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Crossrail – it  
wasn't quick or  
easy, but it is  
wonderful

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Mobility  
initiatives  
impacting  
positively on the  
environment

# The Review



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**steer**

**Spotlight**

**Steer investing for further growth**

Steer's forward plans and strategy build on a period of growth and sets out clear ambitions for further sustainable and material growth to a company with strengthened and new skills, a turnover of £100m.

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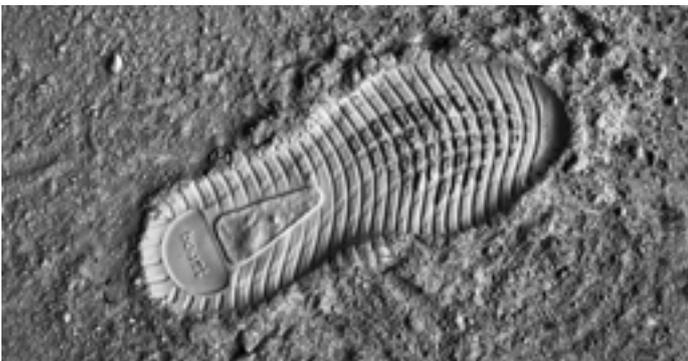


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**A Steer publication**

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## Steer investing for further growth

International consultancy Steer has announced a new global role within its leadership structure. Mike Goggin assumes the role of Managing Director Transformation and Growth to help the business achieve its visionary strategy for growth. Mike will continue to sit on the Company's global executive team working alongside Executive and Regional Directors.

Steer's forward plans and strategy build on a period of growth and sets out clear ambitions for further sustainable and material growth to a company with strengthened and new skills, a turnover of £100m - meeting its global goals to help people, places and economies thrive across cities, infrastructure, and transport.

In recent years, Steer has grown significantly establishing an economic development practice (Steer Economic Development) in the UK while also acquiring a similar business in the USA (Fourth Economy) and made numerous significant appointments in financial advisory, electric vehicles and sustainability and decarbonisation disciplines across its global business.

"Steer has proven to be an agile and resilient business centred on delivering trusted advice that is grounded in impartiality and ingenuity. We are now incredibly

well placed to deliver transformative growth and have the ambition to evolve and develop how our business exists and delivers to clients throughout our global network of offices. - Hugh Jones, CEO

"After three successful years leading the UK business, I am incredibly excited to be working with colleagues across the globe to help Steer evolve and grow on our mission to help people, places and economies thrive. I'm particularly enthusiastic to be supporting the growth of our financial advisory, electric vehicles, sustainability and decarbonisation disciplines. - Mike Goggin

Mike Goggin returned to Steer in 2011 and for the last three years has been leading the UK business as UK Managing Director. He is an award-winning MBA executive surpassing three decades of experience in transport with over 15 years in consultancy for Steer in the UK and overseas. Mike set up Steer's first office in the USA in 2008. Between 2010 and 2012, Mike left Steer to take up a senior role with Network Rail and his previous experience includes working for a UK Train Operator and Franchise Bid Director for MTR.

Steer has recently appointed Lisa Martin as the new UK Managing Director.



alternatives available to most of their users. More recently, providing targeted subsidies such as the Delhi experiment of free public transport for women has shown interesting results by encouraging specific segments of society to gain more mobility freedom.

But as the German experiment shows, subsidizing public transport too much, especially through fare reductions, doesn't necessarily produce the desired results of modal shift and lower emissions. Moreover, the regular users tend to lose out through overcrowding and overexploitation of extra subsidies being offered. At Steer, over the last four decades, we've had the opportunity to consider well over 100 urban transit projects in detail. Despite their differing contexts and continents, there has been a rough observation that we are able to draw. Our rule of thumb when looking at any new public transport investment shows that nearly a third of users of the new service come from existing public transport modes, another third come from walking or cycling modes, and less than a third come from car passenger or driver modes, with a small proportion coming from new trips.

It is very clear from both our experience and the recent evidence that just by reducing fares, environmental and modal shift goals can't be achieved. There needs to be more clear policy objectives of the subsidies being offered so that they can be measured and evaluated at regular intervals.

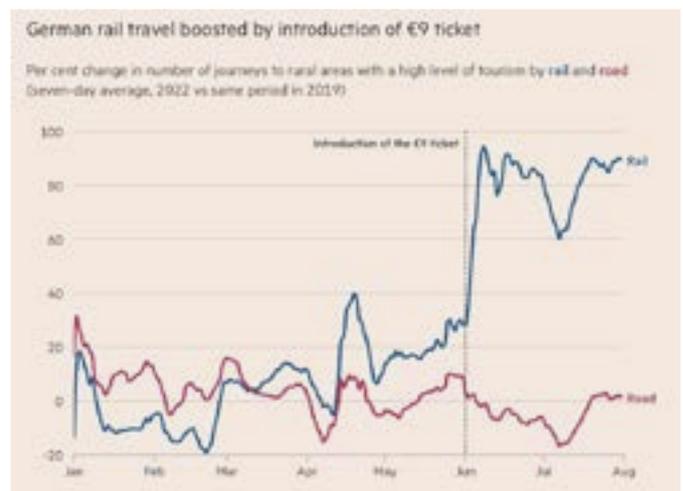
## Free/cheap public transport, who are the winners and losers?

By Serbjeet Kohli

One of the largest public transport fare reduction experiments comes to an end in Germany. The scheme introduced a €9-a-month [USD\$9, INR720] ticket for local trains and other public transport that has proved a massive hit with voters, with a large increase [over 80% jump] in public transport patronage, particularly on the inter-city rail network. However, very little shift was observed from road.

As to what has been observed in Germany very recently, reducing or removing fares from public transport does not necessarily result in a major modal shift away from cars. The need for subsidising or removing fares on public transport has been apparent across the world, but a nationwide experiment of this scale has brought forward some very clear policy options. What is the purpose of public transport and how should it be paid for - by taxpayers money or by users who pay?

The concept of users pay [or more appropriately, polluters pay] has long been prevalent in the road sector, with good quality toll roads across the world from Mexico, USA, France, Australia, and India charging users pay to use such facilities. Public transport modes, on the other hand, receive material subsidies from various government sources, which is considered to be fair given the relative lack of



Source: <https://twitter.com/wessiedutoit/status/1563839487452626945>



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# Electric and Hydrogen Buses, who will win?

By Fabrizio Carippo, Francesco Vaninetti

With the 2030 Climate Target Plan, the European Commission has proposed to raise the EU's ambition to reduce greenhouse gas emissions to at least 55% below 1990 levels by 2030.

In 2017, road transport contributed to 21% of the EU's total emissions of carbon dioxide [CO<sub>2</sub>]. [1] Heavy-duty vehicles – trucks and buses – are responsible for about a quarter of the emissions from road transport in the EU and some 5% of total EU emissions.

