

Game Changers

Insight report
October 2025

Megatrends shaping the future of global
infrastructure and investment

steer

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Contents	01.	Foreword	4
	02.	Air mobility	5
	03.	Highways	7
	04.	Fleet electrification	9
	05.	Data centres	11
	06.	Rail	13
	07.	Ports and maritime	15
	08.	Aviation	17

01. Foreword

In a world increasingly volatile, change is the only constant.

In the wake of a 'once in a lifetime' event, the COVID-19 pandemic, the world has settled into a new normal characterised by economic tensions, geopolitical conflicts and climate change. Meanwhile as every business and industry seeks the agility to navigate this landscape, the digital revolution, AI and the race to net zero form a separate set of contingencies.

At Steer, we have always understood that certainty is a rare commodity. Our role is to help clients anticipate and respond to change, building resilience and agility into the infrastructure that moves people and goods around the world. Those who adapt quickly are those who succeed.

As the Infralogic Investors Forum Europe 2025 makes clear, economic headwinds have not disappeared: inflation remains stubborn, GDP growth is subdued, and the path to lower interest rates is uncertain. Our report **Game Changers** speaks to these conditions and provides a snapshot of a pivotal change that will shape Steer's key infrastructure service areas over the coming decade and into the future.

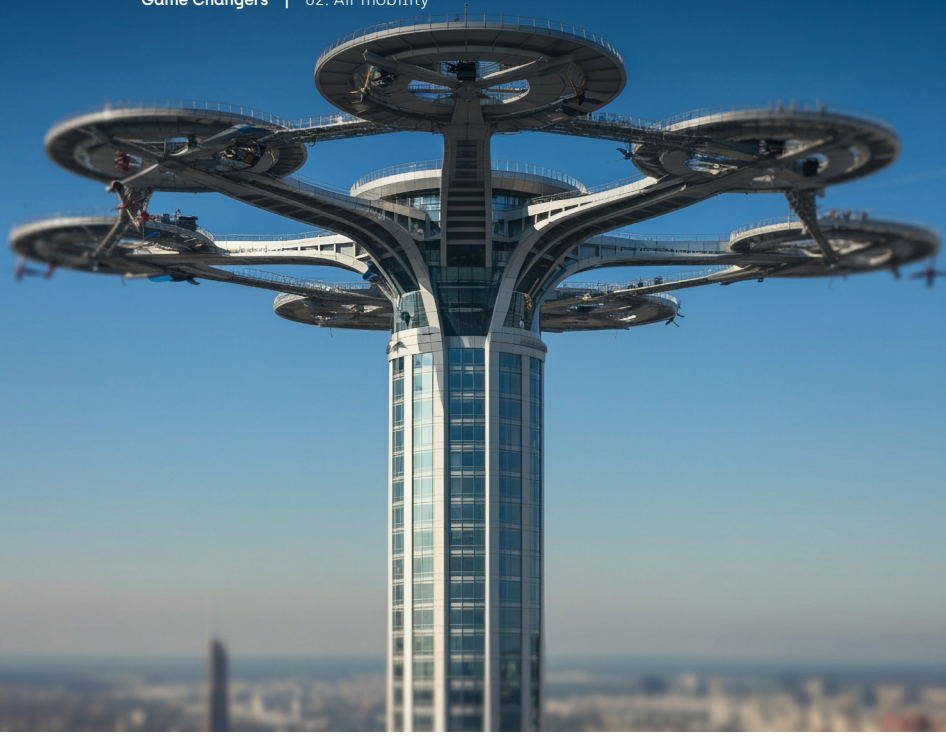
Digital infrastructure investment is, of course, one of the fastest growing areas for our industry but the need to move people and goods has not gone away. **Game Changers** addresses seven sectors; ports and maritime, aviation, highways, rail, fleet electrification, heat decarbonisation and air mobility. Across these sectors our experts unpack technological change that will shape the future.

