Transport Research and Innovation Grants 2024

Grant Specification

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Introduction

The Transport Research Innovation Grants (TRIG) Programme 2024 will launch on the 17th April. The Department for Transport is offering innovators grants of up to £45K to undertake early stage, high-risk research and development projects across 5 areas.

To deliver the Government's ambition to cement the UK's position as a science and technology superpower, the UK needs to continue to support grass roots innovation to help increase employment opportunities, address skills gaps, create new IP and export its products globally. Through TRIG, DfT works with innovators developing technology, products and services that aim to make the UK's transport network safer and greener as well as more resilient and accessible.

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 calls within the 2024 TRIG competition. Applicants are advised to consider this specification along with the guidance document 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. The TRIG competition is formed of an open call and one or more targeted calls in specific areas.

Proposals should clearly highlight the innovative and novel aspects of their potential transport solution. The competition is designed to offer small amounts of funding via a low-burden 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 TRL 2 (basic research) to TRL 4 (proof of concept/small scale prototype).

The solution could be a completely novel idea or approach. However, approaches or innovations from a part of the transport system or other area applied in a novel way to the transport system, are also of interest.

The Department are 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 encouraged to demonstrate that they understand the requirements of potential customers, or who have important stakeholders such as customers partnering with them during the TRIG project.

2024 TRIG Competition Calls

The 2024 TRIG scheme comprises of five targeted calls aligned to specific DfT priorities, as outlined below, and an open call. The open call encourages applications with innovative ideas across all areas of transport where there is the potential for benefit.

Challenge	Number of Projects	Total Funding
Open Call	3	£135,000
Local Transport Decarbonisation	7	£315,000
Maritime Decarbonisation	8	£360,000
Emerging & Critical Technologies	7	£315,000
Nation-Specific Transport Solutions	5	£225,000
Total	**30**	£1,350,000

All funding calls use the same application form and assessment criteria. Projects must clearly articulate what challenge or un-met need is being addressed and how the solution goes about solving that challenge or meeting that need. The solution must be innovative and have a strong science (including social science), engineering, or technology focus.

All bids should contain:

- A clear description of the challenge being addressed and how it supports DfT's priorities
- How the solution will meet the challenge and how it is new and innovative
- Understanding of the potential impact – will this make journeys faster, more accessible, greener? What changes could this idea drive?
- Delivery plans of the work to be caried out and key milestones to be hit
- Outline of the costs and value for money – although TRIG can offer 100% funding, leverage is encouraged
- Next steps after the grant – how will the exploits of the project be progressed beyond the TRIG programme? And how will your project appeal as an investable proposition in the future?
- A well thought out risk assessment, with clear risk mitigation measures.
- Details of the applicant organisation's approach to Equality, Diversity and Inclusion

Eligibility

TRIG provides 100% grant funding and is open to all businesses (including micro, small and medium-sized enterprises) and universities to support research, proof of concept and prototyping work. Organisations must be based in the UK (excluding the Channel Islands and the Isle of Man) but are able conduct elements of work through overseas contractors. However, projects and technologies or services must be fully delivered and deployed in the UK.

Competition Scope
Open Call

Background

The purpose of the Open Call is to seek innovative ideas that have the potential to address a UK transport challenge, across all modes and technology areas. It should be noted that although the open funding call is available to solutions to all transport challenges, applicants should consider their proposals within the context of DfT's priorities and innovation needs laid out below.

Scope

The Department is specifically seeking innovations that have the potential to address the DfT strategic aims and are not suited to any of the targeted calls.

DfT's Strategic Aims are:

- Grow and level up the economy - *Improve the connectivity across the UK and grow the economy by enhancing the transport network on time and on budget*

- Improve transport for the user - *Improve transport users' experience, ensuring that the network Is safe, reliable, and inclusive*

- Reduce environmental impacts - *Tackle climate change and Improve air quality by decarbonising transport*

We will consider any science or technology that could contribute to improving the transport system. For example, this could include:

- Investigating equality of access to transport services for all users
- Investigating the performance of a new low carbon fuel
- Exploring new ways of exploiting DfT and other transport datasets to improve services e.g., open bus data
- Designing new tools to increase the safety of women on public transport
- Creating tools for encouraging mode shift and active travel

Please note this is by no means an exhaustive list and we are keen to hear from applicants developing new ideas in all areas of transport innovation. We know we do not have a monopoly on wisdom, but there are some things which we do know are important. Details of these can be found at **Annex A** to this document. This list is not exhaustive and is intended to spark ideas.