For that reason, the introduction of new low-carbon technologies in public transport represents a crucial solution to combat climate change. Zero-emission buses have been gradually growing in the urban bus market: in 2021, in Europe, the zero-emission bus fleet added up to 8,369 battery-electric buses (BEB), an increase of 48% compared to 2020, and 259 hydrogen buses (FCEB), still a very small share of the global stock of buses, growing by 2366% than the previous year. Overall we are observing a significant and stable growth registered in the past five years (CAGR of the global BEB fleet in the last five years, period 2017-2021, amounts to ca. 74%<sup>2,3</sup>).

The observed increase has been mainly driven by non-coordinated actions nowadays, governments are called to play a key role in setting clear and committed public transport policies, programs and

funding opportunities to allow the industry to prepare for the transition to ZEB, and that's what's happening.

New policies are suddenly making the role of local public bodies and public transport operators (PTOs) central to the process to deploy zero-emission buses in the short-medium term, with particular regard to the Next Generation EU plan, which is providing financial support to all member states to recover from the adverse effects of the COVID-19 pandemic. This sudden acceleration may not fit the typical long response-time of the stakeholders as mentioned earlier. As a result of this situation, the decision-making process may, in some cases, be dictated by schizophrenic approaches and political slogans leading to wrong models. An example may be found in Montpellier, where the City recently cancelled an order to deploy 50 hydrogen buses between 2023 and 2025, after realising electric ones are much cheaper in terms of capital and operating costs.

In addition to this point, it seems that, only because buses will be 100% funded, most public entities are focussing on the short-term opportunity to set up massive investment plans, disregarding the economic impact linked to potential higher operating costs for public transport and the related possible effects on current public service contracts. It's also for this reason that Steer is currently solicited in advising public and private sector clients across the world

in the implementation of battery electric (BEB) and hydrogen fuel cell (FCEB) buses and their related production and fuelling infrastructures. In this context, the first and most recurring question that clients have been asking us is: **Electric and Hydrogen Buses, who will win?** Let's start by saying that the considerations are many and include numerous multidisciplinary topics which need more detailed analysis but the following key points, collected in the field in recent years, maybe useful to provide some guidelines:

- **Economic attractiveness** – The calculation of the TCO (Total Cost of Ownership), which considers both investment and operating costs for vehicles and infrastructures, shows us that fuel cell buses are generally twice as more expensive as battery-electric ones. However, cost parity is likely to be achieved between 2025 and 2030 due to a scale-up in the manufacturing of FCEB components and, especially, the hydrogen value chain.
- **Cost development** – The reduction of the cost of green hydrogen presents the biggest challenge for the deployment of FCEBs on a large scale. For this reason, local governments, rather than only concentrating on providing public funding to the operators, need to start focussing on projects that aim at centralising hydrogen production and distribution in a coordinated way in a few large plants for several users: this would allow for economies of scale, lower fuel prices and better bankability of investments. An example is the Italian Project "H2ise", which aims at introducing a fleet of fuel cell trains (first phase), integrating it with fuel cell buses for local public transport (second phase) and with the possibility of further opening to the use by freight and/or private logistics operators (third phase);
- **Range and refuelling time** - Advantages of hydrogen buses, when compared to battery electric vehicles, include shorter refuelling times (7 minutes vs 4 hours) and a larger range which makes them more suitable for long-range urban transportation (> 450 km daily). It means that, from an operations point of view, FCEB are more comparable to ICE[3] buses and, consequently, deployable by public transport operators on a 1-to-1 basis;
- **Overall process efficiency** – When talking about green hydrogen, which is produced through electrolysis using electricity from renewable sources, the overall efficiency of the process from the fuel production to the operation of the bus (grid-to-wheel) adds up to 25-30%, compared to battery-electric buses which show an overall efficiency almost three times as high (70-75%). This means that, with the current technology, the only way to operate hydrogen buses in an economically sustainable way is to have a cheap and abundant renewable power source for the fuel production and compression processes;

- **Manufacturing capability** – given what the FCEB market is offering, there are currently some concerns related to the capability of manufacturers (when compared to BEB, we have seen how the number of manufacturers is pretty limited) to respond to sudden peaks in demand for vehicles that may rise in the short term. This could lead to significant delays in implementing FCEBs by public transport operators and consequently slow down the transition to a zero emission scenario. Moreover, this might threaten the securing of public funding, which appears to be currently concentrated on very tight timescales.

That said, and based on what we have empirically observed on the field, we would rephrase the crucial question; **Electric and Hydrogen Buses, which is the best option for the specific local context?**

Despite the vast majority of local public entities and transport operators are in a hurry to drive the shift to zero- and low-emission buses, we suggest taking a moment to undertake pre-feasibility studies to assess the technology solution (BEB or FCEB) that can be more suitable for the specific context. This exercise should encompass some actions as listed below:

- Explore potential synergies with local stakeholders (such as energy companies and industries);
- Identify regulatory and economic-financial constraints;
- Evaluate application areas for zero-emission buses;
- Assess technological constraints;
- Define operational aspects and identify the optimal solution for the specific context;
- Implement a business case and assess the potential impact on the public service contract.



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# Funding challenges facing bus and light rail in the UK

By Neil Chadwick

Covid has led to unprecedented impacts on the way we travel. The decision to 'lockdown' society and, as part of that, advise people not to travel by public transport led to a precipitous decline in the use of the UK's buses, light rail and the national rail networks. Within days of the lockdown being announced at the end of March 2020, patronage dropped to a fraction of its pre-Covid levels. To keep public transport services operating, the UK Government had to step in and provide financial support. Patronage has recovered but is still some way below pre-pandemic levels. The UK government's funding support for bus

and light rail services in England outside London is scheduled to come to an end on 5th April 2022.

In March 2021, the UK Government published Bus Back Better, which is the national bus strategy for England. Recognising the economic, environmental and societal benefits that the bus brings, the strategy's central aim is to get more people travelling by bus – first, to get overall patronage back to its pre-Covid-19 level, and then to exceed it. These goals have been reiterated in the Government's recent Levelling Up White Paper, which sets a goal that



by 2030 local public transport will be significantly closer to the standards of London, which means more frequent, more reliable, easier to understand and use, better co-ordinated and cheaper services than people experience now. Integral to the Bus Back Better agenda are “Enhanced Partnerships” between councils and bus operators, which will set out how they will work together to grow patronage and “Bus Service Improvement Plans”, which include councils’ proposals to improve bus services through greater bus priority and the like.

The Urban Transport Group, the representative group of transport authorities for the largest city-regions in the UK, asked Steer to consider what might happen should funding support for buses and light rail outside London come to an end at the beginning of April. What we found is that patronage is still recovering. We think that bus travel in the largest cities outside London could get back to around 85% of its pre-Covid levels by Summer 2022. But for this to happen, services need to be maintained. Should funding support come to an end at the beginning of April, it is likely that there will be a shortfall between the bus operators’ revenues and their costs and if this happens, the way operators have responded in the past has been to reduce services and increase fares. Light rail operators face similar challenges. The report’s findings were also discussed on the BBC’s Newsnight programme on 17 February 2022.

