
Integrated National Transport Strategy: A call for ideas

Department for Transport

UK National Clean Maritime Research Hub's response 20 February 2025

The UK National Clean Maritime Research Hub is focusing on research at lower technology readiness levels to inform future research, development and deployment. Through collaboration with stakeholders from across the maritime sector, the Hub aims to drive forward innovation and transformation, establishing the UK's competitive advantage by setting a global benchmark for excellence.

Website: <https://www.clean-maritime-research-hub.org/>

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1 In your opinion, how could the transport network be better 'joined-up'?

It is important to ensure high levels of integration of road/rail, port, and sea and minimise disruptions to the wider supply chain and mobility of people. There is need therefore, to consider the transportation system is important not only for people but also for cargo and goods.

To realise 'cleaner' or achieve 'zero carbon emission' there may be a need to use combinations of different vehicles to transport people or cargo between destinations. A high-speed rail network between key cities can help make this more appealing and time efficient. A car, taxi or bus or local carrier in the case of goods could then be used for shorter distances between destinations and hub points on the rail network.

For example, we can take a 'high-speed train' from Brighton - London to Edinburgh - Inverness; from London to Cardiff; from Edinburgh to Belfast; then change to a car/bus to get to where we want to go, as seen in Figure 1-13.

This requires a punctual and reliable timetable for time savings on journeys. A single, unified ticketing and scheduling system for all modes of public transport and council parking would encourage seamless travel and encourage public transport usage.

Public transport nodes, such as Park and Ride Hubs with good and affordable alternatives to the car to travel to/ from popular destinations would be helpful and reduces air pollution in cities. Inland and near coastal waterways can provide a useful role in transportation systems.

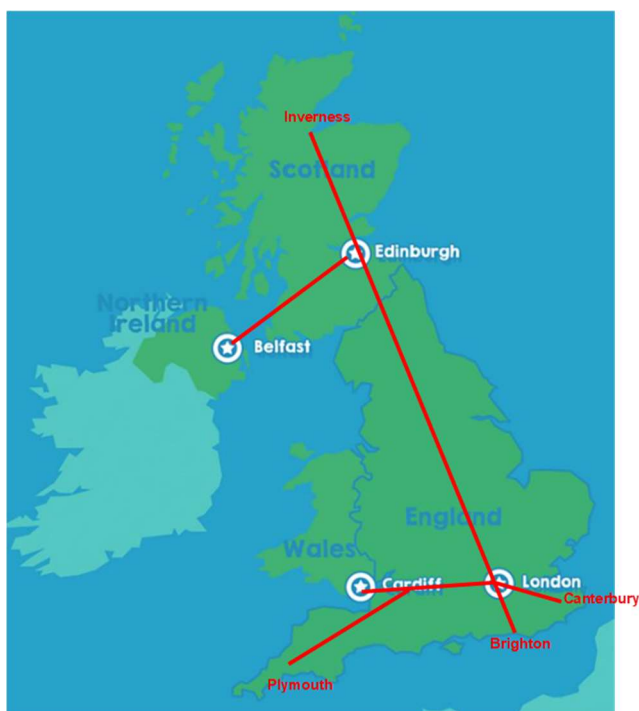


Figure 1-13 Future transport: use combinations of different vehicles to transport people or cargo in the UK

The bottlenecks in the current rail network need to be addressed by investing in infrastructure improvements. This could include; expanding rail connections, lifting freight wagon restrictions, increasing rail speeds, improving service reliability, and enhancing service frequency on key routes. For example, the rail connections to the Port of Liverpool.

Transport services in rural and suburban areas could be enhanced by subsidized routes, demand-responsive transport, modular vehicles, and shared mobility options to ensure that people in less-populated areas have access to the broader transport network.

And in the transition to greener transport modes investments are needed in electric vehicles, hydrogen-powered trains, and low-carbon fuels for vessels. Some ideas to incentivise investment include low-emission zones to reduce environmental impacts, capital cost subsidies, rebates on electricity bills, and expansion of the UK Emissions Trading Scheme (ETS) to maritime and freight transport.

2 How could data be used to improve the transport network?

[Data in the context of the question can mean having better information about journeys, such as but not limited to departure times, journey planning, traffic information and accessibility information.]

In the maritime context, weather and other data such as port congestion could assist with route optimisation. This would minimise the waiting time at/outside ports and berths in particular. This can also have significant benefits in terms of reducing shipping fuel consumption and GHG emissions.

Historical and live data could be used to optimize timetables and better coordinate connections between modes of transport; adjust timetables dynamically based on demand, weather, or unexpected disruptions, e.g. just-in-time vessel arrivals at ports.

The Internet of Things (IoT) is emerging as a new technology in tracking solutions and could be used to track real-time traffic. This, coupled with a strong public-private partnership, tracked data can be used to identify the best routes for emergency services and divert the public traffic away from incidents (through google maps and text alerts) more quickly and efficiently.

If transport data is made publicly available to UK research institutions and stakeholders, including information on the transport networks, passenger transport demands, freight transport demands, this would enable innovative research aimed at improving the UK transport network.

Real-time data sharing between operators could be used to quickly adapt schedules to disruptions or delays. Using live traffic and congestion data can inform road users in several ways: Redirect them to less congested routes or public transport alternatives, provide real-time updates on departure times, delays, cancellations, and alternative routes through apps, websites, and display boards to enable users and operators to adjust transport journey and schedules.

Data on passenger numbers, freight movements, seasonal trends, and events could be used to forecast transport demand, allocate resources (e.g., additional trains or buses), inform long-term investments.

3 How could technology be used to improve the transport network?

[Technology in the context of the question means new and innovative ways to complete journeys, for example but not limited to the use of autonomous vehicles, electric scooters and e-hailing rides.]

Related to Point 3, technology plays/should play a key role in the reduction of GHG emissions.

Technologies could be promoted for developing low-carbon fuels for vessels, trains, trucks, and heavy equipment.

Modular vehicles could be deployed to improve service reliability and reduce operational costs, especially in underserved rural and suburban areas or during off-peak hours.

Real time communication needs to be enabled between vehicles and infrastructure (e.g., traffic lights, road signs) to optimize traffic flow, reduce congestion, and improve safety.

AI-powered tools could be used to predict and prevent congestion by dynamically scheduling resources, adjusting traffic signal timings, suggesting alternate routes.

Develop and implement fast-charging infrastructure more widely and national battery swapping station network to support electric scooters, bikes, cars, trucks.

There is potential for localised application of battery swapping for short haul maritime scenarios as part of efforts to decarbonise inland and coastal traffic.

4 How, if at all, would you improve the way decisions are made about the transport network?

A cohesive, long-term strategy needs to be developed that aligns transport goals across all transport modes (land, air and sea) with environmental, economic, and social objectives (e.g., achieving net-zero emissions by 2050). This would be helped by improved communication and collaboration between government departments, regional authorities, and private operators. Public participation in the long-term strategy could be encouraged through town halls for example. It would be good to include public views in annual reviews of such a strategy.

Transport decisions also need to be coordinated with other sectors such as housing, education, and economic policies. This is to ensure integrated/cohesive development e.g. identifying new transport trends in localities and how best to address these while achieving decarbonisation targets.

Data from transport systems, users, and external factors (e.g., weather, economic conditions) can be leveraged to inform decisions; use advanced modeling tools and data analytics to predict future demand and assess the impact of proposed projects or policies. Such studies need to also capture societal benefits of changes in transportation system and usage profiles.

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