

Helping people, cities  
and economies thrive

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**Spotlight**  
Meeting the  
world's growing  
infrastructure  
investment needs

**Climate change**  
Adapting to a  
climate resilient  
future

**Movement Matters**  
Exciting new series  
of inspirational  
events

# The Review

European Edition  
Issue 52  
October 2019  
[steergroup.com](http://steergroup.com)

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# MM Movement Matters

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To attend any of our Movement Matters events register at:  
[www.steergroup.com/events](http://www.steergroup.com/events)

**Movement Matters is a series of inspirational thought leadership events exploring new ideas about places, people and economies. Drawing on experience from leaders from around the globe, these sessions provide a burst of fresh thinking and a great opportunity for industry networking.**

**Read more about our programme of events across the UK, USA and Canada.**

## INFRASTRUCTURE INVESTMENT FOR A NEW ECONOMY

**London, UK**  
27 November 2019

This high-profile event centres around the recently launched Infrastructure Finance Review following the Chancellor's announcement of the PFI/PF2 mechanism ending. In advance of the consultation findings being reported, we have created a forum to debate how to increase the flow of infrastructure investment with a particular focus on the key trends influencing our economy, such as:

- Technology changes
- Brexit
- Climate change adaptation and prevention
- Security and resilience

With these influences impacting on trade, logistics, industry and the economy, the infrastructure project pipeline is going to change dramatically over the short-to-medium term, resulting in projects that are complex, have significant technological risks and are likely to be large in scale.

As such, these projects are likely to require effective partnerships between the public and private sector where risks are carefully shared and move beyond previous public procurement models.

We have seen this work well in sectors such as offshore wind, where Government set the framework to allow a market to develop and thrive, so how can this successful model be applied to other sectors?

### Invited speakers and perspectives



**Shona Henderson**  
Head of transactions services, IPA  
Exploring the policy-making perspectives of the IPA needs and its implications for delivery capabilities.



**Deborah Zurkow**  
Global head of alternative investments, Allianz  
Offering a financial institution's perspective on investing in infrastructure in an increasingly uncertain and dynamic environment.



**Howard Dawber**  
Managing Director, Strategy, Canary Wharf Group  
Presenting the practical insights of a developer looking to finance the delivery of infrastructure to support their estate investment.



**Andy Mitchell CBE**  
CEO, Tideway  
Adding his experience of delivering major infrastructure projects using complex finance structures to meet anticipated needs in the global city environment.



**Jeremy Westlake**  
Chief Financial Officer, Network Rail  
Offering the perspective of an operator of a network, and exploring what infrastructure delivery and management in the future will require from public funders and private financiers.

## ALTERNATIVE DELIVERY MODELS

**New York, USA**  
Spring 2020

Industry experts will talk about alternative models for financing and delivering infrastructure projects and their potential for take-off. They will consider private sector delivery as well as public involvement, and will try to provide an answer to questions such as how best to manage the risks and impacts of change and how to increase the confidence from design to operations to ensure whole life value for money.

## CHANGING TRAVEL BEHAVIOUR

**Los Angeles, USA**  
Spring 2020

In LA, where funding is being poured into transport infrastructure, is the motto 'build it and they will come' enough? As we continue to plan for transit-oriented districts and make strides in reducing physical barriers, should we also be thinking about how to create lasting behaviour change, increasing transit ridership and decreasing single occupancy vehicle travel? Our panellists will discuss mobility shifts and how to capture the greatest return on the region's investment.

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# Welcome

Welcome to the latest edition of the Steer Review.

Infrastructure investment is critical to economic growth and the development of cities, but the challenge of how we can increase the flow of infrastructure investment, still remains. With key trends influencing our economy, such as; technology changes, climate change adaptation and the large impact on trade, logistics, and economic changes that Brexit poses, we explore the 'infrastructure gap' and how Steer is gearing up to play its part.

In this issue, we also explore our ambition to stretch beyond transportation into other related sectors such as, energy and climate change. We investigate the different challenges women in cities face with public transport facilities, and the solutions to make cities more gender inclusive. Alongside thought pieces and project insights, we bring you a compelling interview with Sofia Athanassiou from Connect Plus M25, offering a global look at her current transport challenges and opportunities.

Finally, I would like to invite you to join our series of global thought leadership seminars, Movement Matters. In their third year, these popular seminars take place across UK/Europe, North America and Latin America, and bring together industry experts to explore new ideas about places, people and economies.



Hugh Jones  
CEO

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trading as Steer, 28-32 Upper Ground,  
London, SE1 9PD, UK.  
Tel. +44 (0)20 7910 5000  
Email: [marketing@steergroup.com](mailto:marketing@steergroup.com)  
Website: [www.steergroup.com](http://www.steergroup.com)

## New faces



**Jonathan Thurlwell**  
Associate Director

Jonathan joins Steer to develop a new line of business focused on energy regulation. Jonathan has 24 years' experience in the energy and utility markets providing market design and regulatory economics advice to governments, national regulatory authorities and energy utility companies.



**David James**  
Associate

David joins our London office to form part of our new energy regulation line of business. He has over 30 years' experience in the energy and utility markets, providing regulatory advice, capacity-building support and economic and financial analyses to governments and private sector entities internationally.



**Karen Letten**  
Associate Director

Karen joins as an Associate Director leading the European Rail market at Steer. Karen has liaised with other international railways on successive projects to consolidate the Eurostar and Thalys businesses, and has extensive experience working on commercial ventures and value creation.



**Colin McNicol**  
Associate Director

Colin joins as an Associate Director in our Leeds office. Colin is a chartered civil engineer with over 25 years' experience in delivering projects in the rail industry. He has previously led a rail design consultancy whilst delivering multi-disciplinary design projects.



**Rachel Brisley**  
Associate Director

Rachel joins Steer Economic Development as an Associate Director. Rachel is an expert in climate resilience, with over 25 years' experience in the private, public and voluntary sectors, working in social, economic and physical regeneration. She is well-placed to advise clients in all sectors on climate resilience.



**Raffael Massa**  
Associate Director

Raffael joins as an Associate Director in our Bologna office. Raffael has over 20 years' experience in infrastructure advisory, project financing and business modelling. He brings in-depth industry experience in the energy, aviation and transportation services sectors.



**Jamie Morgan**  
Associate

Jamie joins Steer Economic Development, with over 20 years' experience working across the fields of economic development and investment appraisal. He will support local economic competitiveness and lead economic development work in the Midlands, South East and across the rest of the UK.



**Jody Tableporter**  
Associate

Jody joins Steer Economic Development as an Associate, with over 30 years' experience working at the interface of economic repositioning and physical regeneration. Jody brings expertise in regional growth initiatives and economic strategies. She will establish Steer ED's southern practice, providing strategic advisory services to clients.

## Looking to move?

If you are considering your future and are looking for somewhere to make a real difference, Steer has much to offer. The firm continues to grow in Europe, Asia and the Americas. To find out about the opportunities we have to suit you, visit our website:

[www.steergroup.com/careers](http://www.steergroup.com/careers)

# Company updates

## New climate change and energy offer

We are delighted to be expanding into the sectors climate change and energy, which have clear and connected interfaces with transport.

We welcome Rachel, an experienced climate resilience consultant to help grow our presence in this new sector; playing an important role in the diversification and strengthening of our global offer.

We also welcome two experienced energy sector professionals, Jonathan and David, whose remit at Steer is to grow our energy and utilities market. Together, they will lead our new Energy Regulation team, who will grow a successful business, providing leading advice and expertise to energy and utility sector clients. Initially, the team will focus on key energy and utility clients, particularly existing relationships, and selectively target key frameworks and opportunities. The team are also keen to explore areas for collaboration within the wider Steer group, given the convergence between the energy and transport sectors.

## Steer celebrates milestone anniversaries

This year, our offices in Italy, Colombia, and Mexico are celebrating milestone anniversaries. The Bologna and Colombian office is celebrating their 20th anniversary and Mexico is celebrating its ten-year anniversary.

We would like to take this opportunity to thank all our clients and partners for the projects we have done together, and will continue to do together in the near future.



## The Steer R&I programme continues

At Steer, we actively invest in developing new ideas and ways of working through our Research and Innovation programme. We encourage our staff to think creatively about their work and how we can help our clients maximise opportunities.

Recent significant successes for our R&I programme include: widely reported research about the effect of AVs on urban design; software for recording the movement of pedestrians through spaces such as stations; and research on the value of train numbers on tickets and timetables.