If services are reduced and fares increased, there will be further negative impacts on patronage that will lead to a further deterioration of services – the so-called vicious circle of decline. Using Urban Transport Group’s Metropolitan Bus Model, we assessed this impact to be potentially as great as the longer terms impacts of Covid restrictions with patronage declining to around 70% of its pre-Covid levels and the network to about 75% of its pre-Covid size.

Such an outcome would be a major setback to the Government’s Bus Back Better and Levelling Up White Paper ambitions. Our prescription is to continue financial support and we suggest for another year. Further funding would allow time for further recovery of demand. It would also give local transport authorities across the country time to get their Enhanced Partnerships in place and re-focus their Bus Service Improvement Plans to support post-pandemic recovery. It would allow time for there to be a debate about how in the medium to long term, the public sector supports public transport provision with the goal of levelling-up and decarbonising the country’s transport network and supporting other wider economic, social and environmental policy goals.

The Steer ‘Continuing COVID Funding Support for Urban Public Transport’ report can be downloaded from Urban Transport Group’s website.



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# Economic growth demands robust decision making in our “new normal” environment

By Paul Hammond

In 2020 the world experienced one of the biggest challenges for humankind in living memory – outside of war at least. In March of that year, business in the developed world began to grind to a halt with the onset of a global health pandemic. Since then, the economy and society has refocussed, re-established, and stabilised economic performance. However, the market shock generated by COVID-19 lingers and remains a reality for all walks of life but especially vulnerable groups and those on the front line of care, and in parts of the world where vaccination is not an affordable option.

Writing in early 2022, what is clear now, is that the pandemic’s “new normal” will not be short-term and will reverberate across the UK and the wider world with a longer-term structural adjustment around recovery, society, the economy and climate emergency. For the UK, the added structural adjustment of post-EU trade is also yet to play out.

Insofar as one can regulate and shape markets, for the places and industries worst affected, we firmly believe that locally specific action in the UK (and elsewhere) is needed to support the transition and realign the focus post-pandemic. This means

expanding sectors in health and care, logistics and ICT, and the green economy, and to support a decisive switch to new and greener ways of working and commuting. It means considering a new localism and ways of spatial planning and relationships between towns, cities, home and work.

There is a consensus that output will revive as ‘lockdown’ ends, but not about the extent of the revival. The UK Treasury’s most recent economic growth data shows the resilience of the UK economy through 2020 and 2021. However, both unemployment and inflation are on the rise and the start of “semi-austerity” from the new 2022-23 financial year (NI and Corporation tax rises and reduced Government spending) will exacerbate the former without addressing the latter in our opinion.

- Consequently, markets will be tight and robust decision making is critical. Below are 6 key attributes to keep front of mind:
- Context - strategy, action, and investment requires a thorough understanding of market data to reduce risk and maximise chances of success. Harness data analytics and economic expertise to support robust decision making.



## Lisa Martin becomes UK Managing Director at Steer



- Act at the appropriate spatial level. What works for a large urban area might not be suitable in a rural setting or in a particular neighbourhood with a dominant community of interest.
- All the above should reflect in a proportionate investment in preparation – normally a business case. Don't cut corners here.
- Consult – get the stakeholders involved. Digital helps but face-to-face and group dynamics remain relevant. Understand the counter perspective, listen and design with the ultimate user in mind.
- Learn from the past but learn as you go – include feedback loops so that evaluation and policy are linked in a virtuous circle of dynamic data collection, review and revised implementation.
- Avoid silos. Consider demand and supply, consider sector integration, and work to a shared goal not a one-dimensional investment. Placemaking and people focused investments are the best examples of this. Innovation and improved performance will often result from nexus thinking.

For more information on how Steer can support your business, get in touch with one of our experts today.



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Steer is delighted to announce that Lisa Martin has become our new UK Managing Director taking over from Mike Goggin who recently became Managing Director, Transformation & Growth.

Lisa brings to the role a deep knowledge of Steer and an excellent reputation within the industry, having held a range of leadership roles at Steer over the last two decades in the UK and USA. Lisa left Steer in 2020 to lead the Surface Access Strategy Team at London Heathrow Airport, returning to Steer late last year.

During Lisa's time leading the team at London Heathrow Airport, she was responsible for developing and implementing the surface access strategy and being part of the airport's COVID response planning.

Steer's forward plans and strategy build on a period of growth and sets out clear ambitions for further sustainable and material growth to a company with strengthened and new skills, a turnover of £100m - meeting its global goals to help people, places and economies thrive across cities, infrastructure, and transport.

Lisa will be a key member of our Steer Leadership team (joining our Global Executive Management Team), driving and overseeing the growth and development of UK market whilst building on the momentum and reputation Steer possess.

Read more here: <https://us.steergroup.com/en-us/insights/news/lisa-martin-becomes-uk-managing-director-steer>



# Crossrail – it wasn't quick or easy, but it is wonderful

By Gordon Bird, Adrian Cole and Victoria Rees

As Crossrail completes its first week of passenger service, with more than a million passengers enjoying this high-quality new line, it's a good opportunity to reflect on the work that led to this milestone.

Many have contributed to this project, not least the 10,000 workers employed in the construction, and Steer is proud to be one of those contributors to this once-in-a-generation change for London.

## The Concept

The idea of a new east-west underground line linking East and West London was first suggested in the Abercrombie Report in 1943. Various ideas were developed for Crossrail type schemes throughout the 1970s/80s, encouraged by the success of the two RER lines in Paris. The DfT/TfL Central London Rail Study in the late 80s considered four options: East-South Crossrail, North-South Crossrail and the Chelsea-Hackney Underground line (now Crossrail 2). It recommended East-West Crossrail linking Liverpool Street and Paddington with just one branch in East London (to Stratford and Shenfield) and two branches west of Paddington was then taken forward for approval by a Parliamentary Committee in the early 1990s.

The Parliamentary Committee disapproved of Crossrail and did not disclose their reasons, but one of the main objections was from Tower Hamlets. They were concerned about the proposal to end the tunnel just east of Liverpool Street and then improve the existing surface tracks to Stratford. Tower Hamlets wanted the tunnel to go all the way to Stratford, avoiding disruption in the Borough and would also have liked a Crossrail station in the Borough.

TfL started to promote Crossrail again in the early 2000s, with a tunnel to Stratford. However, East London was now changing rapidly, with over 100,000 jobs forecast for Canary Wharf. As a result, several other Crossrail options, supported by Canary Wharf and their transport advisors (Steer), were developed to serve Canary Wharf, Stratford and Shenfield.

