

# Transport: destination net zero

Transport produces the largest share of the UK's greenhouse gas emissions, accounting for **27% of the total in 2019**, and despite technological advances in vehicle efficiency, **emissions have fallen by only 3% since 1990**, compared to 43% across all sectors.<sup>1</sup>



The Department for Transport (DfT) has set out bold plans to decarbonise the transport system and meet the Government's ambitious target of ensuring the UK achieves net zero carbon emissions across the board by 2050.

Reaching this goal - and key milestones along the way for road, rail, aviation and maritime transport - will require an unprecedented pace and scale of technological innovation and implementation.

## Targets for transport

2023

- Hydrogen technology to be available for retrofit of existing trains.
- International Maritime Organisation to review global emissions targets for shipping.

2025

- Mandate on supply or use of sustainable aviation fuel to begin.

2030

- Sale of new petrol and diesel cars and vans to end.
- DfT aim is for 50% of all trips in towns and cities to be on foot or by bike.
- 280,000 public charge points operating.
- UK aviation announces new interim decarbonisation targets of at least 15%.

2035

- All new cars and light goods vehicles (under 3.5t) to be 100% zero emission.
- Sale of new non-zero emission heavy goods vehicles (HGVs) (3.5t-26t) to end.

2040

- Sale of new non-zero emission HGVs above 26t to end.
- All diesel-only trains to be removed from the rail network.

2050

- Rail, aviation and maritime sectors to reach net zero.



Despite bold ambitions and targets, it is difficult to address the scale and complexity of the requirements in a strategy without further information and data. In order to meet the net zero targets for transport, more research is required to ensure that we are addressing the whole life cycle carbon impact of both the vehicles and infrastructure that supports them. **The task is huge and time is limited, so research challenges need to be set for both the short-term and long-term.**

<sup>1</sup> 2019 UK Greenhouse Gas Emissions, Final Figures (publishing.service.gov.uk).

# The role of research

Research – fundamental, applied and interdisciplinary – will be vital to the success of this mission. The Engineering and Physical Sciences Research Council (EPSRC) is building its understanding of the landscape for decarbonising transport, while seeking to understand the research and innovation requirements necessary to tackle the crucial questions and issues that must be resolved to achieve net zero by 2050.



To inform this agenda, the EPSRC held a joint workshop in May 2022 with the Institution of Engineering and Technology (IET), where experts discussed the pivotal research and development challenges on emerging zero-emission transport technologies. Outputs from the workshop will inform a forthcoming joint report by the IET and the EPSRC.

The report will discuss meeting the challenge of delivering net zero emissions by 2050 through a whole systems approach, focusing on the need to **replace, remove** and **reduce**. It will also highlight the role of **research and innovation to deliver** transformations required to **discover, develop** and **deploy** solutions.



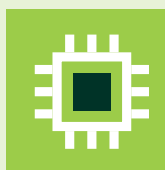
**Replace:** which greenhouse gas (GHG) emitting products, processes and services can be replaced with zero carbon whole systems solutions?



**Discover:** how can we achieve the solutions to the transport and mobility problems we have been unsuccessful in solving?



**Remove:** how can we remove GHGs from processes that cannot be replaced by capturing, storing and using the gases for other purposes?



**Develop:** how do we create insights and innovative technologies to develop solutions that are not yet market-ready and unlock their deployment?



**Reduce:** how do we reduce demand for GHG-intensive products, processes and services through technical solutions or behaviour change?



**Deploy:** how do we address technical and research questions that arise during the deployment stage, so that new technologies can be rolled out at scale?

Find out more at [theiet.org/transport](https://theiet.org/transport)

@TheIET       [theiet.org](https://theiet.org)

Produced in partnership with:

