

HS2 and Carbon

HS2 will be the low carbon alternative for long distance travel with very low carbon emissions per passenger kilometre compared to road or air, and lower than the average across the UK's existing rail network. HS2 is crucial to realising the government's ambition of bringing greenhouse gas emissions down to net zero by 2050.

Transport accounts for 28% of the UK's current greenhouse gas emissions and has recently overtaken the energy sector as the country's largest polluter. The most effective way to cut transport carbon emissions in the UK and improve our air quality is to invest in rail, including HS2. HS2 will get more people out of their cars, off domestic flights, and take lorries off our congested roads.

As the Oakervee Review notes, it is important to consider the carbon impacts of HS2 against alternative ways of managing increased demand for travel. The Review notes that HS2 could in fact be less carbon intensive than other non-rail alternative transport schemes which deliver similar transport outcomes. This includes, for example, the construction and operation of new motorways, and of new runways or airports.

In operation

A journey on HS2 will be 17 times better than a domestic flight, 7 times better than road, and twice as efficient as the current rail system in terms of carbon emissions. As electricity generation decarbonises, HS2 journeys will become progressively lower carbon. In the future, with electricity generation fully decarbonised, using HS2 will be fully zero-carbon.

Modal shift

Shorter journey times by rail will encourage a modal shift away from air and road, amplifying carbon and air quality benefits. It is forecast that by 2050, HS2 will result in 1.2 million fewer domestic air journeys and 4.8 million fewer car journeys.

The released capacity provided by HS2 on the existing network, by taking long distance services off it, could be used for more long-distance freight services. This would take hundreds of thousands of lorries off the roads every year as more freight can travel by rail. Rail freight has a key role to play in the low carbon economy as rail produces 76% less carbon dioxide emissions than the equivalent road journey and a gallon of diesel will carry a tonne of freight 246 miles by rail as opposed to 88 miles by road.

Construction

The construction of HS2 will inevitably create carbon emissions. We will make sure that as little carbon reaches the atmosphere as possible. HS2 has committed to reducing its construction carbon emissions from Phase One by at least 50%. As the largest infrastructure project in Europe, HS2 has a unique opportunity to drive decarbonisation in the rail and construction industries through its supply chain.

To put HS2's carbon footprint in perspective, the estimated total carbon emissions from both building and operating Phase One for a full 120 years produces the same amount of carbon as just one month of the UK's road network.

HS2 and the Natural Environment

Inevitably, HS2 is going to leave a footprint on the British countryside, but we're working to ensure it is a positive one. We take the environmental cost of construction very seriously which is why we're delivering an unprecedented programme of tree planting and habitat creation alongside the new railway.

We will deliver a railway that respects the natural environment by conserving, replacing or enhancing wildlife habitats. This includes avoiding or reducing any impact on the countryside in the first place, with over half of the Phase One route in a tunnel or cutting.

Green Corridor

Our vision is to create a green corridor, running alongside the route. We will plant 7 million trees and shrubs as part of this, including 40 native species specific to each location. So far we have made good progress and have planted 430,000 trees between the West Midlands and London.

We are also creating and enhancing 33 square kilometres of new and existing wildlife habitat. This equates to an area the size of 4,600 football pitches and is an increase of around 30% compared to what is there now. Our programme of habitat creation includes species diverse grassland, ponds and native tree and shrub planting, to support a broad number of species including newts, reptiles, badgers, birds, and bats. Progress has also been made here too, with 60 new wildlife habitats created alongside the route so far.

Far from being a barrier to wildlife, HS2 will be criss-crossed by access routes with 140 bridges and underpasses on Phase One, including 16 specially designed 'green bridges' covered in planting.

Ancient woodland

There are 52,000 ancient woodland sites in the UK and thanks to careful route planning and the boring of 32 miles of tunnel, just 43 of these 52,000 will be affected along the route between Crewe and London (Phase One and Phase 2a). 80% of these 43 ancient woodland sites will remain intact. This means that just 0.005% of the country's ancient woodland will be lost, a fraction of comparable road projects.

Where an ancient woodland is described as affected, in many cases this means a small section of an overall woodland is affected. For example, on Phase One of the route, 32 ancient woodlands are described as affected but in 19 of these the total area of loss is less than 1 hectare.