The selected option, which has been under construction for the last thirteen years and is now called the Elizabeth Line, has two branches in East London. When fully functioning from 2023, all the trains on both branches will pass through a new station at Whitechapel - in Tower Hamlets, meaning their ambition of the 1990s will have been at least partially achieved.

## The Station

Canary Wharf station is an excellent example of how over-station development can help deliver and cross-fund critical transport infrastructure. Steer helped Canary Wharf Group achieve the necessary planning consent by preparing the full suite of transport documents to support the successful planning application for the over station development.

We also worked closely with Canary Wharf over the station's planning and design, carrying out pedestrian modelling to refine the station design and designing the enabling highway works.

Our contribution has continued with Steer also assisting the achievement of the planning consents for the adjacent North Quay development. Upon implementation, this development will provide a high-quality pedestrian link between Canary Wharf Elizabeth Line station and Poplar DLR station, aiding interchange and further enhancing the reach of the Elizabeth Line into the surrounding area.

### The Operation

Steer made a material contribution in specifying and supporting the procurement of the operator of the Elizabeth Line. In addition, we were engaged at an early stage by TfL to undertake detailed modelling of operating costs and operational performance to help inform the scope and objectives of the Crossrail Operating Concession – ultimately awarded to MTR Corporation in 2014.

This new concession would initially take over running the services between Shenfield and Liverpool Street and between Reading and Paddington and then manage the subsequent transformation of services transitioning through the complex staged programme of delivering the Crossrail Project through to the full-service operation of the completed Elizabeth Line.

TfL appointed Steer as their technical advisor to support the procurement of the Crossrail Operating Concession. Our expert team supported all stages of the procurement, from prequalifying bidders, specification of the contract requirements, and tender evaluation process to evaluation of tenders and contract award.

Further reading: [Our role in the Crossrail project](#)



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## Amberside Advisors join global management consultancy, Steer

UK-based project finance advisory firm, [Amberside Advisors](#), is delighted to announce their partnership with global management consultancy, Steer. Amberside joins Steer to enhance their financial advisory services and to add sector specialism advice in the renewable energy, transport and infrastructure sectors.

Steer is an employee-owned consultancy with 22 offices across North America, Latin America, UK, Europe and India. Since 1978, the firm has provided pioneering planning, design and advisory services to government and business – with a particular focus on projects that develop cities, infrastructure and transport.

For more than a decade, Amberside has supported the world's leading developers, funds and public sector organisations to deliver world-changing infrastructure and low carbon projects. From working on projects such as one of the world's largest greenfield biogas-to-grid sites, through to helping the UK public sector achieve its net zero ambitions via initiatives such as Heat Networks Investment Project (HNIP), Amberside has delivered projects that help to reduce our carbon impact and provide a sustainable infrastructure across the UK.

Amberside have delivered over 1,500 projects with project asset values totalling £14bn+ across 26 sectors and 30+ countries. Furthermore, they have worked on over half of the PFI/PPI projects in the UK and actively supported mandates that have provided over 10GW+ of renewable energy into the UK.

This new acquisition complements Steer's global business consultancy offering, strengthening their already successful infrastructure finance team. Earlier this year, Steer retained its first-place position in Infradeal's 'total transport infrastructure transactions', having acted as technical advisor for 28 deals that reached financial close in 2021, with a combined transaction value of USD 11.4 billion. This new partnership accelerates Steer's continued global growth plans, ensuring clients receive an enhanced service offering that provides deep sector experience and intellectual capabilities of both organisations.



# Key takeaways from our Net Zero: making it happen series

Common sense dictates developing a coherent and well-thought-through strategy before undertaking any sizeable or complex activity.

It is a tried and tested path to achieving desired outcomes.

However, when it comes to achieving our global net zero ambitions, the vehicle designed to develop and then deliver this strategy - namely, the series of COP meetings - appears to have accidentally achieved the opposite.

Hard-won and highly praised though COP goals are, delivering global sustainability and climate change goals continues to present an insurmountable challenge to governments and organisations worldwide.

## Net Zero: making it happen

In [our series of webinars](#) hosted a week after COP27, Steer took an alternative approach to discuss and debate the challenges.

We believe in the power of storytelling and that, by amplifying net zero success stories from around the world, we can inspire leaders in all sectors to start taking steps to 'make net zero happen'.

For Steer, the zero-emissions vehicle (ZEV) sector is one we have helped to champion and grow. It is now leading the way in delivering real-world projects that achieve tangible sustainability results. We believe the hard-won insights and game-changing successes the sector has seen can inspire others worldwide, no matter their geography or industry.

## Starting at the beginning, behaviours and numbers

The series deliberately took a broad approach which mirrors the challenge of achieving net zero goals.

Our first webinar, "[Implementation](#)", saw a lively discussion on how the global challenge of changing billions of individual behaviour patterns is at the heart of how we will ultimately achieve our sustainability goals. Using the example of how she introduced a new electric bus system in Santiago, Chile, **Gloria Hutt**, President of Evópoli and former Minister of Transportation and Telecommunications, Chile, illustrated how delivering on user (or in this case 'passenger') experience was critical to ensuring the long-term success of a net zero transportation system.

She also highlighted another critical success factor when delivering ambitious but local net zero projects: local context. For example, Chile's lack of a domestic automobile industry allowed them to pivot more quickly to a public e-bus scheme and probably more rapidly than other nations may be able to do.

Gloria, in her role as Minister of Transport, was able to understand the ambition of COP and translate broad, grand climate goals into immediate action on the ground. The project more than took local conditions into account; it leveraged the region's unique character to 'tailor-make' a relevant public transportation solution and was far more successful than a globally mandated strategy.

In other words, to coin a phrase, she listened globally but acted locally.

Turning to another key enabler of sustainable change, **Jane Stevensen**, CEO of JS Global Advisors, highlighted the successes that are being made in establishing globally recognised disclosures and standards for climate-related reporting. Whilst not having the PR attractiveness of a new e-bus fleet or sustainable e-mobility scheme, data and measuring progress against ambitious goals yield vital information that helps tackle stubborn infrastructural challenges. It highlights both successes and failures of past initiatives and, presented well, can inspire effective change.

## Time for the elephant

Tuesday's webinar, "[Finance](#)", addressed the elephant in the room: how to present projects as low-risk investments that will deliver a commercial return and unlock both public and private investment.

**Lauren Pamma**, from the Green Finance Institute, along with **Daniel Pulido** from the IFC, **Christian Velasco** from AMP Capital and **Luis Andres Alandia** from Proparco [the private banking arm of the AFD] looked at investing in early-stage decarbonisation and net zero projects from both a public and private sector perspective. The role that development banks need to play in this arena is significant; as well as supporting countries to develop the necessary legal and regulatory frameworks, development banks can help increase the bankability of net zero projects.

