges.

Technologies such as artificial intelligence (AI), quantum computing, advanced positioning and navigation systems, drone-based data collection, and enhanced digital connectivity can all contribute to greater data visibility, supporting more efficient operations and building trust across the network. Robotics also hold particular promise for automating hazardous tasks in depots, improving both safety and productivity.

Examples of critical technologies applicable to the freight sector include, but are not limited to:

- **AI** for predictive analytics, routing, and operations optimisation
- **Low-carbon fuels** to support decarbonisation goals
- **Innovative hardware solutions**, including advanced materials and engineering approaches.
- **Quantum technologies** for enhanced data processing and logistics modelling
- **Automation and robotics** in warehousing and depots to streamline operations.
- **Drones** for last-mile delivery, safety inspections, and security monitoring
- **Virtual Reality** for upskilling and training simulations.
- **Digital twins** to support decisions based on data.

7. OPEN CALL

7.1 Background

The purpose of the Open Call is to uncover innovative ideas that lie outside the targeted challenges of Freight Innovation and Maritime Decarbonisation but have the potential to make a meaningful impact on the UK's transport system. We are looking for novel, forward-thinking solutions, including those we don't yet know we need.

Our aims are to:

- support high-potential, cross-cutting innovations not captured by themed challenges.
- broaden the diversity of individuals and perspectives.
- keep innovation activity agile and responsive to emerging challenges.
- advance the UK's position in transport science, technology, and transport innovation.

We particularly welcome applications that:

- Come from underrepresented innovators or regions,
- Draw on [or enable] multi-disciplinary or cross-sector collaboration,
- Address complex, systemic challenges.

This is by no means an exhaustive list. We are keen to hear from applicants developing new ideas in all areas of transport innovation.

Relevant links to strategic documents:

- The Government's Plan for Change
- Science and Technology Framework - GOV.UK
- Areas of research interest 2023 - GOV.UK

7.2 Scope

For TRIG 2025, the Open Call will be particularly interested in seeking solutions which address the following areas, but are not limited to:

a) Decarbonisation: we welcome innovations that support the acceleration and scaling of decarbonisation across all modes of transport. Areas of interest include:

- Strategic energy infrastructure
- Digital tools for energy planning
- Energy use and optimisation across the transport network
- Green energy supply chains
- Skills development for future fuel technologies
- Solutions to reduce transport-related pollution

b) Connectivity: we seek innovations that strengthen transport connectivity to support economic growth and social inclusion. Priority areas include:

- Public and workforce safety across the transport system

- Expansion and integration of micro-mobility solutions
- Safety for all road users
- Improved rural transport and connectivity to support growth
- Enhanced community transport models
- Improved connectivity and enhanced seamless travel between transport hubs (including airports and stations)
- More efficient and accessible bus networks

c) Inclusion: we are looking for solutions that promote inclusive, end-to-end transport journeys that meet the diverse needs of both the public and businesses. These may include:

- Inclusive transport design
- Inclusive and accessible autonomous transport services
- Digital accessibility tools
- Safer transport options for women and girls
- Affordable and convenient travel across multiple modes

e) Critical Technology Priorities

DfT would be particularly interested in the following critical technologies and applications:

- AI for efficient operations, lower cost infrastructure and smart construction
- Novel / alternative position and navigation technologies, e.g. *signals of opportunity*
- Novel applications of drone technology
- Robotics for the dirty, the dreary and the dangerous
- Quantum technologies, especially novel sensors
- Digital connectivity on the move – helping passengers work whilst they travel and helping smart vehicles and craft stay connected
- Smart infrastructure technologies

f) Out of scope:

While the Open Call welcomes a broad range of innovative ideas, the following areas are less likely to be prioritised for funding in this round:

- Wayfinding apps
- General energy infrastructure projects