We look at the evolving geography of global trade in ports and maritime, the competitive advantage of early action on decarbonisation in aviation, and the role of smart corridors in modernising highway networks. In rail, we highlight the potential of battery-powered rolling stock to bridge the gap to full electrification. Our chapter on fleet electrification examines how zero-emission vehicle infrastructure is maturing for investors, while heat decarbonisation spotlights the emerging role of data centres as key low-carbon heat sources. Finally, air mobility explores the opportunity to unlock the "+1 level" in cities, responding to rapid urbanisation.

The pace of change is relentless. Our collective opportunity — and challenge — is to meet it head-on with clarity, foresight, and action.



Jon Peters
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02. Air mobility

Unlocking the +1 level for an integrated urban mobility future

By 2050 the UN estimates that 68% of the world's population will live in cities, but how will these people move around?

'Conventional' systems such as rail, bus and light rail are all already competing for space at the ground level. So, why don't we start looking to the sky – or to the +1 level – to boost mobility and connectivity in densely populated urban areas?

In 2024 Steer released a report on how Advanced Air Mobility (AAM) could change travel in New York City by providing transit links between JFK Airport, Downtown Manhattan and Grand Central Station. Vertiport systems are being actively planned and implemented in major cities worldwide, supporting electric vertical take-off and landing (eVTOL) aircraft and enabling urban air mobility (UAM) services extending to commercial, regional, cargo and emergency transit.

However, AAM will be available for business travel and high-income individuals rather than as a mass transit system. Cables cars (also known as ropeways or gondolas) could provide a more accessible form of air mobility. While still marginal to global public transit networks, cable cars are becoming more common around the world, increasingly seen as viable parts of urban transit networks.

In Latin America Medellín, Mexico City and Caracas all use cable car networks but La Paz, Bolivia, boasts the largest urban cable car network in the world spanning over 30km and fully integrated into the public transit network

In India the spread of ropeways is driven by the central government's National Ropeways Development Programme, while in North America there are a number of schemes that have been promoted by private sponsors and cultural sites across Edmonton, Vancouver, LA, San Diego and Austin.

Meanwhile, in EMEA there are urban cable car examples in France (Toulouse, Paris, Brest), Portugal (Porto), Germany (Koblenz, Berlin), UK (London), Turkey (Istanbul, Ankara) and Algeria (Constantine, Algiers).

Air mobility can bypass the crowded streets of urban centres as well as join up disparate rural and mountainous areas in developing nations, forming a key component of an integrated transport system. The shortened trip times they offer can boost productivity, local economies and social life and wellbeing for residents in provided for areas.

They naturally face the same planning barriers as other modes but, being much easier to construct and by definition taking up little space at street level, can be implemented fairly rapidly.

They also offer green benefits by having an extremely low carbon footprint and adding little to air pollution with no direct emissions.

These systems have traditionally been funded, built, and run by the public sector, but a growing number of projects are now being undertaken in conjunction with private partners. Public-private partnerships (PPPs) in aerial cable cars systems have generally been limited in scope to operations and maintenance, with risk transfer mechanisms being introduced in some cases.

At the international level, a wide variety of different business models have been used, ranging from the award of concessions to private parties to build, operate, and maintain these systems, to public works operated by public agencies.

There will be safety concerns from the public, but they are largely unfounded. Cable cars are designed to operate in some of the harshest mountainous conditions in the world and are therefore perfectly safe for urban transit, with stringent measures to test that they are fit for passengers.

Air mobility is not a magic solution, but it can be an incredibly powerful tool in the transport planner's toolbox and a city's successful growth. It offers answers in rapidly growing urban centres with poor or overstretched existing infrastructure and places it is difficult to build.

The green credentials, pace of construction and practical implementation in densely populated areas all make cable cars an attractive mode for the coming decade and beyond.

For the era of air mobility to be a success public buy in at consultation stage is essential and successful projects will require a robust feasibility study for a smooth implementation process, a strong business case and a balanced risk allocation between parties.

Written by

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03. Highways

Smart corridors create a new value proposition for highways

AI may at times seem like a ubiquitous buzzword but in the world of highways it is having a very real impact.