There is, however, a 'sustainable' finance market, which is becoming increasingly synonymous with the finance market. Again, looking at behaviours, investors putting pressure upon funds to make the links between emissions and investments more explicit will help to accelerate this change, and yet again calls on the need for globally recognised independent standards and reporting criteria.

Using ZEV as an illustrative example, the panel explained how the unknowns around technology could obstruct capital mobilisation. Some areas, including public bus infrastructure, deliver more attractive

projects to investors, whilst others, including charging infrastructure for private cars, may still require significant public sector support ongoing.

Sharing stories of success around projects of this type, involving both new and unknown technologies and investment profiles, is vital in creating the momentum we need to see to create a shift in global investment behaviours.

### Accessibility and equality: our watchwords

As with many complex and ambitious change programmes throughout history, the successes seen are only universally and fairly accessed by some communities.

[Alia Verloes](#), North American New Mobility Market Lead at Steer, hosted Wednesday's session, "[Communities](#)", in which highly experienced practitioners from the US, **Bree Swenson** from the California Air Resources Board, **Caitlin Vargas** from the Lane Transit District in Oregon and **Michelle Go** from the Metropolitan Transportation Commission, San Francisco Bay Area, shared their real-world experience and hard-won insights from projects they have run aimed at removing the hurdles that often prevent people from disadvantaged communities from accessing greener, low carbon forms of transportation.

Continuing the theme of taking a local approach to solving global net zero challenges, the panel discussed the importance of identifying net zero solutions tailored to the local community's needs. The panellists gave examples of this achieved in e-mobility – public outreach campaigns, mass education, and engaging local community influencers who became early adopters.

Yet again, the importance of individual behaviours as a critical success factor in achieving long-term, sustainable net zero outcomes was emphasised. The panel urged those agencies responsible for delivering local, sustainable transportation solutions to recognise that changes to people's everyday lifestyles and mobility, combined with new technologies, will require them to be flexible and agile in their long-term responses.

Put simply; there needs to be an acceptance that achieving net zero, whilst sounding finite, will never be an end state.

### And in the real world

By the time the final session took place, the complex interplay between multiple agencies, data standards, finance, technology, and behaviours was becoming evident and understood.

However, the experience of the ZEV sector also showed that these relationships could be known, specified and successful.

In the last webinar on "[Adoption](#)", we looked at more real-world examples – specifically, how existing structures and facilities can adapt to support and enable net zero transportation solutions.

[Stephen Van Beek](#), Director of NA Aviation at Steer, hosted the "Planes, Buses and Automobiles" session [to coin a phrase!]. **Katherine Ward** from Beacon Rail, **Alessio Tizzanini** from Enel X, and **Ivar Satero** from San Francisco International Airport illustrated in each of their respective sectors the need for a flexible approach to respond to fast-moving technology and changing consumer demands.

Local, regional, and national contexts must be considered to achieve net zero. For example, a rail initiative will likely have more traction and success in Europe than North America. However, the illustrative points that can be extrapolated from successes in local projects can be applied to communities across the globe.

### The time is now

Local or regional initiatives that deliver clear consumer benefits have the energy and momentum required to convene and mobilise multiple agencies, trigger innovative finance, and generate new technologies. For example, keeping consumer behaviour at the heart of all ZEV projects has been a driver of success in that industry; by ensuring that standardised reporting and standards are in the DNA of each project, projects will become both sustainable and prosperous.

And ultimately more attractive to investors – public or private.

### A final word

Throughout history, storytelling has been how our society has learned lessons from the past, understood what is possible in the future, and gained the confidence to take those first steps forward. Steer's Movement Matters webinar series on [Net Zero: making it happen](#) is our contribution to this narrative and, hopefully, a key driver.





## Views on COP27: Optimism Bias?

By Victoria Johnson

Even before delegates began to arrive at COP27 in the resort town of Sharm el-Sheikh, the conference was already overshadowed by the very questionable human rights record of the Egyptian regime, put into the global spotlight by hunger-striking British-Egyptian political prisoner Alaa Abd el-Fattah. [Note: the likes of Amnesty International have been reporting on Abd el-Fattah and the plight of other pro-democracy activists for years].

Then there was the corporate conference sponsorship that smacked of green-washing, record numbers of fossil fuel lobbyists registered to attend the event, and the growing scientific consensus that carbon budgets in place to maintain a 'reasonable chance' [this is a flip-of-a-coin probability of 50%] of stabilising global average temperature rises at or below 1.5°C are potentially less than previously thought. Environmentalist and author Bill McKibben quipped in a post [last year](#), 'Faster Than Expected is probably the right title for a history of climate change so far.'

Against the backdrop of Lord Stern's [estimation](#) of the sheer scale of the funding to help developing countries reduce their emissions and cope with the impacts of climate change that are already occurring [\$2 trillion per year by 2030 in the Global South alone (excluding China)], the escalation of climate disasters globally, the 'less than we thought'

global carbon budget, and a potential [reneging](#) of the Glasgow Pact, are there any reasons to be optimistic? Or by keeping the 1.5°C target in view, are we simply guilty of reinforcing a collective and catastrophic optimism bias, and neglecting the woefully small mitigation, adaptation, and [loss and damage](#) compensation funds available to the Global South, who are already suffering the worst impacts of climate change?

In 2008, my colleague Andrew Simms and I launched the 100 Months Campaign whilst working at the independent think tank, The New Economics Foundation. We argued that [if we are lucky, and based on a quite conservative estimate, in 100 months, we could reach a tipping point for the beginnings of runaway climate change](#) unless global greenhouse gas emissions rapidly declined. That was 171 months ago.

Reflecting on where we are now compared to 2008 [putting dwindling carbon budgets and the escalation in scale and magnitude of climate-related disasters to one side for the moment - more on this tomorrow], yes, there are huge successes.

Take renewable energy, for example.

There has been a spectacular fall in the cost of renewable energy and the battery technology to store



Despite recent [supply chain issues](#), Bloomberg recently [reported](#) that the supply chain for solar PV needed to reach net zero by 2050 is already under construction.

Electric vehicles (EVs) are another success story.

EVs are a key technology to decarbonise the 'hard to abate' road transport sector, and there has been exponential growth in uptake in recent years. The costs of lithium-ion cells have [fallen by more than 97% since 1991](#), and [the IEA now estimate](#) that 13% of new cars sold in 2022 will be electric. If the growth experienced in the past two years is sustained, CO<sub>2</sub> emissions from cars can be put on a path in line with the net zero emissions by 2050 Scenario. They do note, however, that electric vehicles are not yet a global phenomenon, with developing and emerging economies lagging due to higher purchase costs and a lack of charging infrastructure availability.

Despite often contradictory media reports, Carbon Brief found that in both the US and Europe, EVs represent a [substantial reduction in the lifecycle greenhouse gases compared to the average conventional vehicle](#), but the extent of decarbonisation depends on the carbon intensity of the energy used to manufacture and charge them.

