Evidence Submitted by Dr Steve Melia

About Me

I have been a Senior Lecturer in Transport and Planning at the University of the West of England, Bristol, since 2010. My research has focussed on the relationship between transport and the built environment and how to make transport more sustainable. My book, *Urban Transport Without the Hot Air*,[1] drew on observations of European (and a few British) cities which have made progress in reducing car dependency. I was one of the invited speakers to the UK Climate Assembly's session on Decarbonising Surface Transport in February of this year. I have recently completed a research project, comparing government approaches to road building in times of austerity and economic recovery in the late 1990s and after 2010.[2]

Scope of This Evidence

The scope of this inquiry is wide-ranging. The evidence below addresses some of the transport issues relating to some, but not all, of the Committee's questions. It is not intended to provide a comprehensive response to the post-COVID challenge for transport.

1) How can any fiscal and economic stimulus packages be aligned with the UKs ambitions on net-zero, biodiversity, the circular economy, and Sustainable Development Goals?

The most pressing environmental (and economic and national security) threat facing the UK is climate change. Biodiversity is also declining at a rapid rate; decades of "conservation" have failed to halt that decline.[3] The circular economy remains an aspiration – there is no sign of the UK moving comprehensively in that direction.

The legal requirement to reach net zero by 2050 is inadequate. Under the Paris Agreement it is a global target, which is applied differently to developed countries and others. A recent study estimated that to comply with that agreement the UK would need to decarbonise twice as fast as current legislation requires.[4] That study estimates that the UK would need to reach net zero by between 2035 and 2040 in order to comply with the Paris Agreement – based on optimistic, not precautionary assumptions.

Transport is now the largest emitting sector in the UK, responsible for just over a third of carbon emissions and rising.[5] It is also a major contributor to biodiversity loss.[6] This answer will focus on the transport aspects of the question above. To achieve the aspirations contained within it would require the DfT and the government as a whole to:

1. Stop making the problem worse (through road building and airport expansion)
2. Decarbonise all vehicles more quickly than currently planned
3. Build the infrastructure necessary to support this
4. Reduce the number of vehicles to facilitate 2

1) Stop Making the Problem Worse

The UK is currently embarked on the biggest road building programme for over a generation. A recent study estimated that it will add 20 Mt of CO2, cancelling out 80% of the projected savings from electric vehicles on the Strategic Road Network.[7] In addition many local authorities, combined authorities and Local Enterprise Partnerships are promoting substantial road building programmes of their own. The aviation industry, with government support, is involved in a similar exercise in expanding airport capacity, discussed under Question 5, below.

Road building is also accelerating the loss of biodiversity by severing habitats. Gimmicks such as wildlife bridges or tunnels have largely failed to overcome this problem.[5] If the UK is serious about halting and repairing biodiversity loss, we will need to halt the expansion of the road network and begin to progressively reduce its severing effect by removing roads.

In the short-term, the Strategic Road Building Programme should be halted and funds redirected towards measures which support decarbonisation, in transport or elsewhere.

2) Decarbonise all vehicles more quickly

The Climate Change Committee Net Zero report makes some heroic assumptions about the potential to offset residual emissions.[8] The largest single contributor to residual emissions by 2050 would be aviation, discussed below. This would leave no significant opportunity to offset surface transport emissions. If the timescale is brought forward, the potential for significant offsetting for any purpose is clearly reduced. So, to decarbonise surface transport **net zero would mean absolute zero.** This implies that by the target date ***all*** of the following requirements would have to be met:

- No vehicles could be moving powered by fossil fuels.
- All vehicles would need to run on zero carbon sources with the infrastructure they need.
- All electricity would have to come from zero carbon sources (including the additional energy required to power vehicles)
- All manufacturing would have to be 100% decarbonised
- All the remaining petrol and diesel vehicles would need to be scrapped or converted either before the target date or in a carbon-neutral way afterwards

“Vehicles” includes cars and vans, where the solutions are fairly clear, and heavier vehicles such as HGVs and buses, where they are not.

The government is currently consulting on a date to phase out petrol and diesel vehicles. The document mentions 2035. The Climate Change Committee has called for that date to be brought forward to “2032 at the latest”. As discussed above, the current legal target of 2050 is too late. To achieve a Paris-compliant decarbonisation trajectory, net zero would need to be achieved at some point during the 2030s. If we want to avoid scrapping relatively new cars, the phase-out of petrol and diesel vehicles would need to occur much more quickly than even the Climate Change Committee is suggesting.

The government should therefore:

- Legislate for the sale of petrol and diesel vehicles to be halted by the late 2020s
- Support UK industry to make that transition
- Subsidise the scrappage and replacement of petrol and diesel vehicles

3) Build the infrastructure necessary to support this

In the long-term many superior new technologies may emerge, but rapid decarbonisation will have to rely on existing technologies. For cars and vans and some heavier vehicles that will mean battery electric power. This will require a massive programme of construction of charging facilities, coupled with local improvements in the distribution grid. This must be a priority for any 'green recovery'.

