

Sustainability and Innovation: The Challenge for Highways England

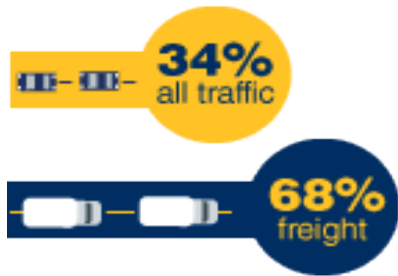
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Highways England

14 November 2019

We are custodians of the Strategic Road Network



Motorways Major A-roads
42% **58%**

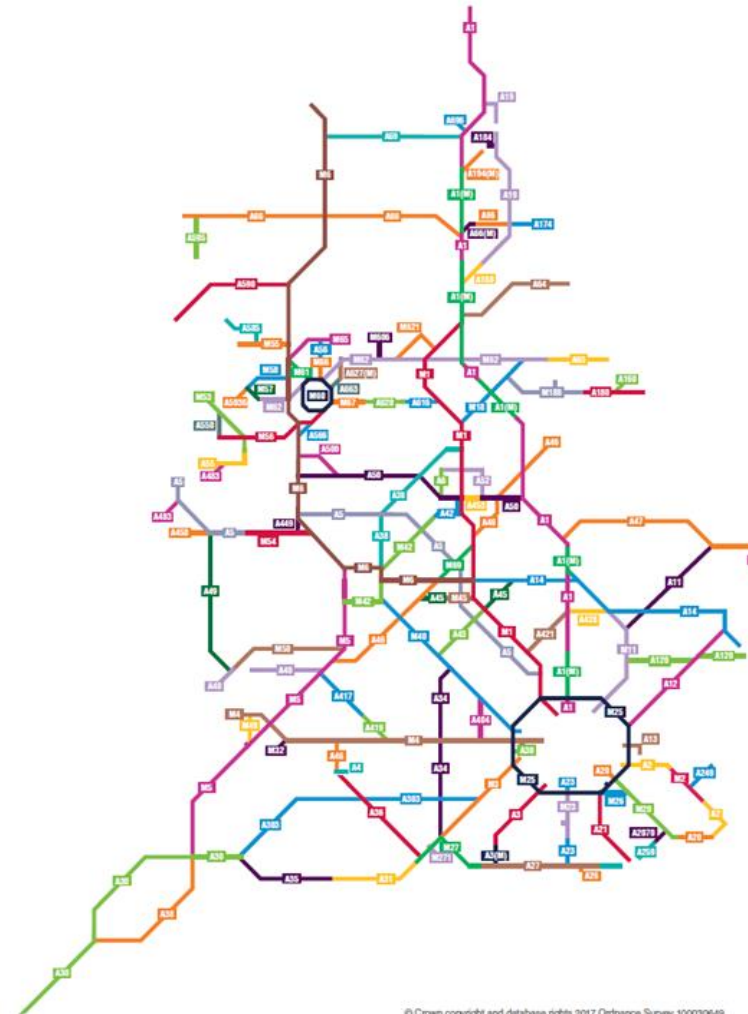


Supporting access to **rail** and development of HS2

Delivering smooth access to ports

Enhancing access to airports

Complementing local networks and connecting nationally



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9 in 10 **recognise** the importance of the SRN to the economy

14.3 billion miles light freight

10.1 billion miles heavy freight

£12 billion contributes to the UK economy



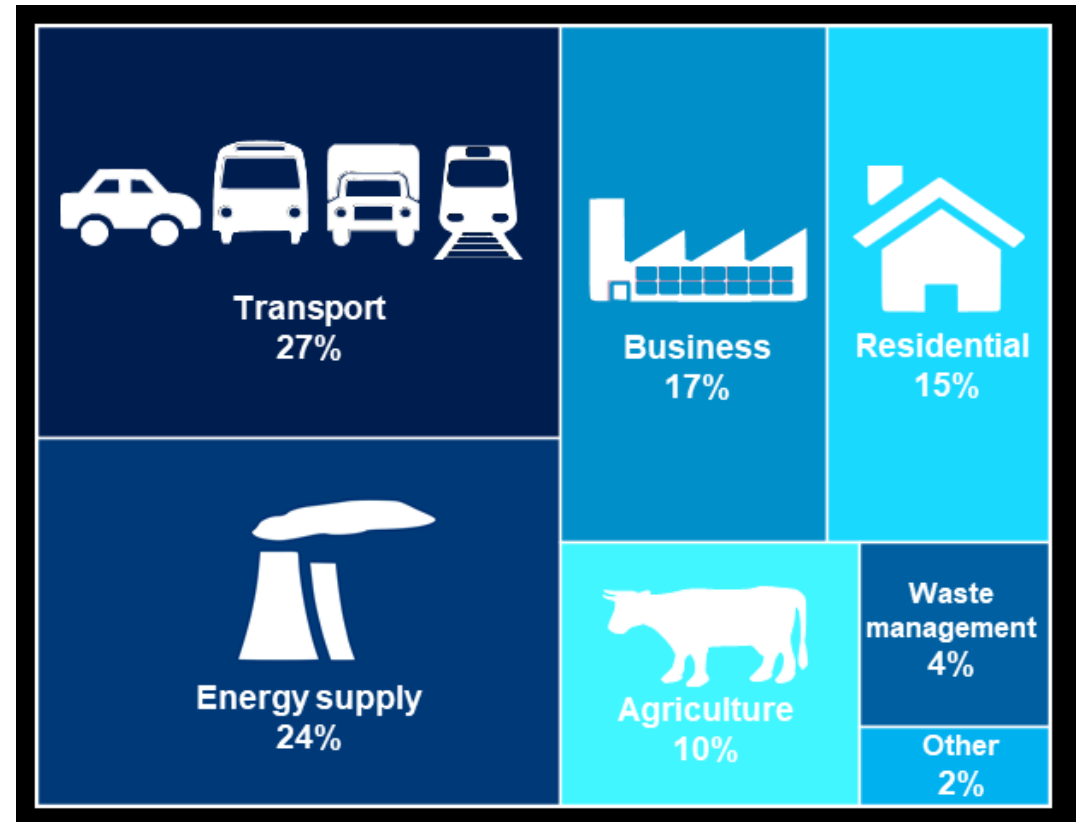
Carbon challenge - context

- UK climate projections show a range of impacts including higher temperatures, increased winter rainfall and sea level rise.
- The UK Climate Change Risk Assessment highlights risks to the UK from climate change.
- The UK signed up to the international Paris Agreement, committing to keeping climate change well below 2°C.
- In 2019 the Climate Change Act (2008) was revised to require the UK to achieve net zero greenhouse gas (GHG) emissions by 2050.



Carbon challenge - context

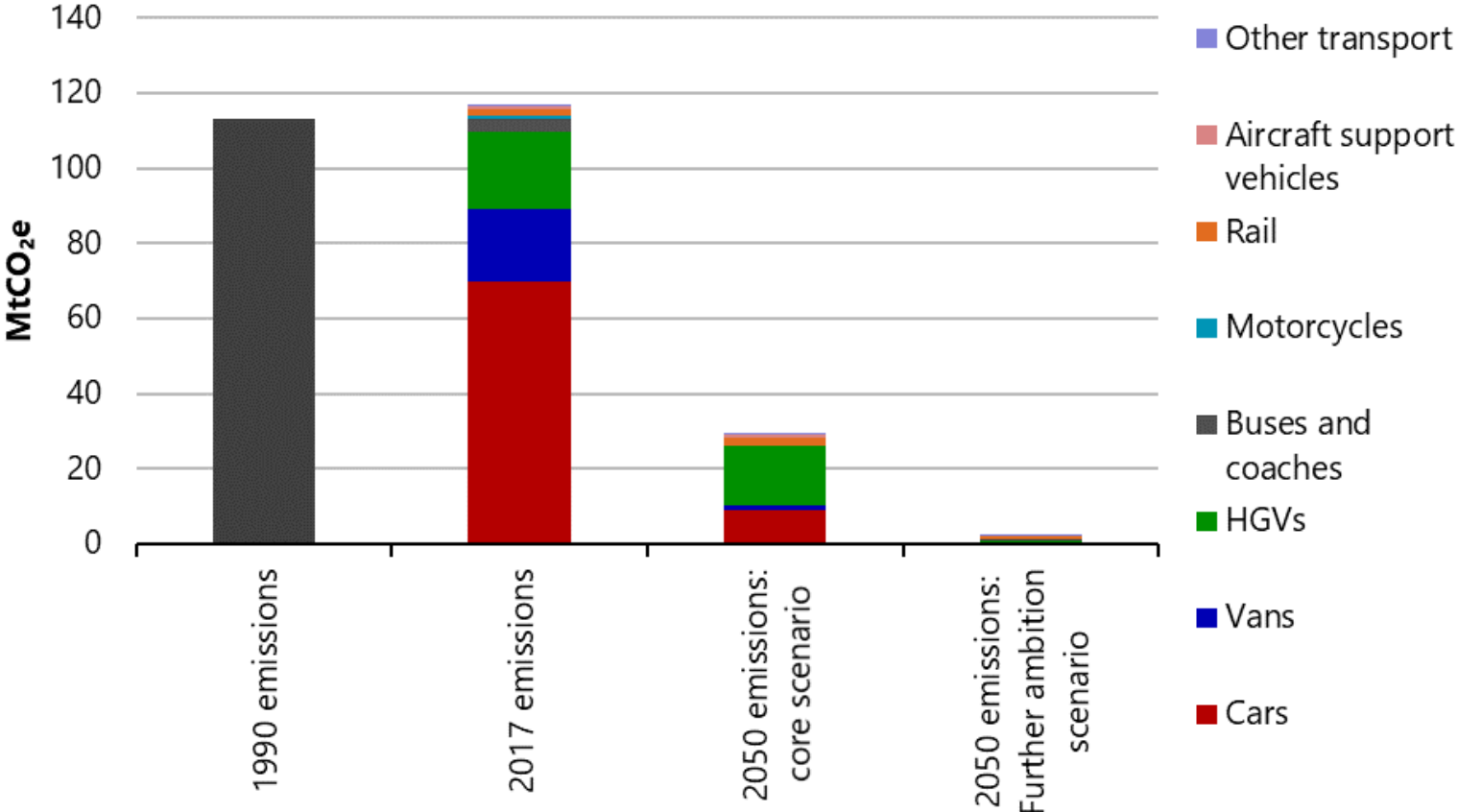
Transport was the largest emitting sector of UK greenhouse gas emissions in 2017



Source: BEIS - 2017 UK greenhouse gas emissions: final figures
– statistical summary



Road User Carbon – the challenge



Scenarios for very deep emissions reductions from the surface transport sector
 Source: CCC (2019) Net Zero – Technical Report



Road User Carbon – the challenge

Highways England are responding to this by:

- Increasing the charging infrastructure for electric vehicles
- Integrating cycle routes into highway design
- Running trials with the Transport Research Laboratory and haulage partners to investigate platooning vehicles
- Trialling use of electric vehicles with traffic officers and in projects such as the A14
- Accounting for carbon in appraisal of schemes



Road User Carbon – the future challenge

- Influencing driving behaviour
 - Can we encourage drivers to share cars, take public transport, drive more efficiently?
- Support new technologies
 - How will road design respond to more ultra low emission cars and HGVS, autonomous vehicles?
- Leading by example
 - For instance by greater procurement of sustainable fleet vehicles, more efficient logistics in our own road projects
- Working in partnership
 - Can we work with others to help achieve low carbon, for instance how do we engage with local authorities to encourage more sustainable journeys?



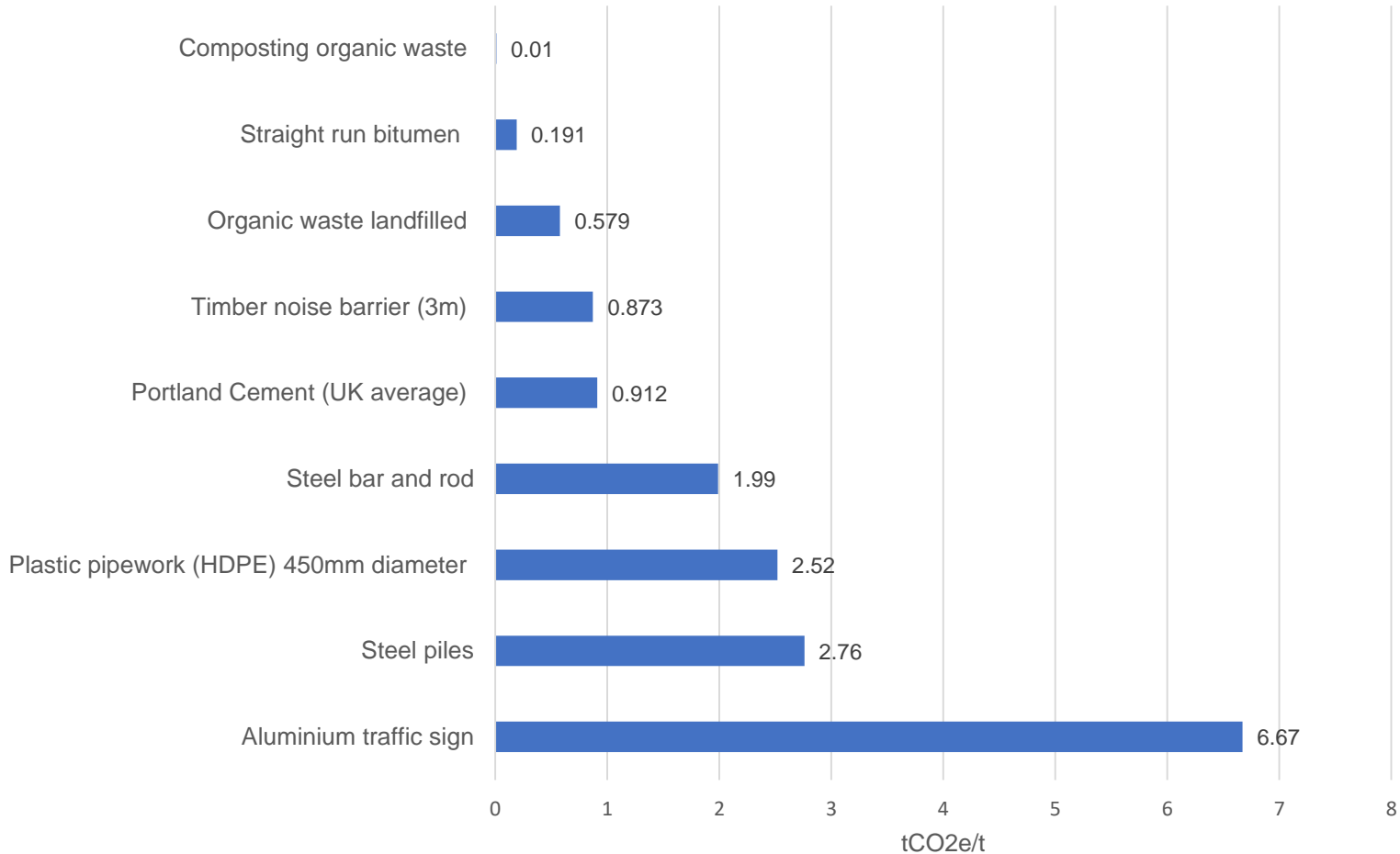
Construction Carbon – the challenge

- Carbon in construction comes from a range of sources including:
 - Transportation of materials, plant and workers
 - Use of fuels to provide lighting, power plant, heat materials such as asphalt
 - Embodied carbon in the materials used for construction
 - Waste materials during construction and at the end of life of assets
- In 2018 Highways England Supply Chain used around 295,000 tonnes CO₂e