A second concern regarding the widespread deployment of EVs is the wider environmental impact of lithium-ion batteries. [Metals in batteries are scarce, expensive, and their mining carries significant environmental and social costs](#). However, battery recycling capabilities are rapidly increasing. This is coupled with a move towards 'servitisation' business models such as leasing, renting, or sharing, and pay-per-use. Servitisation means that manufacturers retain the ownership of the product, enhancing product-life extension through activities such as repair, maintenance, and remanufacturing at the end of the product's life. Circular economy models have the potential to decouple growth and resource use and further the decarbonisation of products, including EVs.

Materials research is also uncovering unlikely substitutes for lithium-ion batteries, with the [University of Maryland](#) developing a zinc battery that is two-thirds biodegradable and made from chitosan found in crustacean shells and the cell walls of fungi.

But electricity, heat generation, and road transport only account for ~42% of global emissions. So, whilst there may be reasons for optimism and the foundations of a rapid transition is evident across some sectors, how fast can these technologies be deployed in practice? Can their current rates of deployment be sustained? And, what about the other 58% of global emissions?

The pace of the transition to zero-emission vehicles, the decarbonisation of the power sector, and energy efficiency improvements all need to increase by

it. Oxford University's Institute for New Economic Thinking published a [report last year](#) concluding that there is a pathway to 1.5°C that is cheap and quick. This contradicts the received wisdom that a green energy transition will be expensive (and a major driver of footdragging in response to climate change over the past 40 years). And they aren't the only research team arriving at this conclusion.

According to the [International Energy Agency \(IEA\)](#), more people are now employed in clean energy [renewables, electric vehicles, energy efficiency measures, and nuclear power] than in the fossil fuel industry. Optimistically, the staggering number of fossil fuel lobbyists at COP27 could simply be the last-ditch attempt of a crumbling industry desperate to survive. Although pessimistically, it could be viewed as an attempt at an African '[gas grab](#)' and to thwart discussions on ending the circa \$700bn in public subsidies the industry still enjoys. According to [DeSmog](#), at least nine gas deals have been struck so far on the side-lines of negotiations as European firms look for alternatives to Russian supplies.

Clean energy investment continues to grow, with the [IEA reporting](#) record growth of 12% in 2020. Spending on solar PV, batteries, and electric vehicles is now growing at rates consistent with reaching global net zero emissions by 2050.

two to fourfold. Furthermore, [recent research](#) has highlighted that four critical sectors – aviation, shipping, road freight, and industry—cannot cut their CO2 emissions to zero rapidly with technological supply-side options alone.

After three decades of international climate talks, it now seems almost inevitable that the carbon budgets required to keep global warming below the critical 1.5°C threshold will be overshoot [without widespread deployment of greenhouse gas removal technologies](#). Although putting faith in technologies that are still in the early stages of research and development and are unproven at scale is a huge gamble to take given what is at stake.

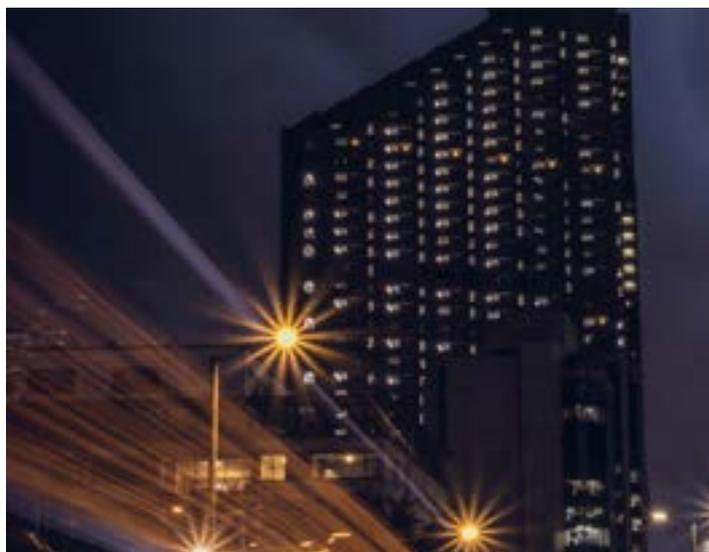
Economy-wide decarbonisation scenarios tend to place great emphasis on the deployment of technological supply-side solutions that displace their higher-carbon counterparts – EVs displacing internal combustion engine vehicles, for example. But this is only one part of the equation. Widespread deployment of low-carbon technologies needs to go hand in hand with demand-side measures: strategies that target technological choices, consumption, behaviour, coupled production-consumption infrastructure systems, and service provision.

An example of this would be integrating the concept of 'envirogenic environments' within climate and planning policy. Public health research has developed the concept of '[obesogenic environments](#)', used to highlight the role of infrastructures, cultures, and institutions in the Global North's obesity epidemic. So why not something similar for climate change, argues Professor Elizabeth Shove, a sociologist at the University of Lancaster. 'What is to stop social scientists and policy makers paying close attention to the making and the erosion of 'envirogenic' environments, these being ones that favour the reproduction of variously sustainable ways of life?' writes Shove in her seminal paper '[Beyond the ABC: Climate Change Policy and Theories of Social Change](#)'

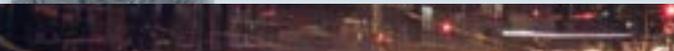
Giving up is not an option, and every effort to reduce emissions urgently increases the likelihood of avoiding catastrophic climate change. But there is an optimism bias towards technological magic bullets, allowing current patterns of consumption, particularly by the highest earners, to remain unchallenged. Not only does this increase the risk of overshooting, but it also makes the task of achieving net zero more difficult and costly in the long run and fails to address long-standing structural inequalities.



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**Felipe Ramirez**  
Ex CEO,  
TRANSMILENIO S.A.



## Mobility initiatives impacting positively on the environment

Climate change is a reality that is becoming increasingly important. Countries, companies and human beings must pay close attention as they are responsible for causing great damage to the environment. Becoming carbon-friendly must be a shared commitment to mitigate pollutants, improve people's quality of life, and have a better place to live.

Companies must prepare and implement strategies to reduce their emissions and for this we interviewed **Felipe Ramirez**, Ex CEO of TRANSMILENIO S.A., who shared with us the bus pool renewal projects initiated by the Public Transport System Managing Entity in recent years, and how Steer in temporary association with KPMG and Pose Herrera Ruiz supported them throughout the process and also the challenges he has faced.

Felipe worked for TRANSMILENIO S.A. since 2016, where he began his work as a Management Advisor, then became Deputy Technical Manager and ended his work as CEO. He recently took office as District Secretary for Mobility, where he will continue to implement public policies on public transport, as the transport authority of the Capital District.