Our R&I Club meets every two weeks and allows anyone to bring ideas, problems and solutions for debate. We've held almost 160 R&I club meetings and our booklet describing 32 of our favourite R&I projects carried out since the Club was established, can be downloaded here: [www.steergroup.com/about/research-innovation](http://www.steergroup.com/about/research-innovation)

Our latest showcases and innovations were presented by our consultants at our London and Leeds Movement Matters event in summer, where we explored:

- the effects of long-term trends on travel demand
- understanding the impacts of timetable design and autumnal effects in rail performance and forecasting;
- the implications of a cashless society;
- further evolution of the Steer Urban Dynamic Model and land use and transport impacts
- the changes to the urban form and public realm in the age of the driverless car; and
- mapping potential PPP opportunities in Mexico.

You can find out more about our previous Research and Innovation events here:

[www.steergroup.com/events/movement-matters/research-innovation-showcase-leeds](http://www.steergroup.com/events/movement-matters/research-innovation-showcase-leeds)



# Driving subtle change to electricity regulation

By Jonathan Thurlwell

Electricity, with monopoly elements, has been a regulated industry since it was restructured and unbundled from the 1980s onwards. The regulatory frameworks and market structures have evolved since then, which has helped the industry in most jurisdictions to decarbonise successfully. However, wider decarbonisation objectives, particularly for transport, will have an impact on the sector and raise new questions of its regulatory framework.

Electric Vehicles (EVs) are seen as a key element in the decarbonisation of transport. However, expected take-up of EVs could be hindered by consumers' concerns around cost and the convenience of recharging. Governments face questions of regulatory approach and how the recharging infrastructure should be provided. For example, should investments be subsidised or provided by customers of electricity utility companies. This article identifies the type of infrastructure required to recharge EVs and considers how the regulatory approach might have to evolve to facilitate this investment.

In most countries, the infrastructure required to recharge EVs already exists in terms of an electricity system consisting of a complex network of interconnected generating plants and transmission and distribution wires owned by private and/or public entities. Nevertheless, widespread adoption of EVs will require investment in:

- **Electricity generation** – New capacity will be required to serve the additional electricity demand, particularly if EVs draw electricity from the system during peak periods, although this can be mitigated by encouraging charging at a time when existing capacity is underutilised.
- **Distribution network upgrades** – Additional connections, upgrades or reinforcement may be required to regional distribution systems. The extent of this will depend on existing capacity, the density of EV owners in a local region and the type of charging undertaken. Again, this can be mitigated by encouraging charging at times when the network is underutilised.

- **Charging infrastructure** – EVs can be connected to the network at a variety of locations using either slow, fast or ultra-fast chargers. EV users can also be categorised as residential (where charging is undertaken at the home, en-route or at destination) or commercial (e.g. fleets of EV vans or buses). For residential users, the home is expected to be the principal charging location, although public ultra-fast charging could be a necessary component to enable widespread adoption.

- **Infrastructure to enable time-variable or "Time of Use" pricing** – Key enablers for such pricing include smart meters that collect real-time electricity usage data, and the two-way digital communication infrastructure between the meter and the retail supplier, network operator and other authorised third parties.

The high-level regulatory framework will not be changed solely to accommodate EVs. However, to facilitate the investment required to drive the growth of EVs, authorities may need to consider their regulatory approach:

- **Generation** – New demand from EVs will trigger investment in new generation in the same manner as any other source of electricity demand. This suggests no change in regulatory approach.
- **Distribution** – Such infrastructure is characterised as a natural monopoly and is often price-regulated. The load imposed on the network by individual residential connections will be marginal, though collectively they could prompt the need for an upgrade. This implies the continued adoption of the regulatory principle that the costs related to such upgrades should be spread across the customer base and socialised. For commercial connections and upgrades, which individually can impose much greater loads, the principle that beneficiaries should pay for the costs for which they are directly responsible would apply, although the authorities may consider offering subsidies if this approach discourages EV take-up.

- **Charging infrastructure** – At home or vehicle depot, the principle that beneficiaries bear their direct costs would apply, and users would be expected to pay for their charging systems (although subsidies may be required to encourage take-up). Recovering the cost of public charging infrastructure is more complex. The infrastructure could be owned by (i) the government/local authority; (ii) the network; or (iii) private entities. Ownership or involvement in the business by the network may be problematic due to its monopoly position – regulatory intervention may be required to ensure non-discrimination between providers. Ownership by the public sector could disadvantage private entities if the former is subsidised by the taxpayer. As each approach may have a different impact on the growth of EVs, it may be prudent to keep regulatory intervention to a minimum to allow infrastructure solutions to develop.

- **Smart meters/communications infrastructure** – Many countries are already rolling out smart meters and related infrastructure for reasons unrelated to EVs. However, additional technology which enables communication between the charging equipment and the meter may be required to enable EV-specific pricing and to facilitate possible future vehicle-to-grid systems. Key questions are whether all EV owners should be required to have this technology, and who should bear its cost. Again, given that this technology is at its formative stage, it may be prudent to keep regulatory intervention to a minimum.



To find out more, contact:  
[jonathan.thurlwell@steergroup.com](mailto:jonathan.thurlwell@steergroup.com)

# Climate resilient future

By Rachel Brisley

**Climate change is no longer something that might happen in the future. It is happening now and bringing major challenges to economies, communities, infrastructures and places across the world. Its impacts will be wide-ranging and irreversible.**

This year, climate change and its impacts have risen up the political, economic and societal agendas. The hottest temperature ever recorded in the UK (38.7°C) was in Cambridge in July, bouts of intense rainfall led to flooding across the UK and contributed to the Toddbrook Reservoir emergency, and extremely high temperatures were experienced across southern and northern Europe leading to wildfires and health emergencies.

Despite the UK Government's commitment to achieve zero carbon by 2050, and initiatives such as the Clean Growth Strategy, the Committee on Climate recently reported that the UK government is not doing enough to reduce emissions - even to meet the previous lower target. The Committee also raised concerns about our ability to prepare for increases in temperature and associated impacts such as heatwaves, flooding and water scarcity. We have also had messages from Extinction Rebellion and from Greta Thunberg that the time to act is now, not at some point in the future. Numerous local authorities, as well as the UK government, have declared climate emergencies.

## Impacts for economies, places and infrastructure

Extreme weather events present a challenge to the resilience of our infrastructure now, and this is likely to increase in the future. Record temperatures earlier this year led to railway tracks buckling, overhead lines sagging and road surfaces melting. Flooding temporarily closed the West Coast Mail Line between England and Scotland in August, causing major disruption to passengers, and lanes were closed on key arterial routes, causing lengthy delays.



While our infrastructure operators are increasing the resilience of their assets and operations to current weather and future climate change, these recent events have shown the disruption and knock-on effects for lives and livelihoods that can result from extreme events.

The human costs from extreme events are far reaching with the mental health impacts of flood events widely recognised and the health impacts from extreme temperatures, whether hot or cold, leading to increased mortality and major costs for the NHS.

Financial institutions are also increasingly aware of the potential changes that climate change impacts and reducing emissions could have for the way that the economy functions. Investors will need to shift away from carbon fuels and banks and insurance companies could face substantial losses.

## Steer taking up the gauntlet

At Steer, we are supporting businesses to become aware and resilient through strategy, action, investment and insurance, while also recognising the need to both reduce our contribution to climate change and prepare for its impacts.

Climate resilience is increasingly becoming embedded in economic and infrastructure planning, and we are developing a forward plan to ensure that climate resilience is prioritised in all of our projects. We understand climate science and can explain this science in a way that is accessible to non-technical audiences and relevant to their interests. We can help organisations identify the risks they face and measures they can take to adapt to these risks, as well as enhancing their adaptive capacity, using tools such as the recently published international standard on adaptation to climate change (ISO 14090).

We are committed to developing climate-resilient places, infrastructure and economies in the UK and internationally and look forward to providing future updates on progress.



To find out more, contact:  
**rachel.brisley**  
**@steergroup.com**

# Electric buses: is now the right time?

By Marco Concari and Fabrizio Carippo

Several Governments have a stated ambition that a majority of their urban buses should meet zero emission standards by 2030, contributing to a cleaner environment. This has created much interest in the electric mobility sector, although initiatives to translate the objectives into concrete reality often remain modest in scope. The big question is the optimum timing for change; is it better to invest in electric buses (e-buses) now, or to wait for more developed products from bus manufacturers?

Of the various alternative fuel technologies currently available, the e-bus market is the most developed. There are increasing numbers of e-bus schemes in operation across Europe, although many remain small pilot fleet schemes. Bus manufacturers perceive an opportunity and most now have at least one e-bus product. As a result, a wide range of vehicle sizes and capacities are becoming available, and there is significant investment to develop new products with improved performance. However, several interdependent factors need to be considered when assessing the viability of using e-buses. These relate to the operational factors for the service (daily mileage and operational patterns) and technology factors (maximum range of vehicles and available charging solutions).

