



Investing in Transport Infrastructure: Notes from Steady State Manchester.

Introduction

In recent weeks weeks and months there has been much debate about the UK government's plan to build a high speed railway from London to Yorkshire and Greater Manchester (HS2). From a Steady State perspective, much of the debate has been of poor quality.

One the one side the proponents of HS2 have been unclear about the strategic goals of the project, shifting from journey time to network capacity¹. Their modelling of the economic impacts of the scheme has been subjected to criticism, both in its original version, for the assumptions made,² and in relation to the work commissioned by HS2 Ltd on wider economic benefits³, for the presence of elementary errors of statistical calculation⁴.

On the other side, critics of HS2 have attacked the scheme from various directions, from those who seem to argue from a geographic, largely Southern perspective (51M⁵), to the presence of the roads lobby (the RAC Foundation⁶, and possibly HS2AA⁷) and the fundamentalist anti-State lobby (IEA and Institute of Directors).

On both sides the thinking is characterised by the orthodox belief that growth will bring benefits, and that greater integration between the regions and London will strengthen those regional economies. They just differ on how this will be best achieved.

From our perspective we question both of these ideas⁸, and instead emphasise the desirability of re-localising the economy and managing the economy within the limits that the ecosystem imposes. This means

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- 1 Report by the Comptroller and Auditor General, *High Speed 2: A review of early programme preparation*. HC 124 Session 2013-14. ISBN 978-0-10-298142-1
<http://www.nao.org.uk/report/high-speed-2-a-review-of-early-programme-preparation/>
 - 2 See note 1
 - 3 <http://assets.hs2.org.uk/sites/default/files/inserts/HS2%20Regional%20Economic%20Impacts.pdf>
 - 4 <http://spatial-economics.blogspot.co.uk/2013/09/hs2-regional-economic-impact-garbage-in.html>
 - 5 <http://www.51m.co.uk/>
 - 6 <http://www.racfoundation.org/>
 - 7 <http://www.hs2actionalliance.org>
 - 8 See our report *In Place of Growth*: available at <http://steadystatemanchester.net>

strengthening local connectivity but avoiding too easy access by the concentration of capital in the capital. It means reducing the amount of travel generally, and mandating a 'modal shift' in the way we travel, from private vehicles to collective public transport, from road to rail, from air to land, and from hydrocarbon power to renewables and human power.

Elements of that thinking can be found in the contributions to the debate from New Economics Foundation⁹ and (although not directly on HS2) Zero Carbon Britain¹⁰. But neither of these has yet considered the infrastructure implications of reducing travel and modal shift for transport infrastructure.

For that reason we were very pleased to publish the report **Sustainable Inter-Regional Travel – Can the Train Take the Strain?**¹¹ by Dominic McCann. In it he models the implications of reducing travel and a modal shift to rail, making a number of other assumptions. His conclusion is that investment in a new railway would likely be needed, although this is not the same as saying his findings support the very high speed HS2 proposal. We do not altogether agree with those conclusions and below we explain why.

How to reach decisions on investing in transport infrastructure

First, however, we outline what we see as the appropriate approach to making investment decisions on transport infrastructure, set out as a logical thought process that can be followed to explore the question of HS2 and other potential infrastructure investments. We have excluded specific data (costs, passenger numbers, carbon emissions, etc.) since the aim here is to make the structure of decision transparent. Such data will nevertheless be essential as part of that process, but we think that this analysis, with its implicit and explicit questioning of the boundaries of the present debate and its decisions, already casts doubt on the appropriateness of the HS2 plan, while the jury is still very much out on the need for more North-South lines of some sort.

What is the aim of infrastructure investment?

The actions to be taken, as well as the boundaries of discussion and decision-making, depend on the aims of the investment. As has been pointed out by the National Audit Office¹², the aims of the HS2 project are not clear. So here we work through implications of four potential aims: reducing carbon emissions, increasing capacity, re-balancing the national

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High Speed 2: the best we can do?