Budget and Bidding

The total budget available for the open call is approximately £135,000. We are looking for up to 3 projects of up to £45k each; however, the final number of projects funded will depend on the number of quality applications received, value-for-money, and the policy needs of DfT.

Applicants are encouraged to consider the scoring matrix in the development of their proposal to ensure the evolution of credible bids. Where applicants submit more than one bid, evidence should be presented as to the deliverability of both projects side by side.

Local Transport Decarbonisation

Background

Transport is the largest emitting sector of greenhouse gases across the UK economy[1] and local transport has a key role to play in helping the UK to achieve net zero by 2050.

Considering transport decarbonisation at a local level recognises the importance of each individual city, town and village, and the unique challenges faced by local areas across the UK. We want every place in the UK to be cleaner, greener and healthier, and to make places more prosperous and pleasant environments to spend time in and enjoy. Developing innovative solutions to local challenges is crucial to reducing transport emissions and accelerating the transition to net zero.

This call seeks to address these challenges. It will support SMEs, industry and academia to access research and development support to progress innovative proof-of-concept projects. These will have the potential to deliver emissions reductions and other benefits including improvements to air quality and better-connected communities.

Scope

The Department is seeking innovative technologies and approaches that have the potential to accelerate the decarbonisation of local transport systems. These projects should take a place-based approach, demonstrating an understanding of the needs of local areas and communities, whilst also having the potential to be scaled-up across the UK in the future.

Examples of previous projects include a replicable model for rural EV car clubs, a transport decarbonisation planning digital twin, and a sodium-ion powered battery quadricycle.

Areas of interest include but are not limited to:

- Future of transport solutions such as Mobility as a Service (MaaS)
- Supporting the uptake of lower-carbon transport modes
- Integration of transport modes such as Mobility Hubs
- Shared mobility and micromobility solutions
- Planning tools to drive transport decarbonisation
- Tools or solutions to support active travel or measure the impact of active travel
- Improving transport connectivity in rural areas, including supporting low-carbon tourism

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[1] Department for Energy, Security and Net Zero, *Final UK greenhouse gas emissions national statistics: 1990 to 2022*. [online] Available at: https://www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-to-2022.

- Accessibility in low-carbon transport modes
- Improving journeys and user experience of low-carbon transport modes through data

The following examples are out of scope for this funding call:

- Projects which do not demonstrate the potential to be scaled up in a local area
- Projects which do not have the potential to deliver carbon reductions
- Projects which only focus on data collection
- Project which only focus on maritime or aviation (including passenger aviation)

Budget and Bidding

Applicants can apply for a project grant of up to £45,000.

The budget available for the Local Transport Decarbonisation funding call is approximately £270,000. We are looking to fund 6 projects, however the final number of projects funded will depend on the number of quality applications received, value-for-money, and the policy needs of DfT.

Applicants are encouraged to consider the scoring matrix in the development of their proposal to ensure the development of credible bids. Where applicants submit more than one bid, evidence should be presented as to the deliverability of both projects side by side.

Maritime Decarbonisation

Background

Within transport, maritime emissions are significant: UK domestic shipping alone emits more greenhouse gases than buses and rail combined, and without intervention, domestic shipping emissions will continue to rise. The UK has a legislative target of Net Zero by 2050, but the lifespan of vessels is approximately 25-30 years, so intervention is needed now.

In March 2022, the Government allocated £206m research and development funding to the UK Shipping Office for Reducing Emissions programme (UK SHORE) in the DfT to accelerate the technology necessary to decarbonise our domestic maritime sector.

Through the UK SHORE programme, the Government is tackling the technical barriers that shipbuilders, their supply chains, and ship operators face in adopting clean propulsion technologies. This will help to bridge the gap between these and conventional technologies, driving the UK towards our domestic Net Zero targets. The UK SHORE programme will also help industry to capitalise on the emergence of new markets, placing the UK at the forefront of the design and manufacture of zero emission vessels.