The characteristics of the on-board batteries fitted are the key drivers in an investment decision, since the battery cost accounts for almost 50% of the cost of an e-bus. The practical battery capacity has a direct effect on the realistic operating distance between battery charging. Notional energy capacity of a battery does not correspond to the total energy available for use: to maintain the health of the battery, around 30% is non-usable if the battery is to retain the ability to keep the charge. Of the remaining 70%, it is recommended that the battery of an e-bus should never be discharged below 15%, to avoid the possibility of getting stranded away from a charging point in the event of disruption.

There are several common types of battery, each of which offer different performance characteristics. Some can only be charged overnight at depots, while others can also receive fast charging during the working day of the bus (usually at a route terminus). Certain battery types are better suited to specific service patterns.

The charging strategy has to be considered in advance of any investment decision, as the charging infrastructure is the backbone of



electric mobility. Substantial capital expenditure is required to create charging infrastructure to support an e-bus fleet. Hence, understanding the charging requirements is critical to making the best investment decision.

The success of the e-bus transition depends on multiple factors such as the technical specifications, the cost of different charging technologies, the capacity of the electricity distribution network, the bus specifications, the operational (service) characteristics, and the charging infrastructure space requirement.

Although interest in e-bus use is high across Europe, many service providers are not currently familiar with the requirements for e-bus operation and charging technologies. They may have limited technical and commercial know-how to inform critical investment decisions. There is still great uncertainty about e-bus market development, in particular related to operation, finance, charging infrastructure development and technology adoption. Anticipated declines in battery cost and potential increases in battery capacity could encourage authorities and operators to delay investment

decisions in the hope or expectation that the technology options will become more stable over time.

Steer has undertaken extensive research, enabling us to understand the market and emerging trends. We have developed a modelling tool which will help city operators to assess alternative technical solutions and select the optimal solution to meet their specific requirements. The output of the model includes calculations of the total cost of ownership (TCO), including capital and operating costs over a period of time (typically the expected life of a bus), and provides comparison with equivalent costs for conventional diesel or natural gas buses.

To find out more, contact:



**marco.concari**  
**@steergroup.com**



**fabrizio.carippo**  
**@steergroup.com**



# Mind the gap: meeting the world's growing infrastructure investment needs

By Matt Bull

Well-designed, delivered and functioning infrastructure is crucial to achieving economic growth and prosperity in both developed and emerging economies. However, despite these demonstrated benefits, investment in infrastructure is lagging and has been particularly slow to recover since the global financial crisis. The Global Infrastructure Hub (an initiative of the G20) estimates that the world is now facing a \$15 trillion gap between projected investment and the amount needed to provide adequate infrastructure provision.

This 'infrastructure gap' has the potential to worsen as climate change, technological change, and increasing urbanisation will place further pressures on existing infrastructure. Governments and international institutions (such as the UN and World Bank) are increasingly aware of the growing scale of this challenge and are mobilising to direct more resources to addressing it.

Steer is gearing up to play its part by continuing to build our financial advisory capability in the infrastructure space to provide solutions to both public sector and private sector clients seeking to access investment in their infrastructure projects and businesses. Working as part of cross-discipline teams with our engineers, economists and planners, our financial advisory professionals provide a range of services that are crucial in unlocking investment in projects and businesses.

### Project Preparation & Structuring

A major obstacle to increasing infrastructure investment is the perception that there is an insufficient pipeline of high-quality, well-prepared projects being brought forward by governments. Governments need high-quality advice to ensure the long-term success of the project but also to ensure knowledge is transferred to the client allowing a programme of subsequent projects to be developed.

The importance of high-quality project preparation is perhaps most striking when governments are seeking private investment in their projects through Public Private Partnerships (PPPs/P3). Private investors subject projects to stringent due diligence to ensure that stable returns are achievable against an acceptable risk profile. Failure to prepare a project that does not meet investor expectations or alternatively does not provide value for money for the taxpayer has the potential to lead to costly failures in procurement and delivery.

Our experts have vast experience of working for both the public and private side on a range of global PPP/P3 projects. This 'dual-side' experience is important to our offer and provides us with a unique perspective on the deal structuring challenges that always face national, regional or local governments.

### Raising Finance & Transaction Services

As demand for their services continue to grow, infrastructure businesses are frequently considering ways by which they can finance much-needed expansion and improvement of their assets. Infrastructure businesses are therefore frequently exploring a range of financing mechanisms to provide the cash and assets to meet their growth aspirations. This includes bond issuances, share offerings, acquisitions and asset disposals. This is accompanied by a growing interest in investors in infrastructure as an asset that can provide long-term, stable and inflation-proof investments, particularly institutional investors such as pension funds and insurers. The combination of these factors has led to a very active corporate finance market in recent years with significant global deal flow.

Steer has been a key player in supporting clients in this market place, particularly through our due diligence services that has seen us recently ranked number one in the Inframation league tables for transaction advisors. We are increasingly expanding our offer in this space to provide more financial advisory services, this includes complex financial and business modelling, valuation and assisting with the finance raising process. We also provide financial model review services to provide third-party assurance around a project or business' financial forecasts.

### Regulatory Finance

Long-term, sustained investment in infrastructure at a reasonable and affordable cost is only possible if there is a stable regulatory environment in place. Transparent and fair economic regulation of infrastructure, particularly large, natural monopolies is crucial in providing comfort to investors that the prices charged to customers will remain reflective of the costs of developing and maintaining the assets and the risks for which investors are exposed to.

Regulating these assets is complex requiring in-depth understanding of the relevant pricing mechanisms and detailed analysis of the finances of the regulated entities. Likewise, regulated companies require support in complying with these regulations and optimising their revenues within the regulatory constraints.

Our financial experts work alongside our regulatory economists to provide a range of quantitative services to this market including financial modelling and assistance with price controls and determinations.

We have highlighted below three case studies showcasing our breadth of experience, across our global financial advisory services:

### Anillo Vial Periférico – Peru

Steer has been appointed by Proinversión, the Peruvian investment promotion agency and infrastructure project promoter, to advise in the financial structuring, demand forecasting and technical due diligence of a large PPP urban toll road in Lima. This is an example of an engagement where our financial specialists work alongside our economists, technical experts, engineers and planners to provide a holistic solution to governments so that they can bring a well-structured and well-prepared project to market and thus maximise the chances of leveraging private investment into the country's infrastructure. Our work includes shadow bid financial modelling, development of the project risk allocation and value for money analysis, structuring of the public funding contribution (through a complex bond instrument) and assistance in negotiation with the bidders for the project sustainable partnerships with the private sector.

### Airport privatisations and transactions

Steer has extensive experience providing advice to international investors (buy-side), governments and development institutions (sell-side), and lenders on airport privatisations across all major geographical regions. Taking the buy-side as an example, our typical support would cover opening on all technical and business plan issues, and evaluating information provided in data rooms as well as through third party sources to create long term traffic, aeronautical and non-aeronautical revenue, and capital and operating cost forecasts to support the bid. Through developing operating and operational models to best practice standards, we are able to test the robustness of these forecasts against a battery of stress tests. Combining this with the financial knowledge of our team members enables us to have fluent discussions with financial advisers and play a key role in helping shape the structure of cash flows to optimise bid parameters.

