# HS2 - Benefits, Misconceptions, and Challenges

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Justine Greening, Secretary of State for Transport, announced on Tuesday 10 January 2012, that the government had approved the first phase of Britain's second high-speed railway line, HS2. She also announced the government's commitment to a number of measures that would reduce or mitigate the impact of the scheme on the Chilterns area, including new and longer tunnels in the Amersham and Chesham areas, as well as some 'green crossings'.

HS2 Ltd, the government company charged with developing the project, can now let contracts for environmental impact studies and the detailed design of the route from London to Birmingham. A great deal of effort is required before a hybrid bill can go to parliament. Members of the public can then petition parliament to amend, or reject, the bill. Once the hybrid bill is passed, and only then, will the government be in a position to grant a Transport and Works Act Order for the line. Despite the considerable uncertainty surrounding these processes, a wide cross section of the business community, engineers, and railway managers have welcomed the announcement. However, it has also been condemned by some as a decision taken against the wishes of the local population, and communities that do not expect to see any direct benefit for their citizens and businesses.

As was the case for the first high-speed lines in France and in Japan, the first phase of HS2 is being promoted by the government largely on the grounds that it will create much needed new transport capacity between the industrial heartland of Britain and the capital, rather than because it will offer significantly shorter journey times between the country's two largest conurbations. Indeed, both the supporters and the detractors of the scheme agree that the West Coast Main Line between London, the North West and Scotland will be saturated by the late 2010s and that this will negatively affect the economic performance of the UK. However, the views on how to address this issue differ greatly.

The proponents of HS2 are convinced that building a new high-speed railway is the only and best option to create and manage the required new capacity, because it can be built without affecting existing traffic flows. They also argue that the reliability of the service and the reduced journey times will result in most long-distance passenger traffic transferring to the new route from the existing railway, the motorways, and air transport, resulting in lower overall carbon emissions, despite greatly increased levels of mobility. The supporters of the scheme argue that Britain's electricity supply will be largely carbon neutral by the year 2026, when the line to Birmingham is expected to open. By contrast, the anti HS2 pressure groups are convinced that the traffic forecasts of HS2 Ltd are overly optimistic, and that it would be possible to create sufficient new capacity by rebuilding the Great Central Railway and adding tracks to the West Coast Line. Network Rail has addressed the latter argument in a new report, and states that adding capacity to existing routes would cause greater disruption than that experienced during the recent upgrade of the West Coast route. Other campaigners criticise the design for its perceived ecological failings, focussing on the damage to the natural environment of the Chilterns, and the impact on existing communities.

A fourth group of contributors to the debate are experienced railway engineers and operators who feel that HS2 Ltd has not demonstrated, beyond reasonable doubt, that its design is capable of delivering the highest capacity (in terms of trains per hour) of any two-track high-speed railway in the world. They also worry about the performance impact of trains from the classical railway network joining one or other of the future high-speed line extensions towards Manchester and Leeds. HS2 Ltd has addressed many of these concerns but it is likely that they will be raised time and time again.

Much of the case for or against HS2 is based on differing perceptions of the future growth of transport demand, and of the economic benefits that accrue to the nation through construction of the line. It is almost impossible to make valid predictions about the impact of a project that influences future development such as a high capacity high-speed railway. In France, the fortunes of Lyon and Lille were transformed by the construction of the LGV Sud-Est and the LGV Nord. The former city grew in stature as an independent regional economic centre while the latter was integrated into the economic realm of Paris. In both cases, the urban fabric and the population benefited greatly from the improved connections with the capital.

Some of the objectors simply do not trust the people and organisations promoting the project, while others have not been given the information that would allay their fears. The team at the Birmingham Centre for Railway Research and Education has spoken with most of the protagonists and has identified two core misconceptions, namely, (i) the view that trains will run at 250 mph (400 km/h) as soon as the railway opens and (ii) that the noise and visual impact of the new line will make life unbearable in the vicinity of the line. It is true that the alignment has been designed for a maximum speed of 250 mph, necessitating curve radii that are greater than 7000 m. However, the proposed journey times can be achieved by operation at about 150 mph. Effectively, the designers of HS2 have developed the alignment in a similar manner to that adopted by Brunel for his Great Western Railway: Brunel's trains barely achieved 60 mph but he designed his railway for speeds of more than 100 mph, in the clear expectation that one day it would be possible and necessary to run trains at much higher speeds. Operating HS2 at 150 mph will have the very desirable effect of creating a very quiet railway with an acceptable carbon footprint.

As already suggested, development of the HS2 will now start in earnest. Much more detailed design work will have to be carried out, the links to the existing network will have to be studied, modelling will have to be undertaken of the operation of HS2, and the impact of services joining HS2 from the classical network will have to be assessed. It is very likely that the result will be an even better railway with a lower environmental impact throughout its route. However, the government's positive decision on HS2 creates a challenge for the West Midlands. Currently the local transport system in the region is not of a standard that would extract maximum benefit from the arrival of the high-speed line. Neither private nor public transport is in a position to offer rapid and reliable access to either Curzon Street station or Birmingham International airport. If HS2 is to be a real success, Birmingham has just 10 years to create an integrated transport system of the kind found in Lille and Lyon.

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