UK SHORE interventions are aimed at addressing different barriers to maritime decarbonisation over a range of technology-readiness levels (TRL). The successful TRIG projects will feed a pipeline of innovation, enabling the development of clean maritime technologies towards commercialisation and deployment. This will decarbonise maritime transport and develop the UK's competitive edge in clean technologies. As a result, it will allow us to meet the DfT strategic aim of growing and levelling up the economy – contributing to the UK's wider global impact.

Scope

Given the breadth and scale of UK SHORE interventions that are being delivered up to 2025, the DfT is using TRIG to support innovators conduct early-stage proof of concept of clean maritime solutions.

Projects must be focussed on clean maritime solutions that reduce greenhouse gas emissions by the UK's maritime sector, as set out in the Clean Maritime Plan and support the transition to Net Zero by 2050.

Projects **must have an innovative aspect**, although this does include products being used in innovative ways, outside of their original intended use.

Projects could focus on:
- Low and zero-emission fuels, energy sources and vessel technologies.
- Land side infrastructure to facilitate the update of low and zero-emission fuels, energy sources and vessel technologies.

- Energy efficiency measures to facilitate the uptake of low and zero-emission fuels, energy sources and vessel technologies.
- Smart shipping technologies, automation and artificial intelligence that delivers indirect emissions savings for any size of vessel.

Example successful projects from previous rounds:
- A project exploring the safe bunkering of liquid hydrogen in congested port environments.
- A project developing an accessible auto EV-charger for use in the maritime sector, improving charging infrastructure for the diverse users of boats and vessels.
- A project designing and developing a prototype of a floating solar charge station for electric vessels.

The following examples are **out of scope** for this funding call:
- Projects that have been awarded funding from other UK SHORE funded competitions for the same work.
- Projects derived from bids that were unsuccessful in securing funding via other UK SHORE funded competitions, that do not clearly meet the scope and eligibility criteria of this TRIG competition.
- Capability demonstrations of currently marketed or existing technology.
- Projects that focus only on increasing the efficiency of current conventional fossil fuels and powertrains of maritime vessels.
- Projects involving aqua culture.
- Projects focused on marine conservation and ecology, such as mapping the sea floor.
- Capital investment only projects.
- Projects investigating the feasibility of financial products, including green finance.
- Projects focused on biofuels, except for projects strictly focused on inland waterway vessels and Non-Road Mobile Machinery (NRMM), which includes port-side machinery.
- Projects dependent on export performance - for example giving a subsidy to a baker on the condition that they export a certain quantity of bread to another country.
- Projects dependent on domestic inputs usage - for example if they insisted that a baker use 50% UK flour in their product.

Budget and Bidding

Applicants can apply for a project grant of up to £45,000.

The budget available for the UK SHORE funding call is approximately £360,000. We are looking to fund up to 8 projects, however the final number of projects funded will

depend on the number of quality applications received, value-for-money, and the policy needs of the DfT.

Applicants are encouraged to consider the scoring matrix in the development of their proposal to ensure the evolution of credible bids. Where applicants submit more than one bid, evidence should be presented as to the deliverability of both projects side by side.

Critical and Emerging Technologies

Background

This is a time of great technology-driven change, not just in transport, but in all sectors. The jump in capability in systems we refer to collectively as AI has catalysed a set of second order changes in almost all other technologies, based on AI's general-purpose ability to accelerate R&D. This group of technologies includes AI itself, but also 5- and 6g connectivity, quantum technology and a whole range of novel life sciences referred to as Engineering Biology. Government is responding to this opportunity through the creation of the Department for Science Innovation and Technology and publication of the [Science and Technology Framework](#).

In transport, we recognise that these emerging technologies have huge potential, but also that as primarily an engineering sector, transport is a great place to be trying out and demonstrating technologies of all types. The transport sector is a complex system which generates vast quantities of data from users, vehicles and infrastructure. It also is something that we use every day and hence understand well, no matter our worldview. This makes transport a great place for innovators, as well as for innovations and it is all these reasons that make us excited about being able to offer *Emerging and Critical Technologies* funding again in TRIG 2024*.*

Scope

The scope for this call is not constrained to one transport mode or outcome, but projects will need to be able demonstrate they are playing a role in the journey of emerging technologies in transport.