<http://www.neweconomics.org/publications/entry/high-speed-2-the-best-we-can-do>

10 ZeroCarbonBritain - ZCB: Rethinking the Future <http://zerocarbonbritain.com/index.php/>

11 <http://steadystatemanchester.net/2013/09/04/can-the-train-take-the-strain-sustainable-inter-regional-travel/>

12 See note 1

economy, or just finding somewhere to invest £50Bn¹³ over twenty years. We haven't considered what may be another aim, that of clothing politicians in the glory of a vast and fast, complex, prestige project!

1.0 *If* it is to **reduce carbon emissions**, then,

1.1 reduce travel overall

- how?

1.11 reduce inter-regional travel

1.12 don't create more options for people to travel - capacity increases create more activity

1.13 anticipate and develop other options for connecting - super-fast broadband to the door, virtual reality?

1.14 reduce intra-regional travel

1.15 reduce intra-urban travel

1.16 reduce both leisure and business travel

1.17 change the geographical population distribution so people don't need to travel to meet needs

1.171 initiatives such as job swap schemes and residence requirements so people can work closer to home

1.18 ensure that local communities, including rural ones have local shops, schools and work is close to home

1.19 consider the use of personal and tradeable carbon-travel allowances

1.20 shorten supply chains by local production and distribution, and dis-incentivise wasteful supply chain contraflows (importing and exporting the same commodity)

1.2 shift modes of travel from high impact to lower impact, across the board.

1.21 long distance, from air and car to rail and coach

1.22 medium distance, from car to rail and coach

1.23 short distance from carbon-based to non-carbon based

1.231 increase cycling and walking

1.2311 provide cycle infrastructure

1.2312 provide system of incentives / disincentives

1.3 reduce carbon intensity of all motorised transport

1.31 penalise planes, trains, buses, taxis, lorries etc that use more fuel per mile (bearing in mind embodied carbon in plant replacement)

1.32 increase taxes on less efficient cars

1.33 programme of electrification - rail, trolleybuses, and technology (battery) permitting, lorries, taxis, cars

1.34 mandate and incentivise optimum speeds for fuel efficiency

1.35 promote slower pace of life - cultural change

1.4 all new developments (e.g. rail lines, roads, cycle infrastructure) to have carbon audit before construction and only permitted if a net

13 This is the current government estimate of cost for both the new railway and the new trains. However, big infrastructure projects nearly always overrun their initial budgets.

saving on emissions results

1.5 Assuming capital for investment is constrained, seriously consider whether a bigger carbon reduction, pound for pound could be achieved via non-transport options for investment. For example a massive 'power down' programme including retrofitting the 90% of housing units that lack adequate insulation / heat-wave mitigation features; local leisure and cultural investments to make communities more 'ludically self-sufficient'. Clearly a modal shift in transport patterns will need to be part of the picture, but let's not leap to the conclusion that such investment is the first option.

2.0 *If*, it is to **increase capacity**, then,

2.1 do accurate assessment of future capacity needs that

2.11 includes assumptions for economy re-localisation, oil price (including a realistic carbon cost), likely future carbon caps and shares, changing technology, and links to the need for a quantifiable modal shift

2.12 does not include the positive feedback effect of increasing capacity - such unwanted growth should be controlled

2.13 requires all parties lobbying to identify their financial interests

2.14 understands how the existing systems actually work - for example how local trains and inter-city trains use the same rails, causing bottlenecks, and understand the temporal pattern of current demand (not assuming that this cannot be managed).

2.15 defines legitimate and illegitimate reasons for increasing capacity in relation to a hierarchy of travel needs

2.151 defines a hierarchy of travel needs - so stag weekends in Ibiza are near the bottom while visiting elderly parents in Kingston (Jamaica) are near the top (despite their carbon impact).

2.2 Then, establish where capacity is likely to be needed and plan accordingly.

3 *If* it is to **rebalance the national economy**, then

3.1 Define clearly what rebalancing means - we see it in terms of bioregional economic sovereignty^{14 15}.

3.2 Consider that the evidence on high speed connectivity between dominant centres and less prosperous regions suggests that such linkage increases rather than decreases regional inequalities¹⁶.