Construction Carbon – the challenge

Examples of missions factors for common construction materials



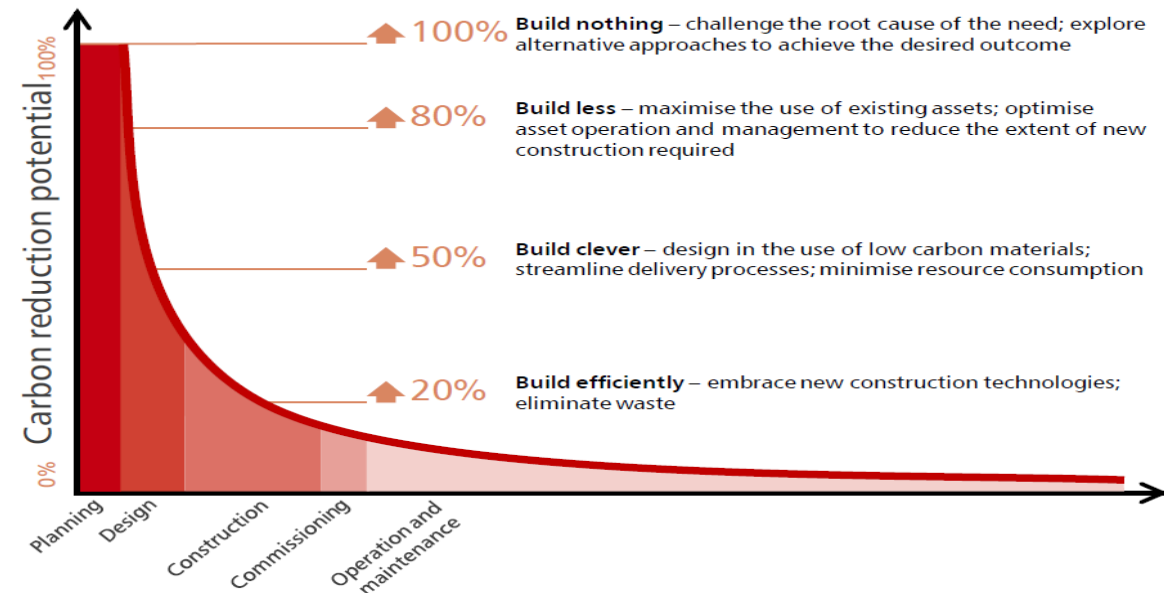
Source: HE Carbon Tool citing Inventory of Carbon and Energy





Construction Carbon – the challenge

- Making materials last longer and repurposing materials – circular economy
- Future automation / modular construction / low carbon materials
- Designing out carbon



HM Treasury, Infrastructure Carbon Review, 2013



Biodiversity Net Gain - context

- Under current legislation projects are designed to minimise impacts on the environment, but can still have negative impacts on biodiversity.
- Defra (Department for Environment, Food and Rural Affairs) and industry are moving towards environmental enhancement.
- Biodiversity Net Gain - Leaving biodiversity in a measurably better state, quantified using a biodiversity metric.
- ‘If you can measure it, you can manage it’
(*W. Edwards Denning*)