<u>Technology Areas</u>

The scope for this call is not limited to a particular transport mode or outcome, but all projects must have a transport focus and project types could include at least one of the following principal areas of interest:

AI in transport across all modes
Projects which investigate the novel application of AI in transport or autonomy in the air, at sea, on our waterways, or on the ground. This can include projects on which focus on data, but they must have some AI implementation and can't be purely about data.

Resilient and novel Position Navigation and Timing Technologies
New ways of understanding where we are and how to set routes, plus any technologies that support accurate timekeeping to support transport system operations and their resilience.

Digital Connectivity and Sensors
5G, 6G and other digital connectivity networks which can support the efficient movement of people and goods across the transport system, the operation of vehicles and craft, and the understanding of how our infrastructure is performing.

Engineering Biology
Novel applications of biological technology to transport system challenges, such as novel fuels, cementitious materials, or components of vehicles, craft or infrastructure.

Novel use of drones on the transport system
Any emerging use of drones either as part of the transport system (e.g. delivery) or in support of it (e.g. inspection of transport infrastructure)

Pathway to personal air mobility
Solutions to the challenges on the pathway to personal air mobility. This could include components of craft, systems that help them complete journeys or technologies that underpin the wider system.

Pathway to smart infrastructure
Innovations that help us make our infrastructure truly smart including low-cost sensors, low energy communications and the monitoring systems that make use of the data outputs.

Digital Twins
Application of Digital Twinning technology in transport to support private sector to realise the benefits through innovation, enable federation between stakeholders, and align with the DfT priorities and National Digital Twin programme.

Budget and Bidding

Applicants can apply for a project grant of up to £45,000.

The budget available for the Emerging Technologies and Digital Twins funding call is approximately £225,000. We are looking to fund up to 5 projects, however the final number of projects funded will depend on the number of quality applications received, value-for-money, and the policy needs of DfT.

Applicants are encouraged to consider the scoring matrix in the development of their proposal to ensure the evolution of credible bids. Where applicants submit more than one bid, evidence should be presented as to the deliverability of both projects side by side.

Nation-Specific Transport Solutions

Background

All parts of the United Kingdom are faced with geographic, technological and behavioural barriers to improving connectivity and delivering cleaner, greener and more sustainable transport systems. These barriers are more pronounced in some places than others.

Scotland, Wales and Northern Ireland face unique challenges, across all modes, most of which can be attributed to physical geography and population distribution. In addition, some areas are disproportionately affected by socioeconomic and environmental factors that have exacerbated connectivity issues and limited the capacity to reduce carbon emissions.

To address these challenges, deliver better transport outcomes, and accelerate the transition to Net Zero, the Department is drawing upon the knowledge, expertise, and creativity of innovators across the UK to help find tailored solutions.

This call seeks to underpin a collaborative approach to tackling nation-specific transport challenges by supporting SMEs, industry and academia to access research and development funding to progress innovative proof-of-concept projects.

Scope

The Department is seeking innovative technologies and approaches that have the potential to improve connectivity and reduce emissions in Scotland, Wales and Northern Ireland. With limited funding options available, we need to work collaboratively with partners to deliver creative solutions to these challenges.

Projects should take a place-based approach, demonstrating an understanding of local, regional and national needs.

Applicants should set out how the challenge they are seeking to tackle is particularly problematic in, or unique to, Scotland, Wales or Northern Ireland. If the challenge is shared, to varying degrees, with other parts of the UK, applicants should consider how and where their project might have broader applications.

Areas of interest include but are not limited to:

- Decarbonisation
- Emerging technologies / digital adoption
- Data sharing
- Better EV infrastructure
- Rural connectivity
- Tackling skills shortages / upskilling transport planning
- Mitigating adverse weather / environmental factors

- Developing transport applications utilising links to, or by-products from, heavy industry

The following examples are out of scope for this funding call:

- Projects which do not have any demonstrable applications in Scotland, Wales or Northern Ireland.

Budget and Bidding

Applicants can apply for a project grant of up to £45,000.

The budget available for the Nation-Specific Transport Solutions funding call is approximately £225,000. We are looking to fund up to five projects, however the final number of projects funded will depend on the number of quality applications received, value-for-money, and the policy needs of DfT.