3.3 Build bioregional economic sovereignty through investment and legislative support for re-localising more production in the regions, building on the 'Foundational Economy' and reducing interdependence between regions and dependence on global systems.

14 See our report, In Place of Growth available at <http://steadystatemanchester.net>

15 <https://greendealmanchester.wordpress.com/about/>

16 <http://www.publications.parliament.uk/pa/cm201012/cmselect/cmtran/writev/rail/m14.htm>

4 *If it is to **spend £50Bn over 20 years***

4.1 Formulate alternative options for this level of public infrastructure investment and carry out a transparent option appraisal with full public participation.

4.11 Develop new ways of putting issues, facts and dilemmas to people, using public assemblies and consultations, virtual technology, meetings with elected representatives in an ambitious national consultation process in two stages - the first to define options for investment in relation to goals of ecological, social and economic well-being, the second to articulate preferences among them.

4.12 Exclude the road lobby, train operating companies, management consultancies, tunnelling companies, venture capital and others with vested interests from participation except with full disclosure and audit of costs under a cap.

4.2 Prioritise investment on climate change mitigation and adaptation given that this is the foremost challenge facing us all.

What does this approach imply?

5 *If a **radically logical approach** like the above were to be taken, then we think it unlikely that a High Speed Railway will need to be built. It is more likely that the following priorities will emerge.*

5.1 Investment in metro, trolleybus and dedicated bus carriageway systems in all cities and towns above a certain threshold of area and population.

5.2 Investment in bypass rail routes at system pinch points by a mix of multi-tracking, parallel lines and tunnels.

5.3 Increase of mainline capacity, where necessary, through incremental means.

5.31 Improve East West rather than North South connections, including for example, consideration of reopening the alternative Manchester-Sheffield route (via the Woodhead tunnel) and connection between West Coast and Midland mainlines near Northampton.

5.32 longer trains - e.g. 12 car Pendolinos and longer regional trains where needed; even longer trains combining / splitting into two to serve more than one destination.

5.33 reduction and probable abolition of First Class on trains

5.34 better network of cross country coaches

5.35 prioritisation of North-North transport links

5.4 Non-transport investment for local ecological, social and economic well-being¹⁷.

17 See for example the New Gren Deal 5-year anniversary report *A National Plan for the UK - from Austerity to the Green New Deal* with its proposal for 'Green Quantitative Easing'
<http://www.greennewdealgroup.org/wp-content/uploads/2013/09/Green-New-Deal-5th-Anniversary1.pdf>

Comments on Dominic McCann's Sustainable Inter-Regional Travel - Can the Train Take the Strain?

We do see Dominic's paper as a brave attempt to look at the infrastructure implications of an ambitious modal shift to rail. His knowledge and ideas have influenced the thinking in this paper. However, we are not convinced that the correct conclusions have been reached. This is hardly surprising: modelling such changes is very complex and changing one or more parameters will give different results. Here we focus on some of those assumptions.

Is capacity the right place to begin?

After contextualising the report in terms of the modal shift needed for re-localisation and carbon emissions reduction, the paper focuses on passenger numbers. It is written largely in terms of an argument about necessary increases in capacity. As our decision model above indicates, we need to start from clarity about the policy goals of infrastructure investment. Capacity analysis is one element of planning and decision-making but it should not come first. From this emphasis in the report, a number of other things arise. Our point here is that decision-making can become path-dependent: moving too soon to a discourse about capacity means that the problem becomes 'capacity-shaped'.

Modal shift requires more than provision of capacity

To be fair, Dominic is very aware of this, and in one of his responses to a comment on the steadystatemanchester.net blog, he makes it clear that modal shift will not happen without other measures being taken to , let's be clear about this, force people out of cars and planes. Merely increasing rail capacity doesn't mean people will switch – just as increasing renewables doesn't imply a reduction in hydrocarbon burning, unless other policy actions pursued. The big danger in providing increased capacity is that it will beget more use, just as the history of road building to deal with congestion has produced more traffic, and more congestion.