For heavier vehicles requiring more intensive use or longer distances hydrogen may be a better option than battery electric. The government should also support UK industry to develop zero carbon hydrogen production and distribution.

4) Reduce the number of vehicles to facilitate 2)

To make the scale and speed of decarbonisation more manageable, wider transport policy should seek to reduce vehicle ownership – note that this is a different objective from vehicle use, which is the main focus of most transport planners and academics. Reducing vehicle ownership is easier to do in dense urban areas where we need to house more people in future and where home charging will not always be possible. That is where the greatest efforts to reduce the number of vehicles, and change the patterns of travel should be focussed.

There is a broad consensus on how this can and should be done,[9] involving:

- Greater investment in urban and inter-urban public transport
- Redevelopment of cities at higher densities, where parking is necessarily limited
- Traffic removal and the creation of carfree neighbourhoods
- Support for walking and cycling including joined-up networks of segregated routes
- Car clubs (using electric cars) to cater for trips which cannot be done by one of the other modes

All of the above should be priorities for government investment.

2) How should the policy response to the current crisis differ from the response to the global financial crash in 2008?

The global crash of 2008 coincided with the enactment of the Climate Change Act (2008) but I found little evidence that those legal obligations influenced the strategy for economic recovery from that crash.[2] The recession and business lobbying from 2012 onwards fostered a belief that using public money to build infrastructure, particularly transport infrastructure, was the most effective way for governments to promote economic recovery. This was in marked contrast to the late 1990s, when governments made little distinction between the economic impacts of capital or current spending. This change of belief – shared across a wide political spectrum – did not follow any significant change in the evidence; it was, and is, purely ideological.

The SACTRA (1999) report on Transport and the Economy found strong theoretical grounds for believing that transport investment could boost national economies but that the empirical evidence was "weak and disputed".[10] Reviewing the evidence two decades later I found that conclusion remained valid.[11] It is not clear whether transport "investment" makes any difference to the size of national economies, but if it does, the difference is small. Cost-benefit analysis, which is widely used in transport, is not helpful in this context. It cannot answer the question: what difference did this piece of infrastructure make to the national economy?

This change in ideology was one of the main reasons why the Coalition government decided in 2013 to treble the size of the strategic road building programme from 2015 to 2020 – a measure which is hampering the UK's fight against climate change and causing wider ecological damage,[5] with no evidence that it is making any significant difference to the UK economy.

The most important lesson for the COVID recovery is that a recovery strategy does not necessarily have to rely on building physical infrastructure. As discussed below, decarbonisation will require some infrastructural change but in making those choices, governments should ask:

- what changes do we need to make? instead of:
- what type of spending will be better for the economy?

If governments are concerned to support employment through a period of transition it will almost certainly be more cost-effective to do that directly, by employing people to perform useful work. That work does not have to involve building things.

3) What sustainability conditions should be attached to Government bailouts for high-carbon industries?

This answer will focus on aviation, which is the highest-carbon form of personal transport, and one which has benefited from considerable government support in the past.

As discussed above, the Climate Change Committee singles out aviation for the most favourable treatment of all sectors in its Net Zero report, allocating nearly 40% of the projected offsetting budget to aviation.[8] Some members of the Committee's Advisory Committee registered their disagreement with that recommendation, which was made for political reasons.[12] The Committee assume that most of the offsetting capacity will come from bioenergy carbon capture and storage (BECCS), a mechanism which is feasible for small measures but creates progressively greater environmental damage as it is scaled up.[13] Even assuming some restraint on aviation growth and liberal use of BECCS Figure 6.5 of the Net Zero report shows an unfilled gap between the projected need for offsetting and the projected offsetting capacity.

Before the COVID crisis, the DfT's aviation projections were showing aviation growth exceeding the carbon budgets set for it by the Climate Change Committee (and accepted by the government) even compared to the old 80% decarbonisation target.[14] Clearly current aviation policy is incompatible with the UK's legal obligations.

Despite the big downturn in demand caused by the COVID crisis, the aviation industry continues to plan for rapid expansion. Heathrow Airport plc is persisting with its appeal to the Supreme Court against the Court of Appeal's ruling on a third runway. Several regional airports are continuing with plans to expand capacity, whilst at the same time calling for government bailouts.[15]

The conditions attached by the French government to its bailout for Air France have been widely reported, but these are non-binding; they do not offer a positive model for the UK to follow. Instead, the UK government should clarify its own policy on how to achieve net zero emissions from aviation. This will inevitably mean contraction of capacity. The reduction which has occurred during the COVID lockdown should be treated as an opportunity to do this. Any financial assistance should be directed at helping employees made redundant to find new employment in sectors which can expand consistent with the UK's treaty obligations.

