

Rebutting the six myths about HS2

'The great enemy of the truth is very often not the lie - deliberate, contrived and dishonest - but the myth - persistent, persuasive, and unrealistic' JFK 1962

1: HS2 is NOT 'green' – it doesn't fit as part of the low carbon economy

The Government say HS2 will be 'broadly neutral'¹ for carbon. But it is unlikely to even be that:

- Trains that travel at 360km/hr use three times the energy of 200kmph trains²
- 87% of journeys on HS2 indisputably create more emissions – all the brand new journeys (22%) and all those switching from existing rail services (65%)³
- DfT say just 6 in every 100 travellers⁴ on HS2 switch from flying. But this assumes the decline in relevant air routes reverses, and satisfying 'suppressed' not real air demand⁵
- The air emissions savings depend on the freed-up slots not being used for long haul, which BAA say they will⁶, and using out of date numbers on the modal switch from air⁷.

A showcase £30bn transport investment should contribute to UK's 80% emissions cut by 2050.

Environmental organisations agree HS2 is not green eg Green Party, the 13 groups in the Right Lines Charter (that includes CPRE, Greenpeace, FoE, Environmental Law Foundation).

2: HS2 WON'T bridge the North/South divide, or deliver economic benefits

Government claims for transformational benefits are based on belief, not impartial evidence. Experts say the evidence on regeneration⁸ (where HS2 acts as a catalyst) points to London winning – with high speed rail strengthening the position of the dominant capital city:

- DfT say more than 7 out of 10 of the 30,000 jobs created by HS2 around stations will be in London⁹ ie not the Midlands or the North. (Old Oak Common, with 20,000 jobs wins most)
- Most of the jobs claimed will not be genuinely new jobs but ones that have moved from other areas in the region. HS2 Ltd concluded this, after consulting respected academics¹⁰
- DfT say 59%¹¹ of extra HS2 trips are for leisure; given DfT assume¹² trips to London grow at twice the rate of those from London, so more people and more money will go to London
- HS2 impacts on the service sector, in which London is dominant. So work is more likely to move to London, not away from it.

The evidence for the wider economic impacts (of the HS2 investment itself) is also small:

- The productivity benefit from shorter journey times is the key benefit, but it's already in the business case (and is overstated with DfT admitting that time-on-board is not wasted¹³)
- The Wider Economic Impacts of better connectivity are relatively small, £4-£6bn¹⁴, and are mainly driven by use of freed-up capacity, which will need a new further subsidy to realise
- HS2 Ltd asked Imperial College if faster connectivity had any further direct benefits – they said 'very little' (max £8m/a)¹⁵ – but their conclusion was left out of the White Paper and is not even referred to in the consultation materials.

3: HS2 is NOT a sound investment – it's not value for money

There is no commercial case for spending over £30bn on HS2 or justification for its subsidy:

- The extra fares (£27bn) don't cover the capital (£30.4bn) and operating costs (£13.9bn), even for the full "Y" network¹⁶, so it needs a subsidy – £17bn.
- The subsidy actually encourages travel (10m/a new trips¹⁷ for Phase 1 alone) despite DfT's other initiatives to reduce travel: this is more than all the modal shift put together (6m trips/a)
- Existing rail services will worsen – this is proven in Government's own case for HS2¹⁸
- It benefits the affluent – 47% of long distance rail travel is by the top 20% earning families¹⁹

The latest 2011 business case cuts the benefits by over a third. The Government's headline £44bn of benefits for the full "Y" network²⁰ was well over £70bn just last year, when an independent report by FTI Consulting²¹ confirmed the business case was flawed.

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But key assumptions have not changed and are still invalid – if corrected, the case that benefits exceed costs collapses:

- *Benefits are overstated by about £27bn:* they total more like £17bn not £44bn for the full “Y”²². The largest benefit (time savings) is based on all time spent on trains being wasted, with DfT disregarding this fundamental error on spurious grounds²³
- *Demand forecast is excessive:* they misuse an out of date model (projecting growth for too long – 35yrs) with discredited forecasting factors. They forecast a doubling in ‘background growth’ to 2043 – 47%²⁴ higher than it should be. The uplift for HS2 is also overstated.
- *Appraisal uses an unrealistic ‘do minimum’ comparator* with virtually no improvements for 35 years and so inflating the benefits such as reduced crowding and shorter waiting times between trains. They disregard valid better alternatives to improve the existing railway

The overall effect of this is to greatly worsen HS2’s value for money. The Benefit Cost Ratio falls²⁵ from 1.6/2.0 for London - West Midlands, and from 2.2/2.6 to just 0.3/0.5 for the “Y”.

So HS2 in fact delivers just 30 pence to 50 pence benefit for every £1 of subsidy spent!

The economic case for HS2 also fails to:

- Learn the lessons of HS1 on demand forecasting and competition
- Adjust the case to reflect the fact that the required 18 trains/p/hr is not technically feasible²⁶
- Recognise new communications technology or Government’s own initiative to reduce travel
- Develop a ‘best’ alternative, and repeatedly misrepresents the alternatives it did develop
- Properly explore the uncertainties in its long term forecasts, or even apply its own rules

Additionally DfT’s acceptance that time on board trains can be used productively²⁷ undermines their justification of HS2 being very high speed and their approach to route selection.

4: A new railway is NOT needed to solve the rail capacity problem

The Government misrepresent the capacity issue claiming only HS2 can solve it. This is not so:

- *WCML full in 6-10yrs?:* Network Rail’s (NR) own forecasts don’t say it will be full in 6 -10yrs or ‘completely overcrowded by 2022’: Government repeatedly misrepresent what NR said²⁸
- *The ‘best’ option:* DfT didn’t require the ‘best’ option be developed: ie to make incremental changes against demand; do low cost rolling stock and capacity changes first; address pinch-points when demand is strong enough. Rail experts say the ‘best’ WCML²⁹ option is:
 - *Rolling stock:* build on what’s already going to happen (two timetable changes, some longer trains and Evergreen 3): rebalance first and standard class; add more carriages (ultimately to 12 car except for Liverpool). Together this delivers 121% more capacity (181% in standard), satisfies peak demand and need not wait to 2026
 - Eliminate the acute crowding problem on the Northampton/Milton Keynes to Euston commuting services by modifying Ledburn Jcn without delay
 - *Infrastructure:* do other low cost infrastructure changes as needed. With the rolling stock changes this can give 147% extra capacity (215% in standard class) with an increased train frequency from 9 to 11/hr. This more than satisfies DfT’s forecast background demand (of 102% increase to 2043) and at much less cost than HS2

Rail experts also say there are low cost ‘best’ solutions for ECML and Midland Main Line too.

- *DfT’s own option:* even the rail options developed for DfT solve WCML’s capacity issue:
 - Rail Package 2 (RP2) involves more rolling stock and removing seven pinch-points. It enables 151% more capacity³⁰ on DfT’s own numbers against their 102% growth forecast, not the 54% Government misleadingly claim³¹, and RP2 is less crowded³²

- RP2 looks like being over twice the value for money of HS2 for just one sixth the net cost, and this is despite Government latest attempts³³ to distort and bury RP2
- RP2 won't be disruption-free but neither is it comparable with the wholesale replacement of WCML under the last upgrade, or the 8-year rebuild of Euston that HS2 requires – described as like 'open heart surgery on a conscious patient'

The other rail options developed for DfT for other parts of the Y network generally produce huge amounts of additional capacity, which unsurprisingly are not good value for money.

- *Other alternatives:* these are not properly considered eg Government's own initiative to reduce travel (by faster connectivity with broadband, videoconferencing); rail pricing options.

5: HS2 will NOT greatly reduce domestic air travel

HS2 can only replace domestic air journeys served by its route. No one flies between London and Birmingham, and rail already has 79% of the Manchester market³⁴.

- For Phase 1 the relevant air market is the 3m/a³⁵ who fly the NW/Scottish lowlands route using Heathrow (just 15% of all passengers), and 6m/a for all London airports (30% of total).
- The full "Y" adds Leeds and Newcastle, but scheduled flights to Leeds ended in March 2011, and HS2 in 2032 only matches the current fastest train from Newcastle to London³⁶.

The Feb 2011 business case has fewer people switching from air to HS2, but is still optimistic:

- DfT say 6% of HS2 trips (8,166/day or 2.9m/a) for Phase 1 switch from air – 25% less than before (11,000/day)³⁷ – and 6m/a for the full 'Y' ie twice the relevant Heathrow route traffic
- To generate even 6% modal shift DfT have to assume the domestic air market will grow – they say by 128% by 2043 (last year DfT said 178% by 2033) – and their forecast is no longer constrained by supply, meaning it's not even real air journeys that switch to HS2. That much real growth could not occur without extra runway capacity for London.
- The NW/Scottish lowlands air route has been shrinking (by 32% from its 2004 peak), not growing. Some domestic air routes have grown (where surface transport links are poor, eg Aberdeen to Exeter), but overall domestic passengers have fallen by 22% from 2005 peak.

Overseas experience shows air can be decimated if HSR delivers very big reductions in journey times³⁸ and rail gets below the 3hr journey threshold. Given the 2011 timetable already shows Edinburgh can be reached in 4hrs, albeit by just one train, the HS2 promise of about 3:30-40 mins 21 years later (in 2032), makes any impact on air look marginal, at best.

6: The UK does NOT need to catch up with Europe – it is still ahead

The UK – unlike Europe – has had a fast national railway system for a long time. As Sir Rod Eddington said in 2006³⁹: '...with [rail] journeys between London and other UK major cities performing particularly well relative to journeys from other European capitals.'

We also have routes capable of 200km/h (125mph) – and still have quicker rail journey times between the capital and the five largest cities than in other major West European countries⁴⁰:

- Averaging 145 minutes in UK (or 148 mins using the same five cities as Eddington)
 - 151 minutes in Spain
 - 184 minutes in Italy
 - 221minutes in France
 - 244 minutes in Germany

Even Frankfurt/Cologne, which is a comparable distance is more like our intercity: it halved its journey time but to only a little less than the fastest train we have from Birmingham to London⁴¹.

Faster speeds are not a priority. Surveys⁴² show the UK has a higher journey time satisfaction (92%) – 2nd highest in Europe – and scoring higher than any other factor measured in the UK.

'When the facts change I change my mind. What do you do sir?' John Maynard Keynes

