

Traction Decarbonisation Network Strategy

Climate Change Act History

UK Climate Change Act 2008 passed into law binding UK to reducing emissions by 80% from 1990 levels.



Climate Change Act 2008

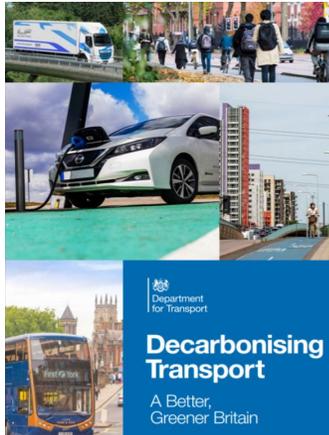


In July 2019 the Decarbonisation Taskforce publishes its final report.

The Taskforce report informs the Traction Decarbonisation Network Strategy, and subsequently the Transport Decarbonisation Plan

December 2015 Paris Agreement established seeking to limit global average temperature increase to well be below 2°C and to pursue efforts to limit this to 1.5°C

In June 2019 the UK Government revised the 2008 Climate Change Act to commit to a target of net-zero greenhouse gas emissions by 2050.

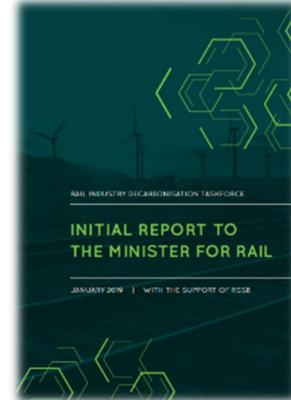


In Feb 2018, then minister from rail Jo Johnson MP challenges the industry to remove all diesel-only trains from the network by 2040

May 2019 CCC recommends to the UK government that a revised UK target of Net-zero emissions by 2050 should be established



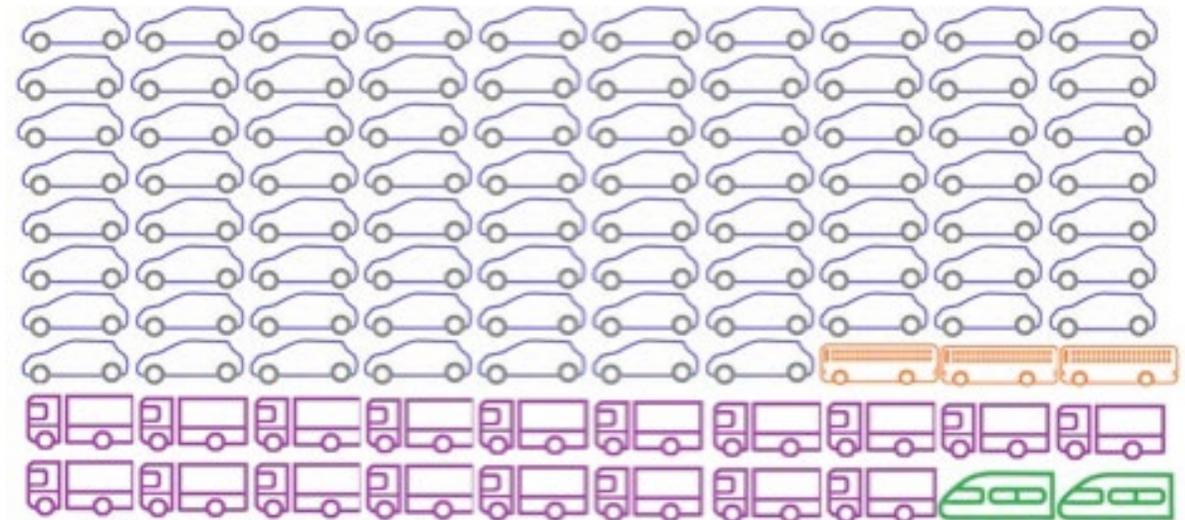
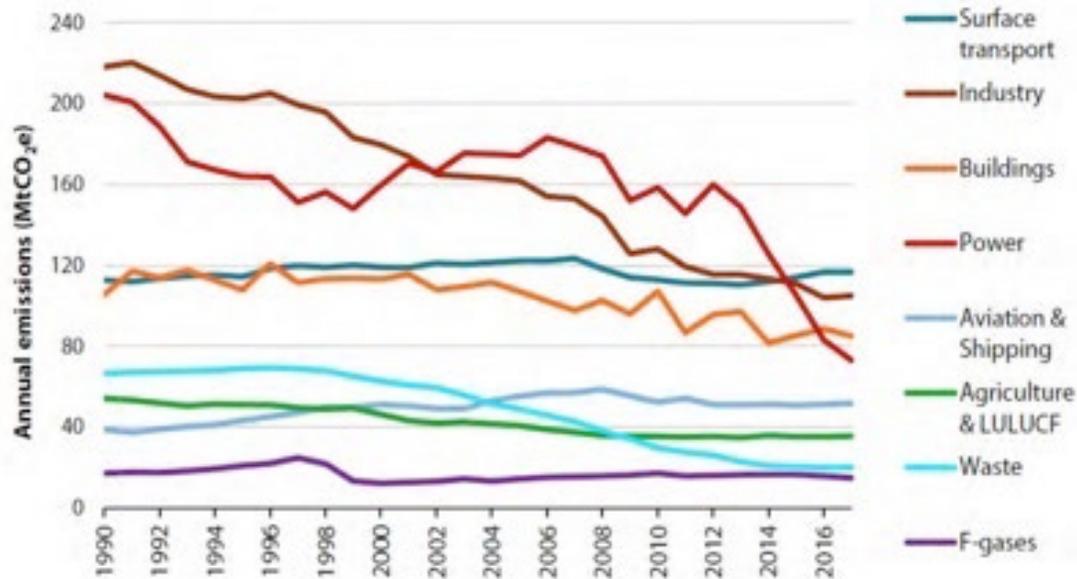
In response to the minister the rail industry convened the Decarbonisation Taskforce to explore decarbonisation in rail



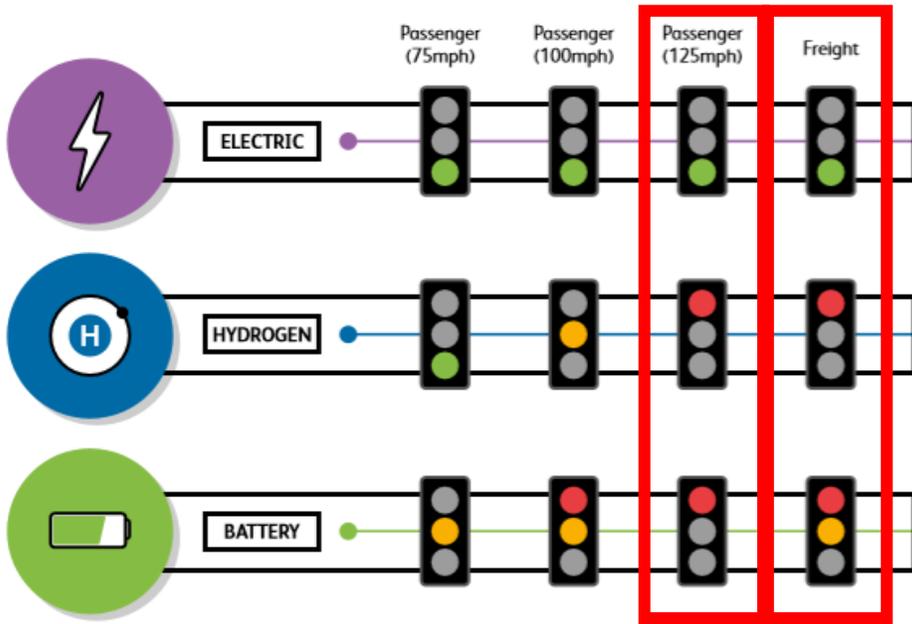
In January 2019 the Decarbonisation Taskforce publishes its interim report noting that it is possible to remove diesel only passenger trains but this is harder for freight