Is it ambitious enough?

Dominic makes a number of assumptions, including:

- *The number of passengers on our long distance or Inter-Regional trains must increase by approx 4% pa (as a minimum and for at least 15 years) in order to bring about the modal shift away from cars and air travel.*

This figure depends on the following assumptions.

- *long distance car travel would go down by 28% between now and 2030.*

This seems too modest a change to us, given the carbon emissions emergency we are living in. But increasing it without changing the other

parameters would mean more pressure on the railways.

- *...people in the UK reduce the number of trips over 50 miles by 15-20% by 2030. This effectively amounts to reducing from 5 or 6 return trips to 4 or 5 return trips over 50 miles for each person in the country. We may choose to say "let's assume an even more restricted number of trips per person / mobility". If so we would need to be explicit about it and say by how much.*

This is a fair point and it is difficult to imagine a faster reduction, but we should run the figures. New electronic communication will bring us virtually closer together. But we could also look at policies that involve temporal shifts. That is to say we should find ways to encourage people to do their travelling times when there is unused capacity on the system. And we need to model the impact of localising the economy faster on travel patterns.

It is also necessary to include freight in the modelling: Zero Carbon Britain¹⁸ suggest (as did DECC in 2010) a threefold ((200%) increase.

Decarbonisation.

Dominic assumes that much of the decarbonisation takes place via electric rail. But the carbon cost of the new infrastructure (embedded carbon, soil disturbance and sequestration losses through loss of biomass) should be taken into account if starting from carbon emissions reduction as the key goal.

Capacity issues

If the key problem is restriction of suburban capacity (largely for commuting) and we agree that this is the greatest 'pinch point', then the solution is to tackle that directly. If usage of the main lines does grow then infrastructure for suburban rail will be a priority. There are a number of ways of doing this, to replicate the London Overground / German S-Bahn separation of traffic on separate railways. This is typically seen as unacceptable, chiefly because of the impact on some suburban housing (did that stop the march of motorways?), but surely it would be far less damaging than building a whole new railway. Even if some of this were by tunnelling, that is what is being proposed anyway for HS2, on an extremely ambitious scale (HSR tunnel under South Manchester). Alternatively, given that traffic is to shift from motorways, invest in dedicated lanes for express coaches, which could be train-like in design: the motorway network has been built so let's use it as part of the carbon-reduction toolkit.

Need for regional and E-W investment.

If this is prioritised in place of N-S investment, then that could reduce the demand on the N-S mainlines. It is worrying that the government is saying there can only be HS2 and the money will disappear if not used for that – but that is clearly a policy choice.

18 See note 2

Alternative options for North South travel

An incremental approach, that assertively manages the demand to travel downwards, could be complemented by a combination of alternative investment packages, including on the Chiltern line, re-opening the Woodhead route (vandalised only recently by putting power cables through a recent tunnel built for electric trains), longer trains (12 and more coaches) and longer platforms, and one class, as well as greener non-rail options such as the dedicated coach lanes mentioned above and a big increase in car sharing.

Economic costs

The cost benefit analyses for HS2 have been flawed due to faulty assumptions, but then they always will be since they assume the quantification of non-quantifiable things. But the evidence generally points to greater connectivity with London meaning amplification, not amelioration, of regional disparities. We need therefore a completely different alternative policy framework for endogenous development and re-localisation of the economy bioregionally. And above all we need to be explicit about the desired benefits.

The opportunity cost of new mainline investment. Is very likely to constrain other expenditure. What if we spent it on other things altogether?

Environmental costs

This is not just a matter of avoiding SSIs and AONBs but of the impact of using more land for hard infrastructure¹⁹. There is a need for carbon and biodiversity audits as a minimum.

We welcome constructively critical responses to this paper via the links below.

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¹⁹ As the agriculture minister has noted: you can't grow old trees.
<http://www.independent.co.uk/news/uk/politics/agriculture-minister-warns-of-hs2-rail-links-risk-to-woods-8825135.html>