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- ¹ 'High Speed Rail: Investing in Britain's Future' DfT, February 2011, Section 2.5.5 page 53
- ² The Institute of Mechanical Engineers estimate that travelling at 360km/h instead of 200km/h increases energy consumption by over 200%, 'Transport Policy Statement 09/03, High Speed Rail', Table 1
- ³ Sources of HS2 passengers from 'Economic Case for HS2', Table 3, Feb 2011
- ⁴ Op cit. Also for the full "Y" section 2.2.3 page 10 gives 6m trips per annum but without specifying total trips.
- ⁵ See HS2AA's Consultation submission (July 2011) page 35 (available on website www.hs2aa.org)
- ⁶ According to ENDS ('HSR set to boost UK emissions from aviation', 18 March 2011) and statement by Nigel Milton
- ⁷ The max reduction (23.2mt CO2) is unchanged from the March 2010 business case despite 25% less air modal shift
- ⁸ Prof Tomaney. Marques, Marshall: '...The impacts of high speed rail investment on local and regional developments are ambiguous at best and negative at worst...' *In countries with dominant capital cities net benefits tend to accrue to these*. See Summary in 'The Local and Regional Impacts of HSR in the UK: A Review of the Evidence' April 2011. Prof. Overman (LSE) gave evidence to Oct. 2010 Transport Select Committee where he said: "...Claims about the 'transformational' nature of transport investments for particularly areas should be generally discounted in assessing these benefits because they have no convincing evidence base to support them."
- ⁹ Clarified by e-mail of 2 March 2011, between Phil Graham, Deputy Director HSR, DfT, and Hilary Wharf, HS2AA
- ¹⁰ 'HS2 Demand Model Analysis' HS2 Ltd, February 2010, Appendix 3, S A3.1.1 says advised by Roger Vickerman & Reg Harman. S A3.1.6 concludes its not a 'win win situation', envisaging activity re-locating within a region & to London
- ¹¹ 'Demand for Long distance Travel' HS2 Ltd, April 2011, section 6.18, page 15, gives the split of extra passengers HS2 causes: leisure 59%, business 37%, and commuting 4%. All leisure/commuting, which includes the HS2 uplift, is 70%,
- ¹² This is a consequence of the values of the income elasticities on demand used in the demand forecasting
- ¹³ 'Economic Case for HS2: The Y Network and London – West Midlands', February 2011, section 7.3.2 page 51
- ¹⁴ Phase 1 benefits (NPV) total £20.6bn (£4bn are due to Wider Economic Impacts (WEI): £3bn are 'agglomeration' from freed up WCML capacity and £1bn 'imperfect competition'. The full 'Y' has £43.7bn benefits (WEI is £6.3bn ie13.7%)
- ¹⁵ 'Advice on assessment of Wider Economic Impacts: report for HS2' Daniel Graham/Patricia Melo March 2010 page 37
- ¹⁶ Phase 1: extra fares (£13.7bn) don't cover capital costs (£17.8bn) + operating cost (£6.2bn): so need £10.3bn subsidy.
- ¹⁷ Estimated from 'Economic Case for HS2: The Y Network and London – West Midlands', Feb 2011 Table 2, page 19
- ¹⁸ There are £5.4bn savings on existing services 'Economic Case for HS2', February 2011, Table 9, Page 41 Table 2, and at Page 12, item 11. Confirmed by HS2 Ltd. Cities losing are at HS2AA Consultation Submission (July '11) App 3.1
- ¹⁹ 'Modelling Long-Distance Travel in the UK', Charlene Rohr, James Fox, Andrew Daly, Bhanu Patruni, Sunil Patil, Flavia Tsang RAND Europe, 2010.
- ²⁰ The latest Feb 2011 business case cuts the benefits for the 'Y' by over 40% (from over £73bn (in March 2010 case) to £44bn), and by 36% for Phase 1 (from over £32bn in March 2010 to £20.6bn). All figures NPV
- ²¹ 'Review of the Business Case for HS2', 13 December 2010, FTI Consulting
- ²² See HS2AA's Consultation Submission (July 2011), page 21 (and Appendix 2.1)
