Future-proofing Infrastructure

Election 2017 | *Let's push things forward* »»

Overview

Britain's business leaders regularly tell us that the quality of infrastructure in the UK is simply not up to scratch. As well as bringing forward 'frugal infrastructure' upgrades across the country, Britain needs to start measuring and digitising its infrastructure and turning its dumb assets into smart ones. New technologies may allow us to deliver far greater 'bang for the buck' on infrastructure, crucial with scarce resources.

Proposals for all parties:

1. Establish an infrastructure Best Value Index

It is essential to start scoring pipeline projects against each other to identify the best return on investment, when resources are scarce and when the numbers don't add up, say no.

2. Drive forward ultrafast broadband and 4G coverage, replacing the Universal Service Obligation with a much more ambitious target

The Government must set a target to 'switch-off' the copper network and reduce access costs to existing physical infrastructure to ensure ubiquitous fibre optic cable.

3. Build a database on UK roads covering traffic, accidents, costs and air pollution

Roads are the hardest-working muscles in the UK's transport infrastructure but we know too little about them. The more information we have about them, the more efficient our investment can be.

4. Bring in speed targets for buses and repurpose roads to better suit space-friendly buses

Buses might not be the most glamorous form of transport, but they are a crucial part of our transport network and we need to ensure they are moving as efficiently as possible.

5. Accelerate 'shovel-ready' projects in the Northern Powerhouse and the Midlands Engine and consult on longer-term projects

Regional growth means investing in infrastructure, often by bringing out-of-date existing networks into the 21st century. Larger projects, like the proposed 'HS3', should be consulted upon to ensure that their design delivers most efficiently and cost-effectively.

6. Outline a roadmap towards the building of Crossrail 2

Recognising that there are resource limitations to the building of new infrastructure, the Government should put together a plan for progressing with Crossrail 2.

7. Start planning for the building of two further runways in the South East with a new Airports Commission

A decision on Heathrow was overdue but has now been made. Planning for 2 more runways must start now with a new Airports Commission, given one year to report back with their preferred options, to prevent the process again being unnecessarily drawn-out. Investment in better connectivity and air traffic management systems will improve the efficiency of existing runways.

Context

The quality of UK infrastructure – both physical and digital – is a constant concern for IoD members. Too often, business is slowed by infrastructure that must be brought into the 21st century.

As a result, some have called for an infrastructure 'splurge' – taking advantage of the historically low cost of servicing the nation's debt. This, though initially appealing, would be a poor choice. Even with low interest rates, the cost of servicing our current debt was £49 billion last year. Permanence is the illusion of every age. An uptick in debt servicing costs would leave the UK economy vulnerable indeed; adding to the debt burden irresponsibly could well cost us significantly in the long-term.

That's why, despite the need for infrastructure upgrades, each new project must have a robust business case. Return on investment has never been more important. Trade-offs and tensions must be taken into account like;

- Demand-driven versus induced demand
- Urban agglomeration versus regional development
- Incremental, adaptive improvements versus 'spend once' big projects

- Local versus regional versus national
- Who pays, who delivers, and who gains?
- First of a kind technologies or 'off the shelf' projects

When you look at these competing demands, it's obvious you can't please everyone and do it all. And more than that, with resources still scarce, you really shouldn't try. If the cost of infrastructure – now at £46 billion a year – was held to more stringent performance criteria, balancing the budget would be a lot easier. In their 2015 book, Frugal Innovation, Navi Radjou and Jaideep Prabhu argue that seeking value is not a short-term recession-driven phenomenon. They cite the example of how Renault discovered, with its low-priced Logan cars, that consumers were shifting to becoming "permanently value sensitive." There is no better time for taxpayers and the private sector to look at infrastructure the same way.