### Control Period (CP) 6 Charging Review

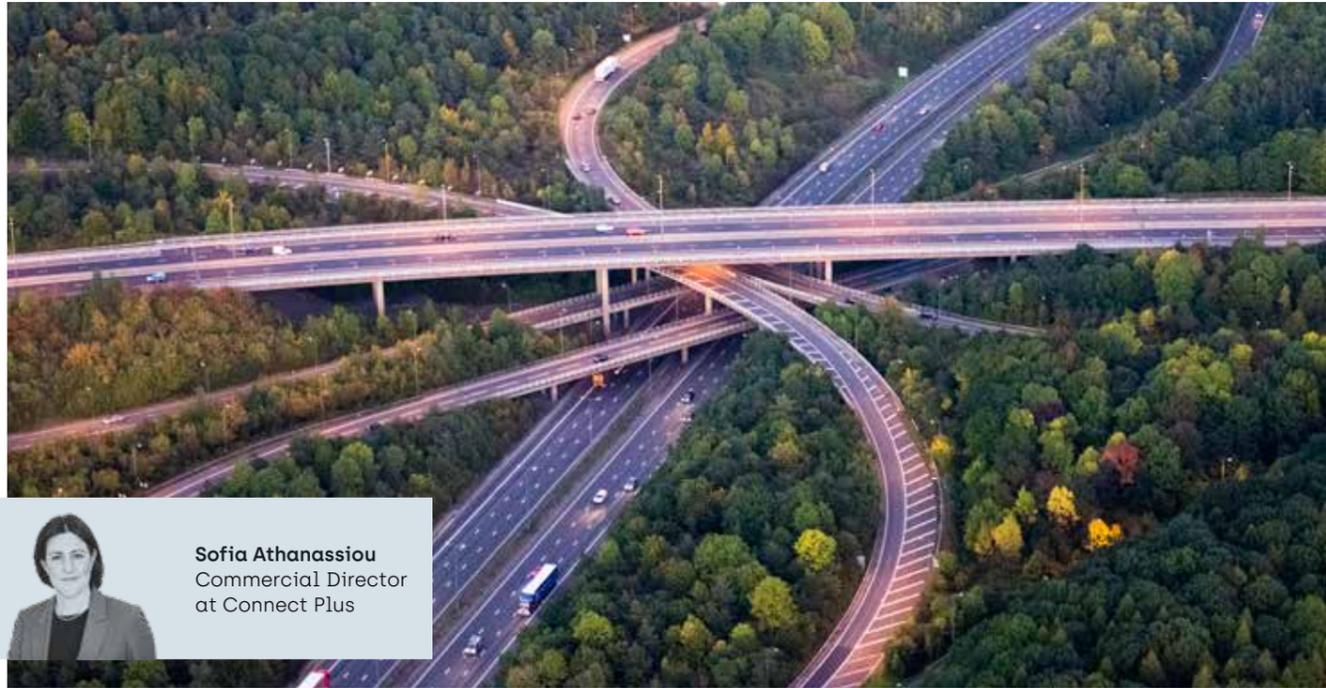
Steer is lead technical advisor to the UK Department for Transport (DfT) in its implementation of the change to regulated track access charges and performance regime payments from franchised train operators to Network Rail during CP6 (2019-2024). Periodic reviews are one of the principal mechanisms by which the UK's rail regulator (ORR) holds Network Rail, the owner and infrastructure manager of UK's rail network, to account and secures value for money for users and funders of the railway. Through the recent 2018 periodic review, ORR determined what Network Rail should deliver in respect of its role in operating, maintaining and renewing its network in the next control period (CP6) and how the funding available should be best used to support this.

Our work involves estimating the impact of the change using the contracted financial models submitted by franchised operators, developing methodology and calculating revised inputs based on the new price lists and supporting DfT in negotiations.



To find out more, contact:  
**matt.bull**  
**@steergroup.com**

## What is it like to work on one of Europe's busiest motorways?



Sofia Athanassiou  
Commercial Director  
at Connect Plus

**The M25 around London is one of the most important roads in Britain, first conceived in 1944, building work began in the 1960s, some sections were opened in 1975 and the final section was opened by then Prime Minister Margaret Thatcher in 1986. The longest orbital road in Europe at 117 miles (188 km) serves five counties and is integral to supporting the 328 billion miles a year the nations' drivers travel.**

Sofia Athanassiou is Commercial Director of Connect Plus (CP) the company comprising Balfour Beatty Investments, Egis Projects and Edge Orbital which is delivering the M25 Design, Build, Finance and Operate (DBFO) contract. CP began in 2009 and when it was awarded by the Secretary of State through the Highways Agency, now Highways England (HE), was the largest ever HE contract at £6.2bn. Sofia is a formidable role model for female engineers and was awarded the WICE (Women in Construction and Engineering) Best Woman in Highways award in April 2019 helping her to be more visible, challenge the preconceptions around engineering and promote the construction and engineering sectors as an attractive career for all.

Originally from Greece, Sofia followed in her mother and father's footsteps by gaining an engineering degree. Sofia then took an MSC in transport in the UK and began her career at Steer, whilst

also studying for an MBA. At Steer, Sofia developed her highways expertise working on projects throughout the world, leading teams developing traffic and revenue forecasts for promoters, bidders and funders of highway schemes.

With Balfour Beatty since 2006 and seconded to CP since 2018 Sofia provides leadership across an incredibly complex environment of many stakeholders, including Highways England, CP's shareholders, CP's framework contractors and their wider supply chain, CP's operator and consultants. CP's scope covers 150,000 assets in 14 asset categories, 440 linear km and 1750 structures (including 5 tunnels and 56 strategic assets), including operating and maintaining the Dartford crossing. Sofia is working closely with Highways England to ensure that significant future schemes, such as the Heathrow expansion and Lower Thames Crossing, benefit from CP's asset management expertise and importantly making sure that CP's contract variations to account for such schemes are developed efficiently and are fair for all parties involved.

The culture being nurtured on the M25 contract, against the current turbulent political and economic climate, is one of making a step change away from adversarial commercial practices to a more sustainable and value-driven collaboration model. Sofia describes this

approach, "the way we have approached the M25 DBFO contract in terms of harnessing efficiencies through supply chain collaboration and integration is an opportunity to bring about a much needed cultural change in the industry and a more efficient, productive and fulfilling way of working together, with a focus on whole life value". Sofia's enthusiasm is infectious as she elaborated further, "we need to promote technological advances, incentivise innovation and most importantly be flexible to support changes to the network for the benefit of customers".

Having faced bias herself Sofia works to change the startlingly low numbers of women (11%) in her industry, also supporting Balfour Beatty's drive to improve diversity and inclusion in the sector. "It is not a secret that the construction and engineering sectors suffer from a lack of diversity, with women and ethnic minorities being significantly underrepresented. This is ethically wrong, a huge loss of opportunity and a big risk to the industry's sustainability. We need to change the culture of the industry and the working practises (including inflexible hours), challenge the misconceptions surrounding the role of professionals in the industry and raise the kudos of engineers; therefore projecting a modern industry profile." Sofia's career is a great example to instigate these changes.

## Open access on the verge of success?

By Karen Letten

The European Union's first three legislative railway "packages" liberalised international freight from 2006, domestic freight from 2007, and international passenger services from 2010. The fourth railway package, adopted in 2016, will liberalise domestic passenger services from December 2020 by permitting "open access" throughout the EU, subject only to a test that these services do not affect the "economic equilibrium" of a supported Public Service Contract (PSC). The need to prepare, means that operators are already declaring plans to operate open access services.

In Spain, Arriva has regulatory approval to operate an open access service linking A Coruña, Santiago de Compostela and Vigo, with an extension to Porto in Portugal. In France, Spanish operator Renfe has expressed an interest in operating services between Lyon and Marseille. This may be because there is little or no spare capacity on routes into Paris. Renfe has yet to announce a firm start date for services.

In practice, however, experience of open access to date has been mixed.

In Italy, in 2012 open access operator Italo introduced its own fleet of high-speed trains to compete with national incumbent Trenitalia on the north-south high-speed line. Italo is still expanding and claims that entering the market has resulted in over 50% more services, an average 40% reduction in fare and a 30% increase in rail's overall market share.

In Germany, in contrast, former operators Locomore and Hamburg-Köln-Express GmbH (HKX) struggled for viability. Today their train services continue under the FlixTrain brand. In Austria, open access operator WESTbahn is reducing its services, but still plans to operate a half-hourly service between Vienna and Salzburg service from December 2021.

Operators proposing new services are studying these successes and failures, but some clear lessons are emerging.

First, potential operators need strong financial backing, because they take on full commercial risk. It can take many years to introduce services and to make an operating profit, and incumbent operators may respond to competition by reducing fares and, in some cases, improving their own services.

Second, new entrants need to identify the right commercial opportunities. To date, these have tended to be in underdeveloped long-distance markets, where there are enough passengers to fill trains which offer



high commercial speeds by focusing on a limited number of stops.

Third, keeping costs down is important. Financially successful open access operators have maintained a low-cost model, irrespective of the positioning of their service offering.

Fourth, there can be high barriers to entry, including the need to lease or buy rolling stock approved for use on the relevant network. This was an issue for Arriva's Drielanden service aimed at connecting Liege in Belgium with Aachen in Germany via Maastricht in the Netherlands. At the time of writing of the present article, Arriva was still waiting for the authorisation to operate in Belgium.

Fifth, there is a need to find the train paths needed to operate a package of services which uses trains efficiently and offers attractive journey times and stopping patterns to passengers. This can be difficult if infrastructure charges are high or the infrastructure is full, particularly on potentially attractive routes such as the main lines to and from the capital, as Renfe has found in France. A further complication is that some infrastructure managers use simple priority rules, which may not allocate capacity in a way which

maximises the benefits to passenger and freight customers in the longer term.

Sixth, effective regulation is important, not only in relation to access charges and capacity allocation, but also to be able to deter or prevent anti-competitive behaviour by incumbents, including cutting fares to unprofitable levels to drive out competitors.

Seventh, where possible, entrants should focus on markets with healthy competition, particularly those where incumbents see competition as a lever to increase efficiency and quality within their own. Renfe's CEO Isaias Táboas Suárez is positive "We're not afraid of competition".