7) The pause in economic activity, fall in traffic and increase in working from home during the lockdown has resulted in rapid reductions in air pollution and greenhouse gas emissions; what measures can be utilised in the recovery to continue these trends as economic activity resumes?

The impact on home working on travel patterns has been exaggerated. Commuting only accounts for one journey in six.[16] Remote working may reduce the number of commuting journeys but it also encourages people to live further from their place of work and to compensate by travelling more for other purposes.[17] So, although more home working will change patterns of travel (such as times and destinations), we should not expect it to reduce traffic or transport emissions by very much once the economic activity resumes. A big increase in unemployment could have more impact.

In addition to the measures mentioned under question 1 above, some of the measures implemented under the Emergency Active Travel Fund have helped to improve the quality of urban environments and constrained the ability of traffic volumes to expand as lockdown measures ease. However, because these measures were implemented quickly, they are not coherent. They do not generally create new joined-up routes for cycling or walking. In some cases they have provoked opposition and been removed.

In planning for the recovery, the DfT should require and support local authorities to lock in the advantages gained by:

- Making the measures permanent, and:
- Joining up the individual elements into coherent routes, and:
- Removing through traffic from wider areas – in city centres and residential neighbourhoods

8) In the run up to Conferences of the Parties to UN conventions on climate change and biodiversity next year, how can the UK use its influence, as both host of COP26 and when holding the Presidency of the G7 in 2021, to influence the nature of economic rescue packages around the world?

As noted above, the obligation in the amended Climate Change Act to reach net zero is not consistent with the Paris Agreement. The UK should lead by example, amending its own legislation to comply with that agreement. It should demonstrate that its own plans will:

- Support the transition to a zero carbon economy
- End support to damaging activities such as road building and airport expansion
- Support employment directly through activities which do not involve building infrastructure

(Note: some of the articles below require a subscription to access them. I can provide copies if requested.)

[1] Melia, S. (2015). Urban Transport Without the Hot Air, Volume 1: Sustainable Solutions for UK cities. UIT Cambridge

[2] Melia, S. (2019). Why did UK governments cut road building in the 1990s and expand it after 2010?. Transport Policy, 81, 242-253. https://doi.org/10.1016/j.tranpol.2019.07.006

[3] State of Nature Partnership, (2019) State of Nature Report [online]. www.nbn.org
[4] Anderson, K., Broderick, J.F. and Stoddard, I. (2020) A factor of two: how the mitigation plans of 'climate progressive' nations fall far short of Paris-compliant pathways. Climate Policy. pp. 1-15.
[5] Committee on Climate Change, (2020) Reducing UK Emissions - 2020 Progress Report to Parliament. www.theccc.org.uk:
[6] Melia, S. (2020). Urban expansion, road building and loss of countryside - a non-linear relationship. World Transport Policy and Practice, 26(2), 44 - 51
[7] Sloman, L. and Hopkinson, L., (2020) The Carbon Impact of the National Roads Programme [online]. www.transportforqualityoflife.com: Transport for Quality of Life;. [Accessed July 2020].
[8] Committee on Climate Change. Net Zero - the UK's Contribution to Stopping Global Warming. www.theccc.org.uk: 2019.
[9] See for example: Melia (2015) op cit. and:
Sloman L, Hopkinson L, Transport for Quality of Life. Planning for Less Car Use. www.transportforqualityoflife.com: Friends of the Earth; 2019.
Whitelegg J, Haq G, Cambridge H, Vallack H. Towards a zero carbon vision for UK transport. Stockholm Environment Institute.; 2010
[10] SACTRA, (1999) Transport and the Economy. London: Standing Committee on Trunk Road Assessment.
[11] Melia, S. (2018). Does transport investment really boost economic growth? World Transport Policy and Practice, 23 (3&4), 118-128
[12] Watson, J., (2019) UK Net-Zero Advisory Group to the Committee on Climate ChangeChair's Final Report [online]. www.theccc.org.uk: Committee on Climate Change;. [Accessed June 2019].
[13] FERN. Six problems with BECCS - FERN Briefing. www.fern.org: 2018.
[14] DfT, (2017) UK Aviation Forecasts. London: Department for Transport. [Online]. www.gov.uk/government/publications/uk-aviation-forecasts-2017
[15] Telford, William (2020) Call for urgent Government help as aviation industry faces £4bn loss. Business Live, July 24th. [Online:] https://www.business-live.co.uk/enterprise/call-urgent-government-help-aviation-18653963
[16] DfT (2019) Table NTS0409a. Average number of trips (trip rates) by purpose and main mode: England, from 2002 [Online:] www.gov.uk
[17] Zhu, P. (2012) Are telecommuting and personal travel complements or substitutes? The Annals of Regional Science. 48 (2), pp. 619-639.

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