In early 2016, TRANSMILENIO S.A. had the challenge of structuring the bus pool renewal of the Phase I and II trunk operating concessions of the system that

began operations between 1999 and 2000 and ended in 2018. The bus pool with about 18 years of operation generated great operational and environmental issues, due to the natural obsolescence of that vehicle technology, resulting in high levels of pollution for the city. One of the big challenges was implementing a clean bus pool without users noticing it. In order to achieve this, TRANSMILENIO S.A. with the support of FDN hired Steer, KPMG and Pose Herrera Ruiz with the aim of structuring the bus pool renewal, whose main recommendation was a change in the business model for service provision, and where a change of technology would become part of the bus pool to reduce gas emissions and reduce the environmental impact. The support provided by Steer, KPMG and PHR resulted in the award of the contract to make the change of technology for the trunk bus pool after helping to respond better to the observations during the tender and award stage, answering the doubts of the market and assuring that the structuring would come to a successful conclusion under the technical, economic and legal standards.

In the market, a very good response was obtained from the banks, investment banking and other external players because they understood that it was a new way of seeing the business model, and today this has become a model of success that other countries have adopted because it shares some risks that cannot be in a single contract, as it was handled before and additionally it has been an opportunity to find or approach new players (financial sector, investment banking, etc.).

According to Felipe, some determining factors that allowed technological advance are:

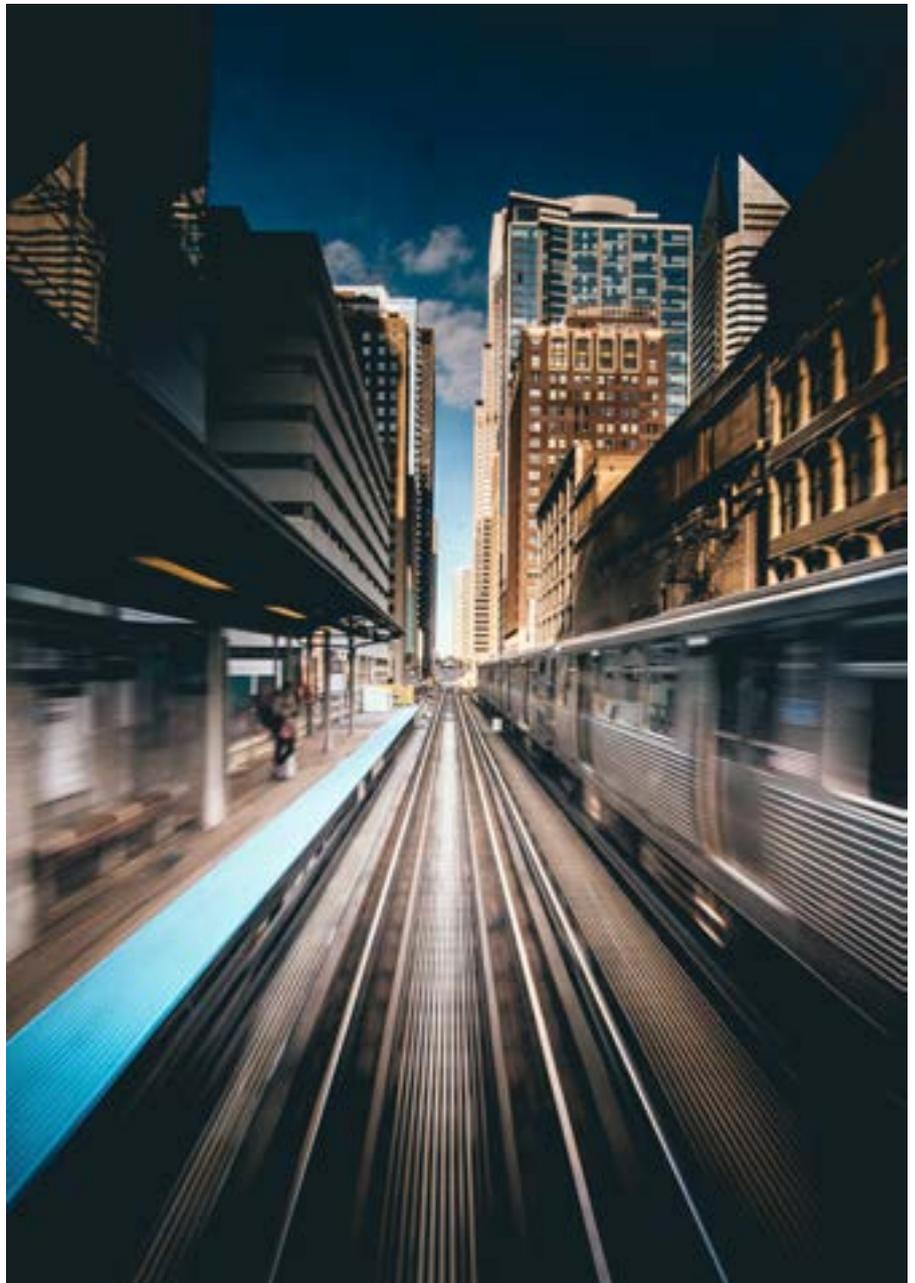
- Political will, meaning that the final objective of improvement for society translates into public policies to move all the players involved in the process.
- New technologies. Implementing them implies higher costs and cities must assume those costs as part of their financial costs, but they must be aware that this is reflected in improvements for citizenship and in the quality of service.

Thanks to the implementation of this technology change in the trunk bus pool, the benefits for citizens have been very positive. On the one hand, air quality was improved by reducing particulate matter by 80% and this was evidenced in a study made by Ecopetrol in conjunction with Universidad de Los Andes. On the other hand, reduction of the emissions of greenhouse gases, such as CO<sub>2</sub>, are

very close to zero with electric buses, contributing to the reduction of the carbon footprint of mobile sources in climate change.

The model applied to the trunk system was replicated in the zonal component of the SITP, specifically in the Fontibon, Suba and Perdomo Zones, where the tenders for linking and operating the electric bus pool were structured, to complete the 100% implementation of the system and eliminate the Provisional SITP, which are mostly buses with a service life of more than 15 years. Although there is still a lot to work on and buses that need to be substituted, the impact that has been generated to date has been quite positive. The city currently has an awarded bus pool of 1,485 100% electric buses in the zonal component, making it the city with the greatest bus pool with this technology in Latin America.

Bogota has been a pioneer worldwide in implementing this type of initiative, this is something that should makes us pride, and the city will continue to progress towards it.





# Carbon is not a local transport problem

By Simon Statham

Carbon emissions and their influence on climate change are now one of the transportation planning community's most important issues. Simon Statham looks into what needs to be done in order to think differently about transport carbon emissions and why they need to be understood in detail if we are to put forward successful strategies to reach net-zero.

## Know your problem

I've always believed that to develop solutions to a problem, you need to know the detail of what the problem really is. Simon Statham - Voices of the industry

Today's big 'problem' for transport planning to solve is carbon emissions and their impact on climate change. I started looking at this while working at Midlands Connect around 2018. Before that, Midlands Connect only had one core agenda – the economy.