The Decarbonisation Challenge

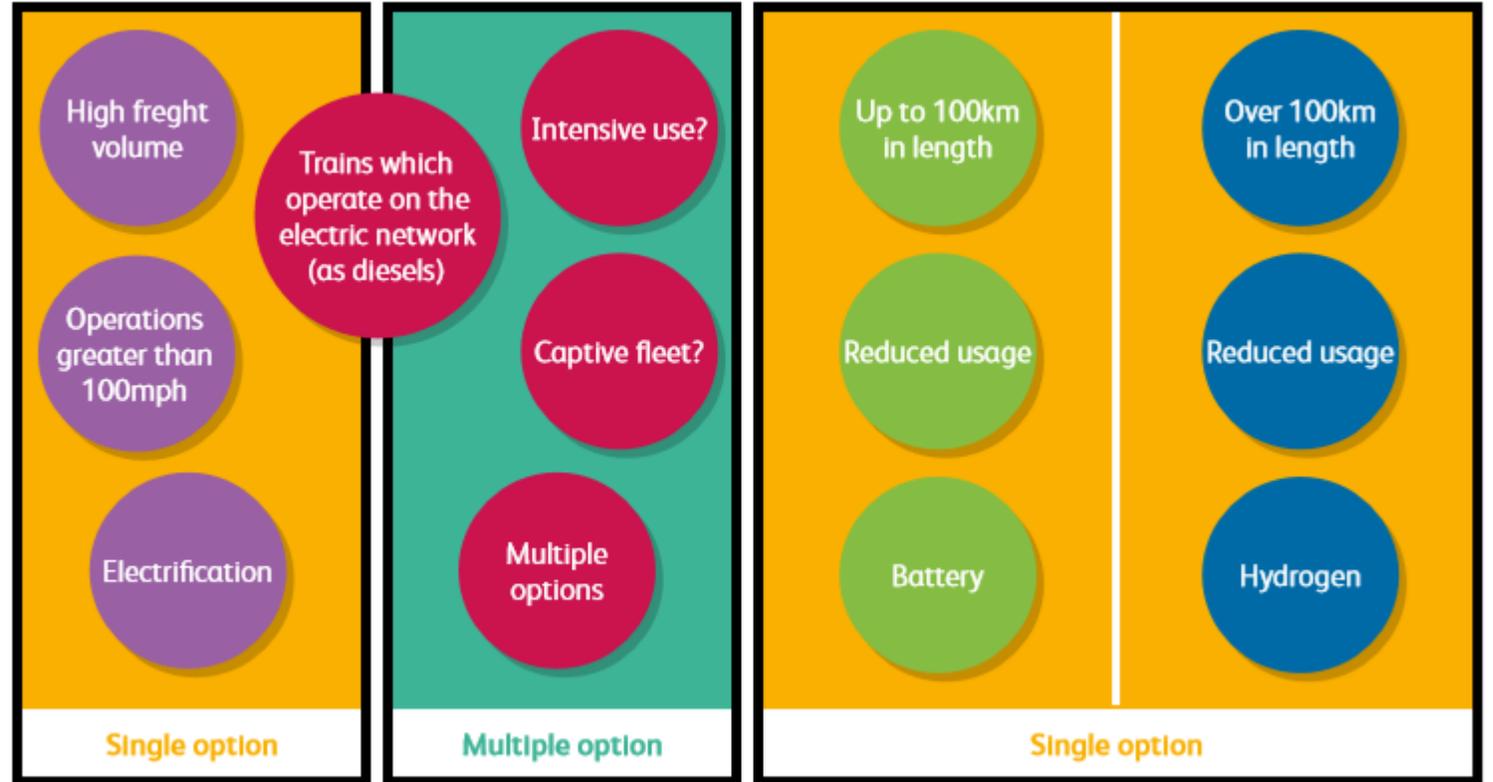
- Rail is already a very 'green' form of transport, but unlike HGVs, aviation and shipping there are current, proven technologies to reduce traction emissions from rail;
- The TDNS outlines where different traction choices would be best deployed to remove diesel trains and support the end of CO₂ emissions from rail;



Methodology and Output



- TDNS used the previous technical capability work undertaken by the industry to determine and map the distribution of each of the traction technology types.
- Given battery and hydrogen have relatively poor energy density they are not feasible solutions for freight or long-distance high-speed operations



 11,700 STKs of electrification +1,340 STKs of electrification	 2,300 STKs where there is no clear technical choice Of this further analysis identified 260 STKs with no choice	 Battery operation over 400 STKs of infrastructure +400 STKs Battery	 Hydrogen operation over 900 STKs of infrastructure and +400 STKs Hydrogen
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The Recommendations...



Any proposed new railway should consider the need to operate using zero carbon rolling stock (i.e. battery, electric or hydrogen), in conjunction with the wider network to which it is linked.



Battery and hydrogen train operations should now start wherever this is possible to ensure standards are developed, whole-system operational experience is gained, and lessons are learned. That way, best practice can be learned and embedded in good time.