Public and private stakeholders are actively exploring how emerging technologies can reshape mobility. On one front, pilot programs on existing roadways are being used to test and refine the technology - not only to evaluate their costs and benefits, but also to lay the groundwork for the transformative role of Connected Autonomous Vehicles [CAVs].

At the same time, CAVs themselves - now operating in major cities across the U.S. and China - are undergoing extensive private-sector testing to evaluate issues to unlock the technology's full commercial potential.

We are seeing two different approaches to deploy the technology:

Technology supporting all vehicle types: In this approach, the technology deployed on roads is designed to support both CAVs and non-CAVs. This includes implementing smart infrastructure such as Internet of Things (IoT) sensors, real-time traffic management systems, and road weather information systems. These technologies collectively improve the safety and reliability of the roads for all users by providing real-time data and predictive analytics to manage traffic flow and respond to incidents more efficiently.

Technology accelerating autonomy for CAVs: This approach focuses on providing additional benefits specifically for CAVs, accelerating the journey towards full autonomy. Key technologies in this approach include Vehicle-to-Everything (V2X) communication, high-definition mapping, advanced driver-assistance systems (ADAS), and the integration of edge computing and AI. These advancements enable entry level CAVs to operate fully autonomously, by communicating between vehicles and the road infrastructure, navigating complex environments, and making real-time decisions with no human intervention.

Opinions vary on the speed with which CAVs will penetrate the market but most predictions show that over 50% penetration will not occur until after 2050, and the pace of change over the next 10 – 30 years will determine which of the above is a better approach.

On current projections option one is a highly viable pathway in the short to medium term, with improved highway infrastructure deployment on smart corridors boosting the experience of all road users in the US and beyond.

There is no doubt technology will bring enhanced safety, improved reliability and will accelerate autonomy. The key questions are first whether this transition can happen quickly and seamlessly and second how much users are willing to pay for these extra benefits.

Autonomous vehicle technology has arrived faster than we had predicted, and it is now legislation and infrastructure that are holding back the CAV revolution.

As we look to the medium term this will transform the value proposition of the toll road industry.

Vehicle technology has shifted greatly in the last 20 years, but roads largely remain unchanged. By implementing smart technology on highways, providers can improve safety and reliability even before autonomy is widespread. This means that in the medium term, investment in technology by infrastructure owner/operators is a key pathway to improvements in highway operations and facilitation of some of the benefits of CAVs, before they represent the mainstream of the vehicle fleet.

Written by

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04. Fleet electrification

How the international market will play out at street level

Fleet electrification is a global story that plays out in homes and on streets around the world.

While the picture of global market penetration of zero emission vehicles (ZEVs) varies greatly [estimates put China at around 50% of new sales and Europe at around 13%], electrification will happen no matter what the timeline.

Fierce competition in China, the world's primary source of battery technology, to provide for the internal Chinese market is causing price deflation that could spill over into the rest of the world. This in turn is causing anxiety in other automotive manufacturing hubs across Europe and North America due to the politically charged nature of the manufacturing base and associated jobs.

The roll out of infrastructure across the world is a different but intertwined story. In these terms we can separate the commercial fleet market into three broad categories: bus, car and trucks.

Bus electrification benefits from regional, state and city policy that sees authorities committing to bus fleets for the cheaper running costs, improved passenger journey experience, contribution to air quality improvement and a PR win with the public.

Commercial car fleets meanwhile present mixed opportunities across the globe. Here, a 'leapfrogging' phenomenon in developing economies in South Asia allow fleet operators to use charging depots and bulk buy vehicles for operation. Meanwhile in countries like the UK, where individual drivers often take their vehicles home at the end of their shift and regularly lack access to off-street charging, fleet operators rely heavily on street charging infrastructure which can be inconsistent. Indeed, some areas with a strong charging network (like London) may create a positive investment and EV market penetration feedback loop, at the expense of investment in other regions.