It seems funny to look only about seven years back when we started work on our original 2017 strategy, but carbon emissions weren't a standalone issue then. If we solved all the other problems, carbon emissions would be dealt with naturally.

The feeling was that if you've got policies and programmes that target modal shift, particularly in cities where there are lots of short-distance trips

to go after with active modes and public transport interventions, then reducing carbon emissions will be a nice by-product of that strategy, won't it?

How naïve we all were!

When Midlands Connect started to take on the issue, I wanted to properly understand the problem in the lead-up to a planned refresh of our strategy. I knew from national statistics that carbon from domestic transport was around 27% of all UK emissions, over 90% of that came from road-based vehicles, and almost 60% of that was from cars.

I wasn't satisfied with this; knowing that car journeys were the offender wasn't surprising or helpful. Instead, I wanted to know what types of trips or activities were the key drivers and what policy or interventions would have the most significant impact.

We embarked on a project to paint a detailed picture of where carbon emissions came from.

The outputs of this were stark and startling.

## Local car journeys don't burn much fuel

The first and most crucial point is that we cannot assume that significant decarbonisation will be an add-on benefit to traditional local policymaking.



Traditionally Local Transport Plans (LTPs) rightly focus on improving the lives of residents by trying to provide a better environment for people to walk/cycle/e-scooter or catch public transport for their everyday trip making. Sometimes this might require a demand-side policy to give the last little nudge, but the theory is certainly sound. After all, we know from National Travel Survey statistics that almost 60% of all car journeys are less than 5 miles in length.

However, these short-distance trips don't burn much petrol or diesel, so they are only a small proportion of where carbon truly comes from. Our estimates showed that trips of less than 5 miles only contribute around 18% of all emissions from cars, which tallied nicely with the National Travel Survey showing that these trips only contribute 15% to all miles driven.

So, our estimates of carbon emissions were backed up by national statistics about how people use their cars.

We may make dozens of trips a week to the shops, school and work; but we also travel to see family and friends in the next town over; or up the motorway to the away match to follow our life-long team; go on a business trip to complete that big sale, or on holiday to the coast or uplands of Britain. Indeed, our research suggested that trips over 25 miles in length contribute 46% of car carbon emissions.

Added to this issue of the trip lengths of car journeys, there are other aspects that previously LTPs were only focused on activities that generated just a small proportion of emissions. For example, around 15% of emissions come from vans and around a fifth come from heavy goods vehicles (17% nationally but 21% in the Midlands).

So, if we remove emissions from longer-distance car trips [anything over 10 miles], vans and HGVs, then we found that, in the Midlands at least, the emissions' market' that a traditional LTP might have the most direct influence over, is only around 27%.

If the plans and policies of an LTP managed to reduce this by as much as, say, 10 to 20% over a 5-to-10-year period, then that would be considered a huge success. But that would mean that well over 90% of all transport carbon emissions would remain.

LTPs are indeed a force for good; they have a huge role to play in improving the lives of residents and enabling them to live more sustainably. LTPs can lead to healthier lifestyles, fantastic places to live, safer streets etc. However, the evidence tells us that even if they are hugely ambitious and ultimately highly successful in what they set out to do, it is still unfair to expect they will be the magic bullet to drop transport carbon emissions dramatically.

So, that's the bad news.

But what can we do about it?

### **Try to widen the scope of emissions an LTP tries to influence**

I've used the word 'traditional' a lot here to describe LTPs. If the primary objective is to decarbonise, perhaps they ought to be 'Local Transport Decarbonisation Plans', which would give them a much broader scope. For example, Oxfordshire CC and Cambridgeshire & Peterborough CA have been developing 'Local Transport & Connectivity Plans' - recognising the need to incorporate digital and energy/hydrogen networks into transport policy making.

### **Influence resident and business vehicle choice**

It's perhaps obvious to say that we must decarbonise the fleet at an accelerated rate. Local authorities must ask themselves what they can do to influence the take up of zero or ultra-low emissions vehicles. For example, the difference in the pace of electric vehicle charging infrastructure rollout is massive. Some authorities are charging ahead (excuse the pun!) and have ambitious delivery plans. Still, there are many who are more passive and leave the private sector to deliver where the private sector wants to.

Towns and cities have significant proportions of housing stock with no off-street parking, so the availability of public charging will be vital to support the shift away from petrol and diesel. For example, Coventry now has around 400 publicly available charge points with ambitions for hundreds more, and per head of the population is one of the most densely covered places in the UK.

In another example, Nottingham City has a scheme running which purchases and leases out (at a reasonable rate!) electric vans to small businesses to help them understand how they can operate without petrol or diesel vehicle. It's an exciting approach, albeit still small at this stage, but it shows the influence councils can have in areas they've not traditionally been active in.

### **Target longer-distance journeys**

Although there has always been a requirement to collaborate across borders, LTPs have tended (rightly) to focus on improving things for residents making relatively short trips.

From the Midlands Connect research, we found that around two-thirds of emissions come from trips which cross at least one boundary (either in/out or through). However, there was a difference between city and

shire authorities, where the figure is 75% for more rural areas (influenced heavily by the presence of the strategic road network); but even for cities, around 50% of emissions come from trips which cross their boundary.

This shows that there is an opportunity for LTPs to widen the scope of emissions they can influence by close working with their neighbours to collaborate on initiatives outside of their boundaries. This is where first and last mile initiatives play a part, particularly accessing and egressing the rail network. There is a decisive role for sub-national transport bodies to play here, but ultimately the initiatives will need to be driven by their inclusion in LTPs.

### **Behaviour change is vital – on all scales.**

Our research at Midlands Connect suggested that even using an assumption which accelerated the take up of ultra-low or zero-emission vehicles at a highly ambitious rate (perhaps even slightly on the implausible side!), the decarbonisation trajectory to 2050 was still both too slow and ultimately did not reach zero. Therefore, there is a gap to fill, either extensive (if alternative fuels are not taken up quickly enough) or, at best, one which still requires substantial changes in the way we move and how much we move.

Therefore, local authorities will require comprehensive policies and plans to influence travel behaviour and manage demand for short and, importantly, longer-distance journeys.

Nothing in the DfT's Transport Decarbonisation Plan suggests a national policy is on the horizon. So local authorities may need to fill this gap and consider making potentially tricky political decisions to use fiscal measures to reduce travel demand.

I am not trying to be evangelical here. We live in the countryside in a two-car household, neither of which is electric (I promise that our next car will be!) and although we work from home when we can, we still drive a lot. But, like a lot of households, we can do more.

### **With new thinking, LTPs can do more**

Although the evidence tells us that carbon emissions are predominantly not a 'local' transport problem, there are ways that authorities can widen the scope of emissions that their LTPs are trying to influence.

The first thing to do is to understand the problem properly!



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