Best Value Index

All that being the case, our first requirement is for the Government to create a public-facing Best Value index, that takes into account eight key metrics:

- Capital required
- Labour required
- Uncertainty and complexity
- Supply chain gains in the UK and beyond
- Training and support periods
- Total lifetime costs of the project
- External benefits, such as urban regeneration
- Projected annual revenues, profit timelines, and break-even period

We think it is essential that local communities and local authorities and not just a narrow cadre of experts are not just more engaged with any given project but that they stand to gain financially from the siting of additional infrastructure. The curse of big infrastructure that frequently leads to planning failure - national gain but local pain - could be overridden if more care was taken to score higher on benefits to the local community. And more caution would be applied if whole life costs were clearly seen to be less than the benefits. One wonders if the level of local opposition to HS2 and Heathrow's third runway would be as high if the compulsory buy out of homes on the route was

150% of the market rate as in France, rather than 110-125%. Equally, were local authorities to see new infrastructure as a source of some additional tax revenue rather than a political headache, then cash-starved local authorities may even start to compete to attract infrastructure investment, rather than gang up against it.

Ultrafast broadband & 4G coverage

Our members have identified broadband as their number one infrastructure issue and have made clear that with faster broadband, they would employ more people, be more productive and profitable and enable more home-working. No other infrastructure improvement could promise such results across the whole country. Yet despite our burgeoning tech sector, we have among the lowest fibre to the premises connectivity (less than 2%) in Europe and rank 56th in the world for 4G coverage. We believe that connectivity is a rare case where faster speeds and capacity beget and induce additional demand and growth. No one would have or write apps for a smartphone today without the 3G and 4G masts dotted around the country. No one would access cloud-based services or make many purchases online if they had to use dial-up broadband. The digitisation of our communications infrastructure has been slow and is now crawling by international standards. Just over a year ago, in *Ultrafast Britain*[1] we argued for an ambition for universal symmetrical 10 gigabits per second coverage by 2030.

There has been precious little advance since then, and what advances there have been are small beer.

Britain's declining world performance in internet connectivity is no time to be making marginal improvements. We need to start leapfrogging. We therefore believe there needs to be a copper switch-off date set of 2025 when all copper cables in the ground are replaced by fibre-optic cable. This would be akin to the digital switchover in TV between 2007 and 2012 or the forthcoming switch off of FM radio and further down the line, the 2G network.

Finally, in order to accelerate still further the rollout of fibre from the bottom up, we need to see reverse auctions established (where the lowest bidder wins) for fibre optic cable to the premises from the 90,000 cabinets, serving up to 350 premises each. It may well be that the last 20% more remote communities will require some subsidy to make this work. This could be provided for by the relevant local authority. Alternatively, with progress being made by satellite broadband, fixed wireless broadband and particularly the onset of low latency Low Earth Orbit satellite broadband constellations planned by SpaceX and OneWeb, little additional infrastructure should be required to reach the last 20 per cent by the early 2020s.

It should be noted that this is not just about broadband. Only when we have full fibre

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1 Published by the IoD in March 2016

connectivity across the country will it be possible to deploy 5G mobile.

Building a database

Britain's 246,000 miles of roads are our greatest infrastructure asset of which we know extraordinarily little. Today, revenues from road-users run to £48 billion and are four times current expenditure on repair, maintenance and new road construction. The value of the road network is incalculable, but the annual costs of the external negatives are substantial. Road accidents cost the economy £35 billion a year[2] , congestion another £8 billion[3] and air pollution a further £3-12 billion[4].

There is a huge need to capture this information because doing nothing condemns roads and their financing to precipitous decline in the years to come. There will likely be declining fuel duty from ever cleaner vehicles, self-driving vehicles reducing the size of the UK vehicle fleet perhaps from 30 million to 6 million, the encroachment of airspace as an alternative transport node and ever faster internet speeds leading eventually to a much more stay at home, virtual economy.