For trucks, ZEV penetration remains low with a technological solution for a vehicle above 19 tonnes not currently on the market. Operators in countries like the UK operate small fleets in the single digits and are not in control of the routes and loads that make up their duty cycles.

A market revolution could come in the form of sodium ion or solid state battery technology which, if successfully brought to market, would dramatically lower costs compared to a typical lithium-ion battery and provide a lighter weight vehicle with less energy density that can travel further on less charge. Not only could this potentially boost vehicle penetration on trucks up to 20 – 30% (compared with around 1% today) but also reduce the constraints of the charging infrastructure network.

However, this innovation is not going to arrive in the medium term. Charge point investors in the short term should work on available data which shows a secure picture for the next five years. Funding for bus fleet electrification is secure but for street level car charging we need to bring in some of the lessons learned over the last few years.

We are seeing a market mature before our eyes which plays out at the most local level but is impacted by global trade winds. A granular understanding of the use case for each vehicle type is required as well as the impact consumer and business behaviour in response to choice will have on investment.

In this environment key things to look out for will be:

- Total Cost of Ownership (TCO) is only a theoretical concept, real world businesses are doing the maths based on specific use cases that are relevant to them;
- Charging infrastructure provision is going to turn into a 'location, location, location' story: real estate from transport, energy and accessibility perspective will become a critical enabler;
- Technology risks are becoming less important as funding and financing solutions have been tried and tested to address such risks.

Written by

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05. Data centres

A key source of heat decarbonisation

The last five years have seen space heating thrust into the public discourse in a way we have not seen since the energy crisis of the 1970s.

Bill increases for consumers across Europe in the wake of the COVID-19 pandemic and the war in Ukraine have created a politically charged atmosphere for bill payers and legislators alike.

In this environment the race to decarbonise heat is cast in a new light.

Low carbon heat networks are a key tool to decarbonising heat for homes and businesses, by using heat offtakes from sources such as sewage works, water treatment plants and underground transport systems to heat multiple homes at a time.

Digital infrastructure is attracting high levels of investment and data centres offer an exemplary source of waste heat. Already some key players in the industry are exploring how to export heat to local communities with operational examples found in Helsinki, Oslo and Dublin.

Legislatively, data centres are now designated as critical infrastructure in the UK, Germany, Ireland, France and the Netherlands. In 2023 Germany enacted the stringent Energy Efficiency Act (EnEfG) which mandates new facilities to utilise 10% of waste heat if operational from 2026 and 15% from 2027. More recently, in France a law was passed in 2025 that transposed the EU Energy Efficiency Directive which requires data centres over 1 MW to install systems to recover waste heat.

Data centre construction is currently in a sweet spot which sees ravenous appetite for provision outstripping delivery. However, this will curtail over the next decade as hyperscalers' projects come on stream.

As the data centre boom unfolds however, considering waste heat recovery at the earliest opportunity is essential. Lessons can be learned from the waste sector in the UK where a hierarchy of usage combined with a decade-long, predictable, increasing tax rate on disposal of waste, managed to limit the amount of waste sent to landfill. A similar approach with the right key stakeholders could change the game on waste heat.

At a time when there is a backlash to the green agenda, heat recovery could be a huge PR win for both the industry and Government. But strategic planning and careful selection of carrots and sticks is needed to link projects to proper utilisation and make them a success.

Written by

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06. Rail

Battery electric trains provide stepping stone to net zero

Rail has been a long-time proposition for private investors with rolling stock and open access operators proving attractive across passenger and freight.

With an imperative to decarbonise, the rail sector needs a way to wean itself from diesel engines, but, while worthwhile, full-scale rail infrastructure electrification has proven costly and time consuming.

A shorter-term solution comes in the form of battery powered trains and locomotives which provide a versatile technology that aid in reaching climate targets and are capable of running on both electrified and non-electrified lines.

The EU Green Deal has stringent targets for reducing transport emissions by 90% by 2050, doubling high-speed rail passenger numbers by 2030, and shifting passenger and freight onto rail from highways and airplanes.