It seems likely that at least some new open access operations will emerge in the next few years, using local variations on models which have already worked elsewhere. What is less clear is the extent to which this will generate the innovations needed to allow open access to expand into a wider range of markets.



To find out more, contact:  
karen.letten  
@steergroup.com

# The future of parking in the evolution to autonomous vehicles

By Anita Mauchan

The effects of Connected and Autonomous Vehicles (CAVs) on parking will depend on the adopted ownership model, public policy and demand. If privately owned, the number of car parking spaces could be equivalent to today's number, or slightly increased due to higher mobility rates, but if shared ownership prevails, fewer vehicles will require parking. Notwithstanding the ownership model of the future, CAVs can be parked more efficiently and consume less space, reducing demand for parking close to one's destination.

What will this mean for those who invest in parking assets, operate car parks, plan new developments and operate CAV fleets?

## Who will feel the impact?

We have identified four broad groups of parties that will be affected by the changes to parking which will arise with the roll-out of CAVs. This includes investors/owners, car park operators, real estate developers and CAV fleet operators, all affected in different ways. The challenges and new opportunities available to each will vary according to asset location, profitability and services provided at each parking facility. These factors will also impact the rate of change of parking provision and implementation of new technology.

## Location, location, location

The widespread take-up of CAVs will greatly impact the spatial distribution of existing and future parking asset.

- For investors/owners and operators, existing assets may no longer be profitable due to their location and/or improved capacity resulting from CAV technology at nearby car parks. Underutilised assets could be converted for alternative purposes or diversified to offer a broader set of services [such as servicing, charging, holding areas], to CAV fleet owners depending on location.
- For developers, parking lots could be relocated to cheaper land (subject to planning consent), away from real

estate developments and arrival locations, or at an optimised location within the development. With less need for parking, integration of adequate pick-up and drop-off facilities across real estate will be critical. Minimum parking requirements at new developments could also be abolished.

- CAV fleet operators will be looking to find the optimal location to service, charge and hold their vehicles to ensure maximum availability and minimum time wasted without a fare.

## Evolving needs and profitability

Since the capacity of parking areas will increase, for some operators parking revenues might also increase, depending on location. At the same time, upfront investment will be required to attract customers beyond simply location, and merely safeguarding your car while you are busy elsewhere, and will need to evolve to offer a range of new services, such as EV charging points, servicing/cleaning and secure delivery of online shopping to your vehicle.

Digital infrastructure will be critical to enable occupancy to be monitored and managed. It is anticipated that the majority of investments in the parking industry will go to improve efficiencies in parking. This will include integrating low-cost technology solutions to streamline and improve the customer experience through the smartphone and the connected car.

- There will be opportunities for investors/owners and operators to diversify their service offer and potential to stratify their services to cater for a range of ownership models: from high-end private CAVs to low-cost fleet servicing contracts.
- Developers will need to incorporate flexibility in the design and configuration of parking infrastructure [to accommodate new technology, higher vehicle capacity and potential change of use in case of local overprovision]. Their chosen designs and locations for parking facilities will optimise commercial attractiveness.



- CAV fleet operators will seek parking which caters to their needs, in the locations of their choice, and at an attractive cost. Indeed, CAV fleet operators may even become asset owners and developers themselves. We could see parking assets purchased by Uber or Google, abstracting revenue from public and private owners/investors.

Impact on revenues will largely depend on the eventual CAV ownership model, location, capacity, and ability of investors/owners and operators to diversify services and make technological upgrades. If shared-multiple occupancy usage increases over time, less capacity for car parking will be needed – this will lead to overprovision and potentially reduced revenues at locations which find it difficult to diversify, such as airport car parks. However, shared/fleet ownership of CAVs also offers the potential to move towards fleet contracts and revenue guarantees against service Key Performance

Indicators (KPIs) targeted at operators of optimally located parking lots.

## The Last Word

It is clear that the introduction of CAVs onto our streets will significantly impact the future of parking. This impact will be felt most prominently in our urban areas. Investors/owners, developers and CAV fleet operators should be looking to understand and monitor this market now, so they can move to optimise their investment. Transformation will, however, take time; assets will need to be designed with flexibility in mind in order to react to changing future demands for parking provision.

There is likely to be a movement, away from parking managed in isolation, to partnership arrangements leveraging enhanced opportunities to satisfy the changing needs of the market, such as enhanced service offerings and fleet contracts. Owners/investors and operators should be proactively looking for partnering opportunities as these trends are spotted. It is easy to imagine

that your future choice of CAV fleet provider will be governed by the speed by which the vehicle can reach you, and partnerships with the owners of optimal located parking with a full-service offer will be key to achieving this.

Changes to the way parking is provided and managed are likely to trigger a wider process of urban transformation, as Steer describes in "Who's Driving" available here: <https://bit.ly/2DJ0bd2>.

To find out more, contact:



anita.mauchan@steergroup.com

## News in brief

### Steer sponsors Local Transport Summit 2019

This year's Local Transport Summit takes place on 28th and 29th November at the Mercure Bradford Bankside Hotel. For the fourth year in succession, Steer is headline sponsor. Neil Chadwick, a Director in Steer's Leeds office said, "the reason we sponsor this event is because we think it is a great opportunity for local authorities, government, academia and consultants to come together and not just talk about the most pressing issues of the day, but also identify positive actions."

For more details, visit: [www.transportxtra.com/tx-events/?id=2430](http://www.transportxtra.com/tx-events/?id=2430)

### Japan Rugby World Cup 2019 advisers

Steer has been advising the Japan Rugby World Cup 2019 organisers to help understand the transport requirements and mitigation measures involved with ensuring the 2.5 million ticket holders can get to each match and home again afterwards.

The project team at Steer employed their extensive events knowledge, including their experience in planning and delivering the operation for the 2015 Rugby World Cup at Twickenham, to identify risks for the Organising Committee in Japan. Rail networks in Japan are notoriously busy so it was essential to identify where reinforcement of existing services will be needed to support each match day or where Travel Demand Management strategies were required to try and minimise background demand on the transport network. Critical to this understanding was the development of a demand forecasting tool to predict the busiest times on the local transport network before and after each of the 48 matches.



# Demonstrating the value of urban street improvements

By David Sutanto

Around the world, people and economic activity are increasingly concentrated in cities, creating increased tension in how limited space on city streets should be used. This is a valuable resource, which in many city cores can comprise more than a quarter of total land area. Conversely, it is increasingly recognized how positive changes to city streets can improve quality of life for residents and visitors. Examples include the Healthy Streets approach in London, and Complete Streets in North America. A common theme is a greater emphasis on the needs of pedestrians and cyclists, as well as the quality of the urban realm.

Moving past the outdated paradigm of designing streets around the needs of motorized vehicles can be a difficult transition. While it is easy to intuitively recognize that more livable streets make cities better places, traditional transportation appraisal tools focus on valuing changes in motorized vehicle journey times. Therefore, innovative and bespoke approaches need to be applied when seeking to capture the benefits of urban realm, walking and cycling projects.

Steer has extensive experience in developing compelling business cases for these types of projects. Our experts are adept at approaching this task in a proportionate way, that draws upon readily available data where possible. We are familiar with the range of relevant tools and techniques to quantify a range of benefits, complementing these with qualitative analysis where appropriate.

Some of the impacts that we commonly take into account when developing business cases for such projects include:

- **Health:** More walking and cycling leads to greater levels of physical activity, which can reduce mortality. This benefit is readily quantified using the World Health Organization (WHO) Health Economic Assessment Tool (HEAT). For example, we applied this tool to help make the case for a £30 million investment in cycling improvements in Kingston in south-west London.
- **Air quality:** Fewer trips in motorized vehicles can also reduce local emissions of harmful airborne pollutants. It can be difficult to monetize this benefit without expensive air quality modeling. For our business case work on Oxford Street in London, we developed a bespoke approach that innovatively combined available



data to quantify air quality impacts on pedestrians, residents and employees.

- **Ambience:** An improved street environment that is less dominated by motorized vehicles is a more pleasant place to spend time in. We often draw on stated preference surveys to estimate users' willingness-to-pay for such improvements. For example, we are currently working with New York City to conduct surveys to estimate willingness-to-pay for street improvements.
- **Local economy:** Attracting people to visit and spend more time on high streets can also benefit the local economy. For example, in our business case for Oxford Street in London, we drew on available data on retail spending, employment and land use to illustratively demonstrate how the local economy would benefit from proposed urban realm improvements.
- **Severance:** Reducing the severance caused by roads helps to bring communities together. This can be valued by using the findings of recent research that has been conducted by University College London (UCL).