Once this data is collected, then it can be queried to find answers as to how to cost-effectively bring down the volume and costs of accidents,

congestion and air pollution leaving more resource available for data-focussed road investment. Some of the questions could be;

- Where do the most and least types of accident happen and at what time of day/year relative to traffic volumes and road length?
- Which roads have the most/least and what kind of street furniture relative to traffic volumes and road length?
- Which roads have been treated for the most/least?
- What is the annual cost of maintenance for each road, then weighted for traffic and road length?
- Which areas have the most/least pollution relative to road traffic and at what time?
- Which local authorities have the highest/lowest annual road repair and maintenance costs relative to the length of roads and volume of traffic?

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2 See DfT *Reported Road Casualties Great Britain: 2015 - Annual Report* –*£35 billion figure includes cost of unreported accidents*
3 See See Department for Transport's National Transport Model Road Transport Forecast 2013
4 Estimate derived from range of £6 to 62 billion http://www.bbc.co.uk/news/science-environment-17704116 annual cost less non-road transport emissions, therefore median figure is £34 billion. So £34 billion / 13,000 estimated annual premature deaths from all UK Combustion x central case 4,900 road transport premature deaths = £12.8 billion

Repurposing roads

Buses matter to business because they are vital to the economy. According to Arriva and First Group, buses carry more commuters than all other forms of public transport combined. Every day, 2.5 million people commute to work by bus (with 1 million more using it as a backup) where they generate more than £64 billion of goods and services. They are however falling in average speed, reducing their use, despite their great space efficiency. We see the need for local governments to set increased speed targets for buses and use this as a method to repurpose roads to enable faster speeds. Finally, we need to a big push on reducing dwell times – the collection of fares from passengers. This requires a shift to full cashless and contactless payment that take only 0.7 seconds to process compared to 9 seconds for passenger requiring change.

'Shovel-ready' projects

Projects such as the Northern Powerhouse and the Midlands Engine – if executed properly – can connect up well-populated areas of economic growth into a wider and more successful agglomeration. Upgrading existing infrastructure should be a priority – from accelerating electrification to removing Pacer trains from existing stock – and we should also consult on larger projects such as the Trans-Pennine Tunnel and the 'extended' HS3 running coast-to-coast from Hull to Liverpool. At the same time, many larger projects outside the south east aim to induce demand with better transport connectivity rather than serving pre-existing or clearly forecastable demand. Great care must be taken not to commit to projects that do not past the 'best value index' test.

Crossrail 2

With Crossrail – the Elizabeth Line – coming on line in the coming months and years, we are of the view that the time has come to look at developing a roadmap towards Crossrail 2. In a world of limited resources we do not expect money to be magicked out of thin air, but it is clear that London's infrastructure will also need to be upgraded in time. A roadmap towards it would be a welcome sign of the Government's commitment. A welcome focus on regions should not take away from ensuring the capital keeps moving.

Further runways

The decision on a third runway at Heathrow has been made. It has taken so long and won't even be ready until towards the end of the next decade, so it's important to start preparing now for two new runways. Gatwick is more or less full and Stansted will be by 2027. That's why we are calling for a new Airports Commission 2.0. Its mandate will be to answer the question: where could up to two new runways be built at the lowest cost to the taxpayer, to the maximum competition-enhancing benefit of passengers and airlines, and in the quickest possible time?

In the meantime, with the most spare capacity, Stansted can make the greatest difference. Its Achilles' heel, the distance from London, could easily be rectified by a fast train that brings the journey time to under 30 minutes from 55. Already there are plans afoot for additional line capacity. A more radical solution would involve extending Crossrail to Stansted and further on to Cambridge along the M11. An additional limitation of Stansted could be dealt with more quickly. By lifting the artificial cap on aircraft movements, it could take up to an extra 20m passengers a year.

There is no better time for government to enable Stansted to reach its full potential.

Author

Dan Lewis
Senior Infrastructure Adviser

Dan leads the IoD's policy work on energy and infrastructure .