Part of this framework involves an acknowledgement that electrification is not practical in all cases and a push in legislative and funding terms for rolling stock-based solutions including battery trains.

Manufacturers are working at pace to provide passenger train models with Siemens' Mireo Plus B and Stadler's Flirt Akku (both models having almost three quarters of the market share for battery electric trains) both available for operators. Battery powered rolling stock has been ordered or is operational in Germany, Denmark, the Netherlands, Austria, Poland and the Czech Republic.

Battery powered rolling stock can improve sustainable travel across national boundaries where lines have incomplete electrification. This could mean increased mode shift from air travel for passenger rail. Meanwhile, freight decarbonisation could also benefit from battery powered locomotives within and across borders, especially given potential downward pressure from consumers for low carbon deliveries and upward pressure from corporate net zero targets.

It is clear from the number of new potential entrants to the open access market (including in France and Spain, cross border sleepers, and UK to continental Europe services) that rail is still attractive across the different risk-return profiles within the sector (spanning across

rolling stock, rail infrastructure and open access operations) which can appeal to different types of infrastructure investors. Within rolling stock, battery technology is novel but maturing quickly and we can see investors beginning to come to it, with the usual appetite for the asset-backed nature of rolling stock investment.

The market is willing to accept something new, innovative and exciting. Battery powered rolling stock can provide a good return, as investors become comfortable with the technology expected to be more widely used across Europe and therefore reducing the investment risk.

What remains critical for investors is to find opportunities within the rail sector that align their appetite for risk and return with the likely evolution of technology and associated willingness for climate neutrality. In this way we can be instrumental in providing sound investment guidance and meeting climate goals.

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07. Ports and maritime

Complexity underpinning investment opportunities

Global maritime trade is facing one of its most volatile periods in decades.

A new wave of disruptions, driven by climate change and geopolitical tensions, has upended long-standing shipping routes, distances, and transit times, particularly across chokepoints like the Panama Canal, the Red Sea, and the Suez Canal.

These changes are reshaping global logistics, challenging the reliability of critical trade arteries, and placing unprecedented pressure on the world's supply chains. While different shipping sectors (for example container, bulk, tanker) are differently impacted, they are all subject to common strategic factors.

These changes underscore a fundamental truth: the industry we knew is not the industry we see today, and the pace of change is accelerating.

Earlier this autumn Steer published scenario analysis, [Tides of Change: Global scenarios for the future of ports & shipping](https://steergroup.com/sites/default/files/2025-09/Steer-Tides-of-Change.pdf)^[1], setting out four plausible futures for the global ports and shipping industry over the coming years. Key selected drivers of the scenarios are: trade relations and tariffs, geopolitical relations, and political agendas.

- In the 'trade tensions' scenario global maritime trade becomes increasingly fragmented and regionalised due to tariff uncertainty and geopolitical instability, challenging GDP growth and supply chains. Sectors with complex, international supply lines are more impacted, and there is a push to domestic production and near-shoring. Trade patterns partly shift towards Asia and LATAM. Port investment opportunities continue and follow the new geography of trade.
- In the 'stormy seas' scenario ongoing geopolitical conflicts reshape global shipping. Security threats persist, forcing trade diversions and port congestion, and driving up shipping costs. Ports gain strategic significance with increased military and energy roles, and governments exert increased influence over port and shipping strategic acquisitions. Port operations evolve to prioritise resilience, national security, and energy independence.
- In the 'national agendas' scenario national elections drive a shift towards domestic growth, security, and self-sufficiency. Trade tends to be shaped based on bilateral trade agreements and trading blocks. Supply chains diversify their geographic footprint, including on-shoring and near-shoring, accompanied by a focus on countries rich in natural resources [Russia, US, China and countries in the Middle East and Africa]. Port and more broadly transport infrastructure investment increase reflecting a new geography of trade.
- In the "global outlook" scenario political direction focuses on global economic and sustainable development. While some of the events occurred in the last five years (for example the COVID-19 pandemic, energy crises, trade uncertainty, geopolitical disruptions) leave their mark, GDP and international trade growth is more stable, and shipping is an enabler of global economic development, with new port and shipping investments delivered across geographies.