- **Other benefits:** There can also be a range of other benefits that are difficult to quantify but are still worth including qualitatively. For one public realm project in a part of London hosting world-class educational and cultural institutions, we obtained qualitative evidence from these organizations on how the project would enable greater collaboration to take place. In Toronto, drawing on market research we demonstrated the benefit of the TO360 wayfinding strategy.

By drawing together various benefits of city street improvement projects, we have often been able to demonstrate that they are very high compared to the costs of such projects. This is complemented by benefits that are described more qualitatively or illustratively, that further strengthen the case. Put together in a business case, this type of economic appraisal can be used to secure funding by reassuring decision-makers that investments in making city streets better for people are worthwhile.



To find out more, contact:  
 **david.sutanto**  
 **@steergroup.com**

# How to build a nuclear power station

By David Bowers



In the last days of Theresa May's Government in the UK, a new policy was implemented targeting net-zero carbon emissions by 2050. This is a radical shift which requires fundamental changes across all parts of UK society.

This renewed emphasis on reducing carbon emissions is helping give a much-needed boost to nuclear power, but the existing nuclear power stations in the UK are reaching the end of their working lives and, of the planned new facilities, only Hinkley C has progressed to the construction phase.

So, if nuclear power is going to help reduce carbon emissions from the energy sector then a raft of new power stations is required. However, getting planning consent for these facilities is complicated, very costly and often controversial, taking many years to progress through the system. In practice, it is not the operation of the power station which provides the most significant planning challenge but the construction phase, which can take almost a decade and involve many thousands of workers living and working in isolated areas.

The planning of the Wylfa Newydd power station in Anglesey in North Wales shows how providing a sustainable transport strategy can help manage impacts and smooth the planning consent process.

The first challenge is materials. A new nuclear power station needs approximately 6million tonnes of material to be delivered. A lorry can

typically carry 20 tonnes per load, making this equivalent to 300,000 lorry movements, which would lead to large and unwanted traffic, noise and air quality problems for local residents. However, nuclear power stations need plenty of water for cooling, and so the Wylfa Newydd scheme is located next to the Irish Sea, allowing 80% of all material to be delivered by sea. To help manage the impacts of the remaining lorries, a series of bypasses is proposed around villages on the road linking the construction site to the main road network.

The second challenge is worker travel. Anglesey is mainly rural, with 70,000 residents and two main towns of Holyhead and Llangefni. The arrival of up to 9,000 construction workers suggests traffic impacts could be high if car use is permitted to dominate.

This is where matching travel arrangements with worker characteristics helps build a sustainable transport strategy. The first step is to provide on-site accommodation, in the case of Wylfa Newydd for up to 4,000 workers. This removes entirely the need for day-to-day travel to and from the work site. This accommodation will have a wide range of leisure facilities to make it an attractive place to live, and it will be particularly suitable for workers who move to Anglesey from the rest of the UK, Europe and further afield to help construct the scheme. The project also aims to provide jobs for at least 2,000 local residents as well as 3,000

additional temporary workers and a new shuttle bus network and Park and Ride facility are proposed to link local towns and villages with the construction site. These will substantially reduce the need for construction workers to travel by car. To provide an extra incentive, all cars parking at the main site will generally need to carry three workers to be allowed through the gate. This is a very high-level car sharing strategy, but the shift-based patterns of work and the location of the site at the edge of an island mean this is considered achievable, especially given the success of a similar scheme recently implemented in Sellafield.

All these measures have led to a target of approximately 80% of daily worker trips using non-car modes showing that best practice transport planning can lead to positive transport outcomes. However, challenges remain and the funding of a £20billion project like Wylfa Newydd is never straightforward. Seeing this sustainable transport scheme operating in practice will require a successful conclusion to negotiations between the UK government and the Japanese developers of Wylfa Newydd concerning the financial and economic arrangements for the project.



To find out more, contact:  
 **david.bowers**  
 **@steergroup.com**

# Planning for women in our cities

By Liliana Pereira

**At the end of the 90s, the city of Vienna decided to run a survey to gauge how residents used public transport. It was all pretty routine until they began to notice something surprising: men were completing the questionnaires in just a few minutes while the women seemed to take forever.**

The reason for this, it turned out, wasn't anything to do with men being more business-like and women chattier, or any other sexist stereotype, but something much simpler. Women, they discovered, simply have more complex lives when it comes to moving around in cities. While a man would typically use a car, train or bus twice a day to travel to and from work, a woman would often be making multiple different journeys using multiple modes of transport, combining work, childcare and domestic tasks in complex patterns. Women use public transport more, they make more, and shorter journeys and they do much more walking. They are far more likely to be burdened with shopping or children and are highly aware of inadequacies in infrastructure such as handrails, steps and ramps as well as streetlighting and the width of walkways. In some ways, the two sexes hardly seemed to be living in the same city at all.

The Viennese findings have since been borne out in investigations in very different urban environments. A recent study run by Steer for the CAF (Development Bank of Latin America), for example, found that women used public transport in Mexico City very differently from men, and in similar ways to their Viennese equivalents. Journeys undertaken for caring purposes, such as picking someone up or taking children to school account for 35% of women's journeys and these tend to be short distances with much more travelled on foot, about 58% in Mexico City. Unlike the men in their lives these women are also much more likely to be encumbered, either with children, or shopping, or elderly relatives, and that makes a big difference to what they are looking for from their transport, as anyone who has tried to get on a bus with a toddler, a day's shopping and a buggy will tell you.

The implications of these findings are far-reaching for just about every aspect of transport planning. Integrated fare structures can have a far greater impact on women users, for example, because they are making many more 'chained' trips - journeys chopped into smaller segments using a variety of transport modes. The greater emphasis that women place on security - because of the greater risks faced by women in most cities - means that improving cycling infrastructure can have a disproportionately positive effect on encouraging women to cycle.

The challenge for planners is how to adapt so that we are no longer making designs that discount the needs of half of our users. Now that we have begun to understand the depth and breadth of the issues, we have the opportunity to make cities that are truly inclusive, to the benefit of both women and men and marginalised groups made up of both and neither. Everybody wins when the barriers to participation are knocked down, but to do it, we must learn to ask the right questions. The trouble with entrenched differences such as gender is that they are sometimes invisible, or hard to articulate, even to the affected individuals, but even small changes to practice can tease them out. When we change user surveys to ask if the individual is travelling alone or accompanied, we get a completely different picture of how a mode of transport is being used and why.

Steer is putting these ideas into practice in Mexico, as part of the Future Cities programme, and beyond. Future Cities, which is a consortium led by PwC, is a three-year project which aims to transform public transport provision in the target cities in Mexico. It is not the first public transport project with transformational aspirations, but it may be the most ambitious yet in terms of gender equality. We hope that the trail we blaze will set a standard that will radically alter how gender is perceived in planning across the world.

It is difficult to overstate the benefits to women and other marginalised groups that thoughtfully planned gender-aware places might bring. In many parts of the world women

still feel under serious threat when travelling alone, even in daylight hours, for example, and that fear places a limit on freedom. Cities designed more thoughtfully for women can go far towards reducing that danger and liberating their female citizens, and other marginalised groups. In Mexico City, where a recent UN report found that 77% of women felt unsafe using public transport, for example, Steer has helped to re-design the night bus system which until recently has been pretty much the preserve of men but the safety focus is only one part of a much broader strategy. Too often, in the past, women's safety was understood as a discrete problem to be solved with lighting, CCTV, and segregation, but we need to learn to think of it as part of something much bigger, just one part of a network of ideas that keeps women at the centre of planning and design.

When Vienna discovered its invisible women, it responded with energy and imagination, improving access to public transport, adding ramps, widening walkways and providing better lighting. But the most important change they made was to build an awareness of gender difference into all future planning, as part of their 'mainstreaming gender' initiative. From now on, the question would always be asked: 'does this also address women's needs?' That is where Steer and our partners start from: asking the right questions.

Women make up half the world, but do not always take up half of its resources. Putting that right is going to be as exciting as it is challenging. The legacy will be places to live that are everywhere subtly transformed, where everyone, at last, is treated with equal respect, to be seen and heard, where nobody is invisible any more.



To find out more, contact:

[liliana.pereira@steergroup.com](mailto:liliana.pereira@steergroup.com)



## News in brief

### Local transport plan for Cambridgeshire and Peterborough

In 2017, the UK Government agreed a devolution deal which gave the Cambridgeshire and Peterborough Combined Authority power over certain transport functions. As the Local Transport Authority for the area, one of the key responsibilities transferred was the development of a new Local Transport Plan.

Steer was commissioned to produce an ambitious Local Transport Plan for Cambridgeshire and Peterborough that supported the Mayor's bold plans for housing and economic development and addressed historic deficits in transport investment.

