

Is HS2 good for the environment?



The Coalition has announced that “this Government is committed to the establishment of a high speed rail network as part of its programme of measures to create a low carbon economy”. It is presenting HS2 as an environmentally friendly form of travel. Scrutiny of the information provided by HS2 Ltd does not support its claims. HS2 will have far-reaching effects on the environment – and they are largely negative.

Caroline Lucas MP has said "The Green Party is opposed to the current HS2 proposals. The economic case is unsound. The claims about reducing CO2 emissions are questionable to say the least. And the huge damage which would be caused to local communities and their environment would be unsustainable."

Photo shows the route of HS2 up the valley towards Hyde End in the Chilterns – there is an ancient woodland in the background

HS2 and carbon emissions

HS2 Ltd says that HS2 will be broadly carbon neutral, but may increase the nation's carbon emissions.

Carbon emissions resulting from the construction of HS2

The embodied carbon in the construction of the line and provision of supporting infrastructure is forecast to be in excess of 1 million tonnes. This is almost certainly a significant under estimate. In 2007, a Government commissioned report argued that building and operating a new north-south rail network in England would generate more CO₂ than taking the same route by air over a 60-year period.

Carbon emissions resulting from HS2's operation

- A particular environmental concern with high speed rail is its higher energy use and consequent emissions, when compared with conventional rail. Trains operating at 300km/h (compared to conventional rail's maximum speed of 200km/h /125mph) will use twice as much energy as a classic train (45 kilowatt hours per mile versus 23 kilowatt hours per mile). HS2 Ltd state that a journey time saving of 3.5 minutes consumes 23% more energy.
- HS2 Ltd say that 1 in 5 of passengers on HS2 will only be travelling because HS2 has been built (11 million journeys per year).. This is in direct conflict with the Department for Transport's non-travel remit.
- HS2 will create tens of thousands of additional journeys per day to reach the HS2 stations (NB Birmingham parkway and East Midlands Parkway will mainly be reached by car). This will worsen congestion and air quality around stations.

"The argument that high speed rail is a green option does not necessarily stand up to close inspection. Increasing the maximum speed from 200km/h to 350km/h leads to a 90% increase in energy consumption. In exchange, it cuts station-to-station journey times by less than 25% and door-to-door journey times by even less." Former Rail Minister Tom Harris

HS2 Ltd agree that HS2 will be responsible for an increase in carbon emissions but hope that this increase will be offset by a modal shift from cars and planes to trains.

The effect of HS2 on domestic aviation

The environmental case for HS2 rests to a large extent on the assumption that it will attract passengers from domestic flights resulting in lower carbon emissions from aviation.

- HS2 has inflated the UK domestic market in order to generate enough modal shift. In practice it is a declining market. HS2 is unlikely to take a 100% share of routes between London and Scotland as flying will remain competitive on cost, time and convenience. It will have little effect on flights between regional airports.

- HS2 has converted the forecast number of passengers switching from planes directly into flights withdrawn - it has not considered the possibility that smaller aircraft might operate or airlines accept lower load factors. A reduction in the number of passengers may not lead to a proportionate reduction in number of flights.
- All gains are negated if HS2 replaces short flights that are then replaced by flights to other destinations. If the short haul domestic flights are replaced by long haul then emissions will increase by several times. (BAA has confirmed that all vacated slots at Heathrow will almost certainly be replaced by long haul flights).
- HS2 Ltd has not factored in any possible reduction in aviation emissions. The CAA is forecasting dramatic improvements based on more fuel efficient engines and aerodynamics, improved fuels and flight management. It is already planning to reduce emissions by 10% by 2020. **Such improvements would reduce the savings of switching from plane to train.**
- HS2 Phase 1 will have no impact on emissions from aviation as there are no commercial flights between London and Birmingham.
- Birmingham airport has announced that it will market itself as a fourth London airport with HS2 as the link. The airport said it is currently running at 40% of its capacity and could take 9m extra passengers a year. Birmingham Airport's expansion plans will to double the number of flights, resulting in increased emissions.

"Given that domestic aviation accounts for 1.2 per cent of the UK's carbon emissions, it is unlikely that building a high-cost, energy-intensive very high-speed train network is going to be a sensible way to reduce UK emissions." Eddington Report

Transfer from cars to HS2

Historically high speed trains have done little to reduce car travel. HS2 Ltd is forecasting that 2% or less of motorway traffic will switch to HS2. So carbon emission savings from car journeys switched to trains will be minimal. However, millions of additional car journeys will be to HS2 stations which will have relatively poor environmental performance (e.g. reduced car occupancy and lower fuel efficiency). The relative advantage of the switch from cars to trains will diminish with the continuing introduction of more fuel efficient cars and electric vehicles.

"Not a single high-speed track built to date has had any perceptible impact on the road traffic carried by parallel motorways." Ari Vatanen MEP

The Power Generation Gap

The UK is facing an energy crisis through restrictions in electricity generation capacity. This is brought about by continuing rising demand and the projected closure of several aging coal-fired and nuclear power stations before new nuclear and renewable electricity generation can be brought on stream. Ultra high speed trains require a massive increase in power which does not fit with a sustainable future and a low carbon economy.

The impact of HS2 on the natural environment

Protected areas and sites

- Over 160 wildlife sites between London and Birmingham will be damaged including 10 Sites of Special Scientific Interest and 50 ancient woodlands. .
- 12 miles will cross the nationally protected Chilterns Area of Outstanding Natural Beauty involving the removal of nearly 1 million cubic metres of soil and rock.
- HS2 will tunnel through the Chilterns aquifer which supplies drinking water to over one million people, including thousands in London

Impact on Agriculture

The proposed High Speed Rail Link crosses much open countryside. For every 100m of track, 1 hectare of land will be required. (1 hectare = 2.47 acres). 5,088 acres of land will be lost from London – Birmingham alone. Permanent loss of agricultural land means less food can be produced in this country.

Visual Impact

Lines designed for very high speeds have to be very straight, making it harder to fit them in with the landscape and avoid sensitive areas. In addition, a bigger gap between tracks is needed, while tunnels must be wider to allow trains to pass safely. So very high speed lines are much more expensive to construct and have a greater impact on the local environment.

Tranquillity

Tranquillity is primarily a natural resource. In a densely populated, heavily built-up country like England it is scarce and its distribution is uneven. It's why many people visit rural areas - the chance to experience tranquillity is what makes the countryside different from cities, suburbs and towns.

HS2 Ltd has confirmed the assumption of pass-by train noise at 350kph of 95db at 25 metres and that they do not have any noise assumptions for 400kph. HS2 Ltd also state "Current thinking is that noise from high-speed trains is acceptable at speeds of up to 300 kph, but that higher speeds produce more intrusive noise levels."

The current proposal for a route through open countryside fails to take account of the impact of the extra noise where the background level is currently very low and not subject to constant road or railway noise. Neither does it take account of the impact on those who live in towns and built-up areas who spend their leisure time in seeking facilities provided in the countryside where tranquillity is the main asset.

“The weakest aspect of the case for HS2 is the ‘green’ argument which virtually falls apart.” Christian Woolmar, railway journalist and author