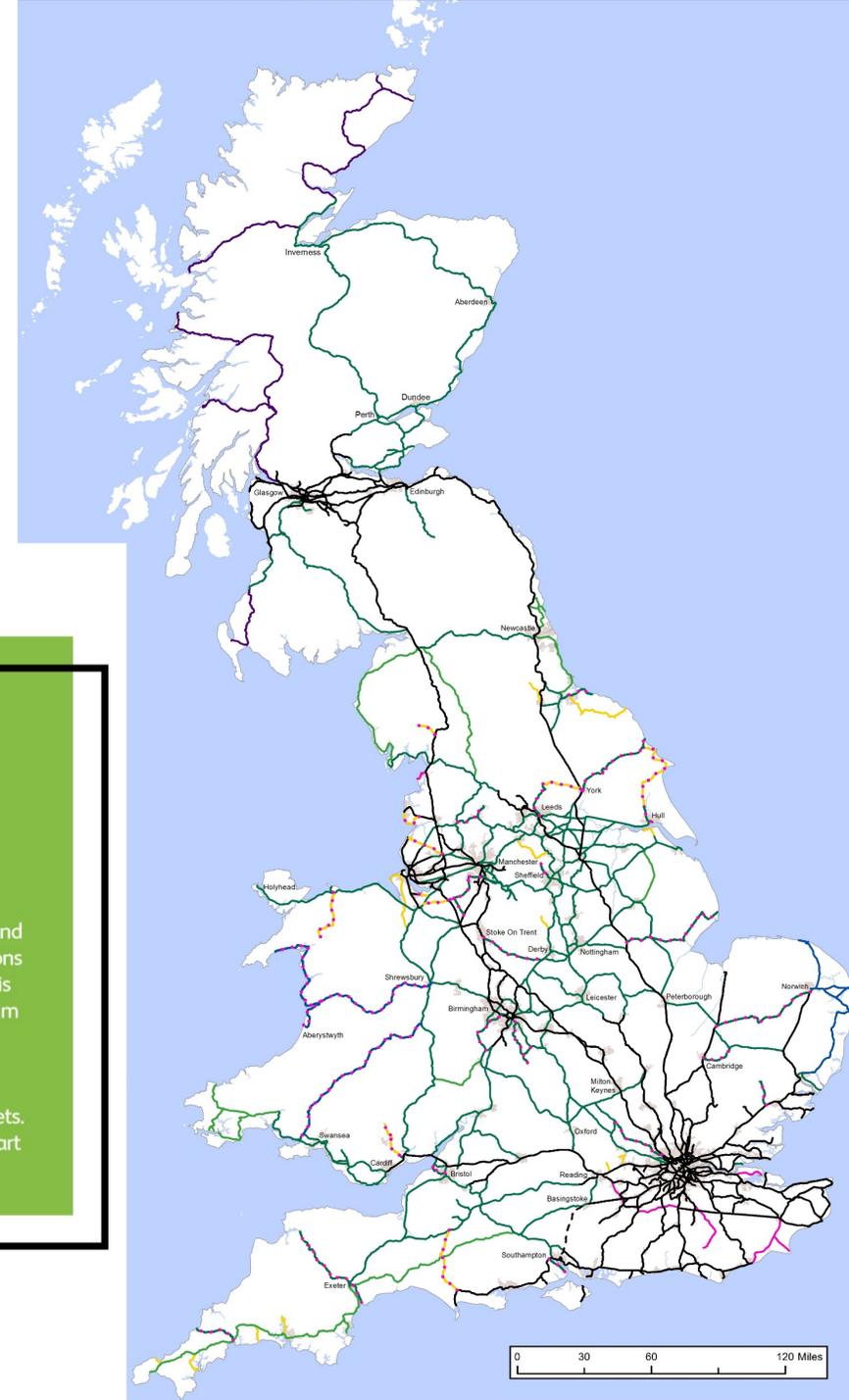
From now on, diesel-only trains should only be bought where there are clear strategic and economic reasons for doing so. Where this is necessary, only trains where the possibility exists in future to replace the diesel engines with a zero-carbon alternative should be chosen. Hybridisation and the use of multi-mode trains offer an excellent opportunity to progressively reduce emissions and realise the benefits of electrification.



Projects and programmes which increase capacity for passengers and/or freight should continue in order to support a modal shift to rail. These projects and programmes could draw on the strategic and economic benefits of decarbonisation and modal shift in their business case. This is especially true for freight projects because of the significant modal shift they deliver.



A stable and efficient programme of traction decarbonisation is the most efficient way for us to deliver this work and will enable us to incorporate all the lessons learned from previous electrification. This programme is also likely to include interim solutions to make the most effective use of resources and keep disruption to passengers and freight to a minimum, while meeting emissions reduction targets. This programme will be considered as part of the TDNS programme business case.



Next Steps for Traction Decarbonisation

- Delivering rail decarbonisation will require working with Government and partners across the rail sector to progress an affordable, deliverable programme to deliver an ambitious, sustainable and cost-effective programme of electrification to enable a net-zero railway, as outlined in the Transport Decarbonisation Plan.
- There are significant pressures on public finances resulting from the Covid-19 pandemic, with Government needing to make difficult decisions about public spending. This follows significant investment both in supporting railway operations during the pandemic.
- Since 2017/18 the ORR has recorded c. 1,600 new track kilometers of electrification, with projects including Midland Main Line electrification, the Transpennine Route Upgrade and Wigan-Bolton electrification having been announced.
- Rail decarbonisation projects will need strong businesses cases with additional benefits beyond decarbonisation. We need to learn lessons, increase efficiency, and roll-out alternative traction trains as well.