The draft Local Transport Plan (which is currently being consulted on) is intended to challenge traditional approaches in how we design our transport solutions and move towards a new model which creates a world-class public transport system through integrating metro, rail, bus and mobility services with walking and cycling facilities that support more active travel choices.

### Steer sponsors London Walking and Cycling Conference

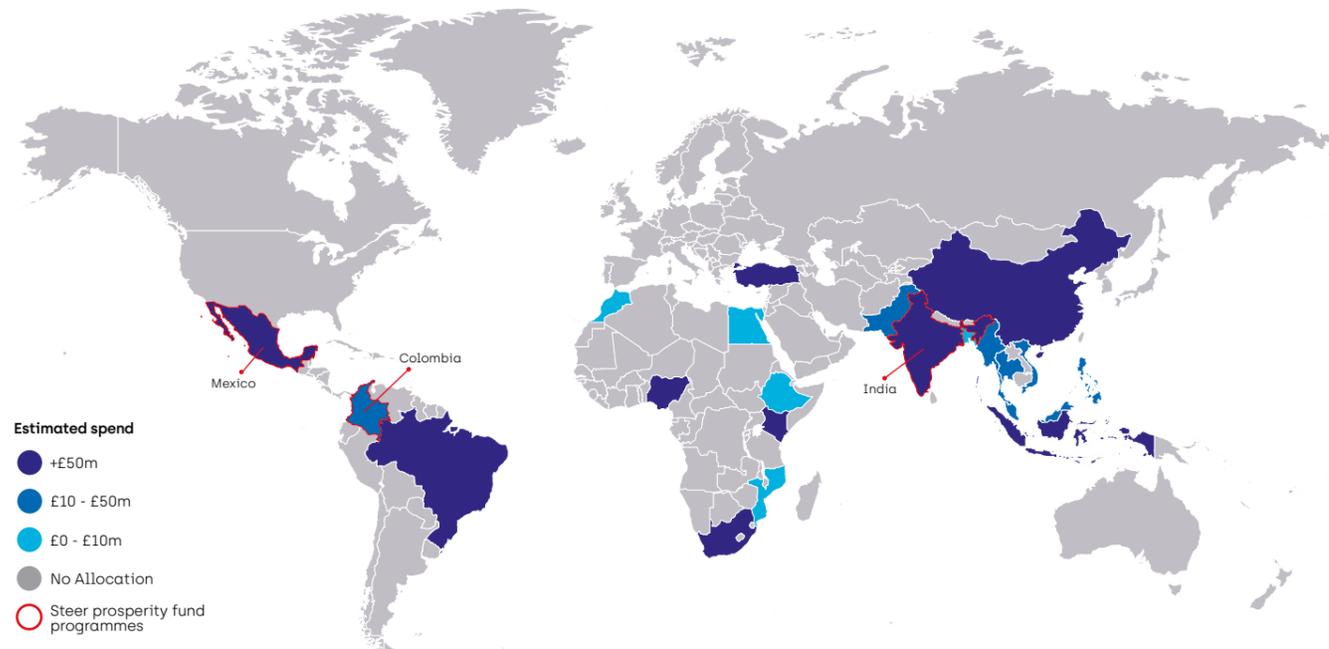
After seven successful years of the Hackney Cycling Conference, Hackney Council partnered with the City of London Corporation to host the London Walking and Cycling Conference, in association with Steer. Mayor of London Sadiq Khan gave a keynote speech, announcing that during his three years in office he has doubled the length of protected cycle lanes in London to 116 kilometers.

Steer presented on the topic of changing mobility patterns through a gender perspective in Mexico City. This year's conference was the largest yet, with over 220 delegates and 30 speakers.



# Prosperity fund programmes in Mexico, India and Colombia

By Luke Miller, Serbjeet Kohli and Liliiana Pereira



Steer is delighted to have secured roles over the last six months within delivery partner teams for three major multi-year Prosperity Fund programmes. These are located in Mexico [Future Cities Programme], India [Sustainable Cities for Shared Prosperity] and Colombia [Global Infrastructure Programme]. Successful and efficient delivery of these important Overseas Development Assistance funded programmes is supported by our global reach.

We draw on our international expertise to build shared understanding across stakeholder groups, new markets and new situations, to ultimately improve outcomes.

The Prosperity Fund, administered by the Foreign and Commonwealth office, aims to improve economic development to help build long-term inclusive growth. As a secondary benefit, this will open market opportunities for foreign countries, including UK businesses.

Working with lead partners PwC (Colombia and Mexico) and Mott MacDonald (India), Steer combines teams with local market knowledge in each country with international good practice to deliver effective and implementable advice, training, and pilot projects.

In Mexico the objective of the Future Cities programme is to support urban development in selected cities that results in safer, resilient and more

sustainable mobility services for citizens, particularly for women and girls. There are two interventions:

- Improved governance, decision-making and planning mechanisms for urban mobility services within Mexico's cities and
- Adoption of strategies tested in successful pilots to deliver better urban mobility services, particularly for women and girls in Mexico's cities. The implementation phase started in September 2019.

In India the objective of the Future Cities programme is to support urban development in selected cities across seven states with a potential to unlock the finance needed to revolutionise the development of these cities, fostering inclusive economic growth and improving the lives of their citizens. The aim is to develop five high impact interventions in the areas of urban transport, water, sanitation and solid waste management which can be used to alleviate bottlenecks of sustainable growth in these cities. The implementation phase starts in December 2019.

In Colombia the objective of the Global Infrastructure Programme (GIP) is to support sustainable infrastructure development in Colombia. The project aims to adapt UK methodologies that allow for better planning, delivery and management of major infrastructure

projects to the Colombian context. The methodologies are the Treasury's Five Case Model (5CM) and the Infrastructure and Projects Authority's (IPA) Project Initiation Routemap (PIR), which have become references of international good practise. The project will investigate ways of adapting the methodologies, taking account of current national guidance, methodologies and regulations. The implementation stage will involve the development of adapted guidance and training materials, together with a comprehensive training program to government officials within Colombia.

To find out more, contact:



# A Parliament suitable for the 21st Century

By Phil Rust



Steer are helping to resolve some difficult issues surrounding the challenges of providing safe and secure access suitable for the 21st century, to a collection of historic buildings in the heart of London.

London's Palace of Westminster, more commonly known as the Houses of Parliament, is one of its most famous landmarks and, with Westminster Abbey and St Margaret's Church, forms part of the UNESCO Westminster World Heritage site. The oldest part of the Parliamentary Estate, Westminster Hall, was built in 1099 and is still in use today. The 1,100-room Palace dates from the mid-nineteenth century and is now undergoing a restoration and renewal Programme established to preserve the heritage of the Palace.

Over the last three years, Steer has been supporting BDP, the lead architect, on the programme. The programme is complex and currently expected to last until the mid-2030s, with Steer potentially supporting the entire programme of works. It has been determined that the best and most cost-effective way to carry out the restoration and renewal of the Palace in one single phase, is to move temporarily out of the building. Accordingly, a key step is the conversion of the Northern Estate to provide continued security and flexibility of accommodation for the government, including an operational chamber, committee

rooms, and House support services.

Steer has a key role in developing enhanced access and circulation in combination with ensuring suitable security to all potential Members of Parliament and visitors. Amongst other workstreams, we have been advising on how to ensure the necessary public access, inherent in the desire for an open democracy, can be balanced against ever changing security risks, with the complications of disruptive technology and quickly evolving transport policies.

Our role has expanded as we have demonstrated our ability to address the challenges inherent in such a complex programme and we anticipate an extensive involvement in the evolving programme of works.

At present, some fifteen staff from our London Planning team are security cleared to work on the project. Our current workstreams include traffic modelling, highway engineering, urban realm design, pedestrian modelling and lift strategies, service and waste management strategies and the preparation of transport and environmental impact assessments.



To find out more, contact:  
**phil.rust**  
@steergroup.com

# News in brief

## Steer sponsoring Transport Planning Day

Steer is pleased to be sponsoring Transport Planning Day #TPDay2019 held on 20 November at the Institution of Civil Engineers in London - a day dedicated to transport planners, celebrating their importance in our everyday life.

Transport planners across the world play a significant role in connecting us to our jobs, homes, schools, friends, family and activities. The campaign raises awareness of the benefits of transport planning in addressing climate change, improving our health and providing economic opportunity.

As part of #TPDAY2019, come and join us on a free walking tour from the South Bank to the City, exploring the evolution and developments of the City of London; led by David Bowers, one of our leading transport planners.