Applicants are encouraged to consider the scoring matrix in the development of their proposal to ensure the development of credible bids. Where applicants submit more than one bid, evidence should be presented as to the deliverability of both projects side by side.

Annex A: Broad Innovation Needs for the Open Call

This is primarily aimed at applicants to the Open Call to spark ideas for innovative projects, it is not an exclusive list. Other ideas which can improve the transport system will be given equal weighting during the bid assessment process under the Open Call.

Although the scope for the Open Call is broad, there are some technologies which we are keen to see being utilised and considered:
- Carbon Capture, Utilisation and Storage technology
- Advanced Materials
- Additive Manufacturing
- Nanotechnology
- Novel Energy Vectors and Propulsions
- Sensor Technology
- Biometric Technology
- Sustainable Technology
- Alternative Battery Chemistries
- Low Speed Zero Emission Vehicles (LZEV)
- Delivery Robots
- Extended Reality
- Open data architecture
- Solar power
- Inductive or wireless or dynamic charging

Below is a summary from DfT's Areas of Research Interest (ARIs). The latest DfT ARI was published in April 2023. It is by no means an exhaustive list but rather it should spark ideas and inspire projects which will make up the Open Call.

Sections are organised under the headings of:

- Reducing the Environmental Impacts of Transport
- Improving Transport for the User
- Growing and Levelling up the Economy

Reducing the Environmental Impacts of Transport:
Tackle climate change and improve air quality by decarbonising transport, mitigating wider environmental impacts, and ensuring the transport system is resilient to climate-related change

Context
Transport is the largest emitting sector of greenhouse gases (GHG) in the UK, contributing 27% of domestic emissions in 2019. Our transport system must change to deliver the Government's Net Zero ambition and DfT will drive forwards that change through our longer-term green transport agenda. Sustainability will be at the heart of levelling-up. People everywhere will feel the benefits - villages, towns, cities

and countryside will be cleaner, greener, healthier and more prosperous and pleasant environments in which to live and work.

Key areas of focus are:
- Decarbonising all forms of transport
- Decarbonisation of more difficult modes of transport e.g., HGVs
- Maximising the benefits of sustainable low carbon fuels
- Future transport – better choices and more choice
- New technologies to ensure the removal of embodied carbon in transport infrastructure
- Resilience to climate change, built into the transport system

Improving Transport for the User:
Build confidence in the transport network and improve transport users' experience, ensuring that the network is safe, reliable, and inclusive.

Context
We must put the needs and expectations of current and potential users at the heart of the operation of the transport system, considering end-to-end journeys rather than focusing solely on individual transport modes. Ensuring that our infrastructure and the services which use it meet the varied needs of businesses and the public, are attractive, affordable, sustainable and resilient is a crucial goal for the department.

Key areas of focus are:

- Measuring and understanding user experience and accessibility
- Designing transport systems to work for users in different areas – urban, peri-urban and rural
- Improving the journey end-to-end for the user
- Preparing the transport system to both benefit from new technologies and be resilient to the risks associated
- Improving safety of vulnerable passengers on transport systems
- Improving accessibility in transport
- Improving safety for operators of vehicles
- Ensuring transfer between different modes of transport are smoother and ensuring it caters to user accessibility needs
- Encouraging active travel and finding ways to make it safer

Growing and Levelling up the Economy:
Improve connectivity across the United Kingdom and grow the economy by enhancing the transport network on time and on budget

Context

Government is committed to Levelling Up across the UK so that every corner of the country can benefit and share in future prosperity. Transport connectivity is an essential input into the efficient functioning of markets, reducing the costs of doing business and supporting linkages between key sectors of the economy. More efficient and faster delivery of major projects are fundamental to job creation and so a key lever for economic growth. We are therefore enhancing the national strategic transport network, shifting the focus of DfT investment towards major projects that link the towns, cities and left behind places outside of London and the Greater South East.

Key areas of focus are:
- Transport interventions in both disadvantaged and left-behind places
- Impact of transport on local skills and jobs
- Stimulating and supporting innovation
- Impact of transport on wellbeing
- Driving mode shift towards public transport use
- Impact of emerging technologies on demand for public transport
- Inward investment into UK transport innovation
- Utilising R&D in the transport sector to be facilitated to be a facilitator of international engagement and trade