While the future is inherently uncertain there are some common denominators to future scenarios:

- Investment opportunities in port and shipping assets will continue and the ports and maritime industry has proved resilient to disruptions;
- The port and shipping sector vertical integration is likely to continue, with land assets (for example logistics, rail freight) considered key to ensure presence on consumer markets and secure production inputs;
- The regionalisation of trade is likely to change the geography of ports and shipping investments, including opportunities in LATAM and Africa;
- The bulk, break-bulk and energy sectors are likely to play an important role to secure domestic growth and economic resilience in a more turbulent international context.

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¹ <https://steergroup.com/sites/default/files/2025-09/Steer-Tides-of-Change.pdf>



08. Aviation

Early adopters of net zero strategies will have the advantage

Aviation, like all industries, needs to decarbonise rapidly.

As global awareness of climate change intensifies, governments, industry bodies, and consumers are demanding substantial reductions in carbon emissions and greater environmental responsibility from airlines and airports alike. This shift is already prompting accelerated investment in sustainable aviation fuels (SAFs), electrification of ground operations, and the exploration of hybrid and fully electric aircraft technologies. Airports are also rethinking infrastructure to accommodate charging stations, green taxing solutions, and more energy-efficient terminals.

Over the next ten years, we can expect sustainability to become central to both operational strategies and capital investment decisions. The pressure to decarbonise will not only influence fleet renewal and fuel sourcing, but also shape airport design, airspace management, and the broader passenger experience. Those in the aviation sector who proactively embrace these changes, by investing in green technologies, collaborating on industry-wide sustainability initiatives, and adapting to evolving regulations, will be best positioned to thrive in a rapidly changing landscape, while also unlocking new opportunities for growth and differentiation.

The transition towards sustainable aviation will drive significant changes in both airport infrastructure and operations over the coming decade. Airports will increasingly invest in green technologies, such as installing charging stations for electric ground vehicles and, as electric and hybrid aircraft become viable, for aircraft themselves. There will be a shift towards sustainable aviation fuels, necessitating new fuel storage and distribution facilities tailored to SAFs. Terminals and airfield operations will see greater emphasis on energy efficiency, with upgrades to lighting, heating, and cooling systems, as well as the integration of renewable energy sources like solar panels.

Operationally, airports will adopt more sustainable practices, including green taxing solutions that reduce emissions on the ground and digital systems to optimise air traffic flow, minimising fuel burn and delays. Waste management and water conservation initiatives will become more prominent, supporting broader environmental goals. These changes will require close collaboration with airlines, fuel providers, and regulatory bodies to ensure seamless adaptation and compliance. Ultimately, airports that invest early in sustainable infrastructure and operations will not only meet emerging regulatory requirements but also position themselves as leaders in a greener, more competitive aviation market.

The transition towards sustainable aviation directly impacts regulatory compliance, operational efficiency, and long-term competitiveness. As governments and industry bodies introduce stricter environmental standards, airports and airlines must adapt swiftly to avoid penalties and reputational risks. Practically, clients will need to embed sustainability into their core strategies, this means investing in infrastructure upgrades such as charging stations for electric vehicles and aircraft, adapting fuel storage and distribution for sustainable aviation fuels, and retrofitting terminals to enhance energy efficiency through renewable energy integration and smarter resource management.

Collaboration with airlines, fuel suppliers, and regulators will be essential to ensure a seamless transition and maintain compliance.

The opportunities are significant, and early adopters can not only meet regulatory demands but also stand out as leaders in sustainability, attract environmentally conscious passengers and business partners, and unlock cost savings through greater operational efficiency and resource conservation.

Those who invest now will be best positioned to capture new market opportunities and drive sustainable growth as the sector evolves.

Written by

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Insight report

Game Changers: Megatrends shaping the future of global infrastructure and investment

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