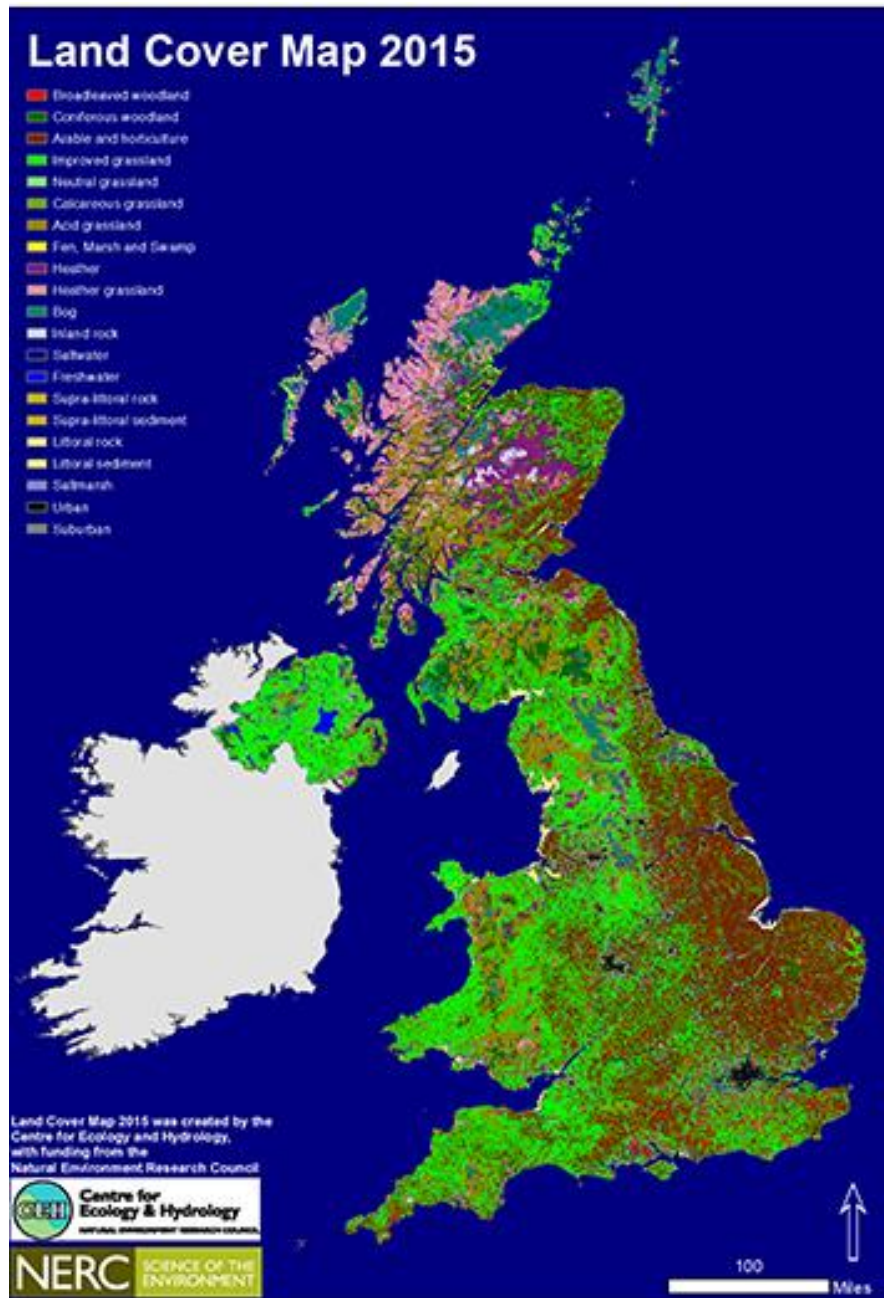
Biodiversity Net Gain – what it means for Highways England

- Moving from minimising impacts to delivering an improved environment.
- Supporting projects to have positive impacts inside and outside of project footprints.
- Integrating biodiversity enhancement into project design from inception through to asset management and maintenance.
- Providing transparency around the biodiversity impacts of our projects – calculating and reporting using a biodiversity metric.



Biodiversity Net Gain – Challenges and Opportunities

- Balancing environmental outcomes with the financial viability of projects.
- Ensuring projects are designed to minimise biodiversity loss before offsetting is considered.
- Working with external organisations to secure areas to offset biodiversity impacts outside project boundaries.
- Understanding the implications of the ongoing management and maintenance of newly created habitats.



CEH Land cover Map 2015 showing different types of habitat
 Source: <https://www.ceh.ac.uk/services/land-cover-map-2015>

Biodiversity Net Gain – Innovation

- Using aerial imagery and remote sensing to collect habitat information over larger areas.
- Working collaboratively with environmental bodies to use opportunity mapping to identify areas that will benefit most from biodiversity improvements.
- Moving from biodiversity net gain towards environmental net gain - an integrated approach across multiple environmental topics e.g. water, soils, landscape.



Any questions?