- ²³ DfT argue the reduction in crowding and modal shift would fully off set taking time on board being productive into account ('Economic Case for HS2' page 51). But compared to a realistic alternative HS2 has greater crowding, and only the 7% of journeys transferring from cars have potential productivity gains. Business unit time is also over valued using 10-year old figures that now equate to £70k/a (see HS2AA's 'Review of Consultation Business Case', April 2011, S 5.2)
- ²⁴ Analysis given at 'Review of Feb 2011 Consultation Business Case', HS2 AA, April 2011, Section 3.1.5
- ²⁵ See HS2AA's Consultation Submission (July 2011) Appendix 2.1 col 4 and 9, explained under Q2 page 20
- ²⁶ HS2AA Consultation Submission (July '11) page 55 and 'High Speed 2 Interfaces' Greengauge21, July 2010, s 4a, p 6
- ²⁷ Economic case for the HS2 para 7.3.2, 7.3.3 and 6.1.6
- ²⁸ Summarised in HS2AA's Consultation Submission (July 2011) App 1.4; and June Review of Business Case, s. 3.1.8
- ²⁹ See HS2AA's Consultation Submission (July 2011), page 40 (and Appendix 2.2 and 2.5)
- ³⁰ See HS2AA Consultation Submission (July 2011), App 2.4 for 151% (a DfT/Atkins figure)
- ³¹ The 54% is in Table 3.7 ('High Speed 2 Strategic Alternatives Study – Strategic Outline Business Case', March 2010), showing the increase in RP2 seats over the 'do minimum' of 54%. This is then stated in the White Paper (page 51, Table 2.4) as about 50%. But analysis shows the figure is based on the capacity over and above the 'do minimum' for WCML and Chiltern Line and not over the 2008 base for WCML (which is the basis of DfT's 102% forecast in background growth). See HS2AA's Consultation Submission, App 2.4 (July 2011); & 'More capacity on WCML: an alternative to HS2'
- ³² RP2 has 51% loading ('HSR Strategic alternatives study: Strategic Alternatives to the proposed Y Network', Feb 2011, Atkins for DfT, Table 4.2, Scenario B). In 'High Speed 2 Strategic Alternatives Study, London to West Midlands rail alternatives: update of economic appraisal', Table 4.2, Feb 2011, it is shown as 55% loading (albeit with a higher 'do minimum' demand than HS2). HS2 loading is 58% ('Economic Case for HS2', Feb 2011 Page 19, Section 3.3.12)
- ³³ RP2 was re-assessed by Atkins in 'High Speed 2 Strategic Alternatives Study, London to West Midlands rail alternatives: update of economic appraisal' (Feb 2011) to bring it in line with HS2. It fails to do this by using a different 'do minimum' comparator to HS2, and so reduces the benefits. It doubles rolling stock costs and increases operating costs by 70% (applying the same 41% optimism bias as HS2, despite obvious knowledge of RP2 operations). Even using all these changes except the 41% optimism bias, RP2's Value for Money criteria is over twice HS2 (3.4 NBR cf 1.6 for HS2) and has one sixth the net cost (£1.7bn cf £10.3bn for HS2). See HS2AA's Consultation Submission App 2.4 (July 2011).
- ³⁴ ATOC press release 5 April 2011
- ³⁵ All air passengers numbers are from CAA 'Table 12.2 Dom Air Pax Route Analysis 2010' and earlier editions
- ³⁶ 'Economic Case for HS2' DT, February 2011, Table 1 gives London – Newcastle journey time of 2hr 37 mins (for 2032), which is exactly the time as the fastest Newcastle – London train in the summer 2011 timetable.
- ³⁷ Sources of HS2 passengers in Section 3.5 of HS2AA 'Review of Feb. 2011 Consultation Business Case', June 2011
- ³⁸ Osaka to Tokyo halved journey times with HSR from 6hrs 30 mins to 3hrs 10 mins (then 2hrs 30 mins); Madrid to Seville (was 6hrs 30 mins and became 2hrs 45 mins, then 2hrs 30 mins). See HS2AA's Consultation Submission page 7
- ³⁹ 'Eddington Transport Study: Main Report: Volume 2', section 2.18
- ⁴⁰ Details of HS2AA's study are in HS2AA's Consultation Submission (July 2011), App. 1.2 'Journey Times in Europe'
- ⁴¹ Frankfurt Cologne is 180 kms and reduced its journey time with HSR from 2hrs 20 mins to 1hr 10 mins., compared to London Birmingham (182 kms), where fastest train from Birmingham is already 1hr 12 mins.
- ⁴² See HS2AA's Consultation Submission (July 2011) Appendix 1.1 with details of 2011 Euro survey & UK's NPS survey.