To attend and for further details, please contact:  
**marketing@steergroup.com**

## From NIMBY to PIMBY

Together with the NIMBY (Not In My Back Yard) phenomenon, the YIMBY (Yes In My Backyard) and PIMBY (Please In My Backyard) concepts around the globe have been appearing. In the US and Canada, the YIMBY movement supports public-interest projects such as the installation of clean energy sources including wind turbines. In Italy, a variety of infrastructure and mobility projects have been nominated for the PIMBY Green Award; established by "FISE Assoambiente", the association that represents all companies operating in the environmental sector in Italy.

The elevated cycle path on Lake Garda "Ciclopista del Garda", the most spectacular elevated cycle path in Europe, the "Florence Tram" and the "Green Mestre By-Pass 2.0" have recently won the PIMBY Green Award for 2019.

Steer has been acting as lenders' technical advisors for the Florence Tram since 2005 and has been operating as technical and traffic advisors to the project bond underwriters of the Mestre By-Pass.

# Igniting innovation in rail

By Helen Waters

**Rail could be one of the most dynamic and technologically forward-looking industries in the UK, yet passengers are struggling to reap the benefits which innovation could unlock. This isn't for any lack of inventiveness or ingenuity – the UK rail industry has more than enough of both – but more a lack of co-ordination, effective development and delivery processes, and the sheer number of different agencies involved each effectively throwing up barriers to entry, stopping innovation from getting in. It is sadly ironic for an industry that once represented the pinnacle of British modernity and technological advance. This must change the industry is to meet the expectations of our customers and stakeholders.**

All too often brilliant ideas wither because our industry processes are simply hostile to innovation or too impenetrable to navigate. A good example of this is when innovative ideas or products develop from prototype to real working applications. This is typically the move from Step 6 to Step 7 in Rail Industry Readiness Levels [see diagram below] and is referred to within the industry as the "second valley of death." The first valley being the transition from lab testing to prototyping.

For many innovation developers (suppliers) and companies (purchasers), this valley is proving to be an unbridgeable chasm. New approaches, if they are truly new, mean risk in some way. This might be risk of failure, a commercial risk (long-term costs or true benefits may not be clearly understood), or a programme risk (a lack of understanding about how long the testing and development may take and when a product could be "in service"). To develop an innovation, potential purchasers need to step forward and collaborate with innovators by providing access to customers, infrastructure or services. For these potential purchasers there is the risk (real or perceived) that the innovation may not deliver the expected outcomes and internal processes (such as investment approval) require a level of certainty which is inherently hard for innovators to provide.

On top of that, the UK has a hugely complex and fragmented industry structure, so for some types of change, such as modification of rolling stock or changes to retailing, a large number of agencies need to be involved and supportive of a change. Aligning the needs of stakeholders with potentially competing or conflicting concerns and technical demands can be daunting. Other industries are arguably less



challenging, and provide quicker and less risky commercial returns, for entrepreneurs and SMEs.

Some businesses, such as freight and open access operators, have generally longer time frames to develop and deliver innovative change. Franchises are, by their short-term nature, more challenging, driving a cycle of change delivery at the start of the period where operators must deliver returns in the short-term. The way that franchises are specified, and bids are assessed, can also limit the types of innovation that can be taken forward. A concept needs to have a level of certainty in its deliverability, which can be difficult for innovators and bidders to provide, resulting in these ideas rarely making it to the delivery stage.

Government has attempted to address these challenges with innovation funding and specification of innovation in franchise terms, generating development of great ideas at the start of the innovation process (RIRL 1-5), but very few have bridged the "second valley of death".

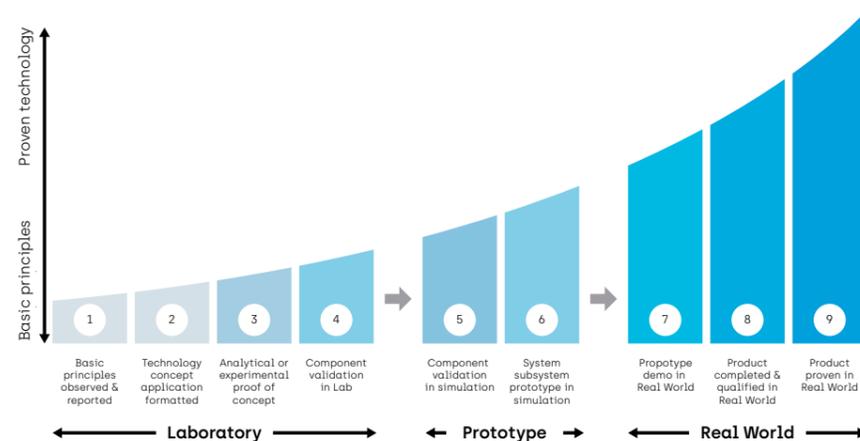
The industry is trying to deliver change, and is not short of good ideas, so how can we distill the best ones and get them into the industry at a scale to make a change for the passenger? As I see it there are two fundamental areas we need to address. Firstly, how businesses and their incentives find a line of sight from innovation to the customers and, secondly, how we plan and deliver innovation, breaking it down into a road map of simple steps.

I have recently been fascinated by attempts to introduce new fuel sources to rail to reduce the carbon footprint and cost of operation. Modification of existing vehicles to burn CNG or hydrogen is proven in the UK bus industry and in rail outside the UK – so it should be a fairly simple step to apply this technology to the UK. The Department for Transport (DfT) is providing a stimulus though the requirement to trial emerging novel propulsion or onboard emerging storage in the new East Midlands franchise and there are incubator trials funded by industry innovation funding, which are

ready to be scaled up. Any change to a train requires alignment and agreement by, at the very least, operators, fleet owners and infrastructure owner (Network Rail) as well as compliant and potential modification to relevant standards to achieve these changes. DfT and the customer must also be engaged and supportive of the change. Grand Central is very close to delivering a CNG trial on one engine and there are efforts to develop hydrogen and other approaches. It is very likely that not all of these technologies will be practical or scalable – but by trialling many we will find an optimal solution. The CNG trial shows the need for an organisation or an individual with the drive to make it happen and a plan to break down the large end goal of reducing the carbon footprint of a legacy DMU to achievable and supportable steps – through first testing one engine and then scaling it up.

Can we deploy the same approach to say a radical re-think of seating design for commuter trains, or integrating parking and ticketing

payment into a system-wide pay-as-you-go approach? The technology for these approaches already exists, and has already been prototyped and trialled in local applications, but needs pulling together and linking up into a workable systemised solution to step over the "valley". Imagine for a moment another industry that would allow transformative technology like this to stop dead. What would the retail sector look like if it was as cautious and risk averse? Companies such as Waitrose and Amazon have defied all expectations by being quick on their feet and constantly investing in promising new practices and technologies without any guarantee of a short-term return on the risk.



To find out more, contact:  
**helen.waters**  
**@steergroup.com**

# Complex questions. Powerful answers.

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**Bogotá, Colombia**  
+57 1 322 1470  
colombiainfo@steergroup.com

**Bologna, Italy**  
+39 051 656 9381  
italyinfo@steergroup.com

**Boston, USA**  
+1 (617) 391 2300  
usainfo@steergroup.com

**Brussels, Belgium**  
+32 2 808 1127  
belgiuminfo@steergroup.com

**Delhi, India**  
+91 124 441 8650  
indiainfo@steergroup.com

**Leeds, UK**  
+44 (0)113 389 6400  
ukinfo@steergroup.com

**Lima, Peru**  
+51 1 705 8232  
peruinfo@steergroup.com

**London, UK**  
+44 (0)20 7910 5000  
ukinfo@steergroup.com

**Los Angeles, USA**  
+1 (213) 425 0990  
usainfo@steergroup.com

**Manchester, UK**  
+44 (0)161 261 9140  
ukinfo@steergroup.com

**Mexico City, Mexico**  
+52 (55) 5615 0041  
mexicoinfo@steergroup.com

**New York, USA**  
+1 (646) 989 9945  
usainfo@steergroup.com

**Panama City, Panama**  
+507 263 7215  
panamainfo@steergroup.com

**Rome, Italy**  
+39 06 4201 6169  
italyinfo@steergroup.com

**San Juan, Puerto Rico**  
+1 (787) 721 2002  
puertoricoinfo@steergroup.com

**Santiago, Chile**  
+56 2 2757 2600  
chileinfo@steergroup.com

**São Paulo, Brazil**  
+55 11 3151 3630  
brazilinfo@steergroup.com

**Toronto, Canada**  
+1 (647) 260 4860  
canadainfo@steergroup.com

**Vancouver, Canada**  
+1 (604) 629 2610  
canadainfo@steergroup.com

**Washington DC, USA**  
+1 (703) 788 6878  
usainfo@steergroup.com

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The logo for Steer, featuring the word "steer" in a lowercase, bold, sans-serif font. The letters are white and set against a dark background.