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Emerging Trends in Infrastructure

KPMG International

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The trends that will change **the world of infrastructure** in 2018.

Viewed against the disruption, confusion and uncertainty of the past year, it would be easy to become despondent about the future of infrastructure around the world. Yet we see great opportunity and promise emerging.

There is much to be excited about. Governments continue to demonstrate a strong desire and ambition to invest in infrastructure, both as a path to economic growth and as a way to hold back the rising tide of populism. New technologies and rapid innovation are creating new approaches, models and tools for infrastructure development and helping to bring down costs. The quest to identify new pricing and funding models offers the potential to unblock pipelines and unleash a new era of rapid development. And new perspectives on key issues such as sustainability, governance and investment are driving greater sophistication in many markets. A new dawn may be rising.

Yet this is no time for governments, investors and developers to relax; great threats also loom on the horizon. The politics of the past year have grown more divisive and fractured in the West. Institutions have lost some of their legitimacy and public trust. And the gap between the 'haves' and the 'have-nots' has grown wider. Infrastructure players will need to redouble their efforts and their collaboration if they hope to deliver on the demands of their citizens and economies.

In this year's *Emerging Trends*, we have identified a number of issues and topics that carry both pros and cons. Technology could allow unprecedented progress… or it could fracture our societies further. Politics could lead to new visions and value… or it could become more divisive and isolating. Pricing and funding models could release massive investment… or they could beggar the poor and enrich the privileged.

How accurate are our predictions? Last year, we forecasted that the rise of the populist agenda would slow the momentum of globalization in the West while the East consolidated power and pushed for greater regional collaboration. We argued that shifts in consumer behavior would change the way service providers prioritize their investments. And we predicted that we would see a greater confluence between energy, transportation and technology.

Some of our predictions from last year have yet to fully develop. In that edition, we talked about the coming convergence of real estate and infrastructure within the investment market — a trend that has been slow to materialize but become increasingly important in its impact. We also expected swifter action on the impact investing and credit enhancement fronts.

Not surprisingly, therefore, there are a number of trends in this year's report that could be seen as a continuation of previous evolutions. At the same time, this year's edition also highlights topics that are only now emerging and, we believe, will continue to shape infrastructure markets for years to come.

We hope that this year's report catalyzes infrastructure participants to think differently about the opportunities and risks we face today. We believe there is huge potential for great good to be unlocked. But, if we do not respond with vision and purpose, we may also be sowing the seeds of discord and division for future generations. The choice is ours.

To discuss the trends highlighted in this year's report, or to assess how the issues raised will impact your unique projects, markets and investments, we encourage you to contact your local KPMG member firm or any of the authors listed in this report.

Lastly, a special thank you goes to James Stewart, formerly Global Head of Infrastructure, who helped author much of this document.

Richard Threlfall
Global Head of Infrastructure
KPMG International
E: richard.threlfall@kpmg.co.uk
@RThrelfall_KPMG

Stephen Beatty
Non-Executive Chair,
Global Infrastructure
KPMG International
E: sbeatty@kpmg.ca
@stephencbeatty

Julian Vella
Asia Pacific Head of
Infrastructure
KPMG International
E: julian.vella@kpmg.com
@jp_vella

Trend 1
The clash of competing forces

This was supposed to be a decade of growing global harmony. Technology was going to break down barriers between societies. Social media was going to strengthen democracy. Globalization was going to remove distance between markets. And political stability was going to drive growth. Utopia was on the horizon.

But reality has proven to be far different. Rather than coming closer together, our societies, markets and institutions seem to be rapidly fracturing. Schisms are opening everywhere: between the West and the East; between the young and the old; between the 'haves' and the 'have-nots'; between the left and the right; between protectionists and free-marketers… everywhere you look, the public discourse has become more divisive.

This year, policy-makers and politicians will need to focus on building bridges between opposing viewpoints and finding ways to balance the needs of all stakeholders if they hope to get anything done. Some governments in the East are making good progress in this regard. In the West, however, all signs suggest that this year will be even more disruptive and divisive than the last; don't expect a return to harmony in 2018.

Governments recognize that increased infrastructure investment can help solve many of the long-term challenges they now face. But they are also prudent enough to know that there will be many short-term obstacles to overcome before they can get there.

The big challenge, therefore, is to create a shared future in an increasingly fractured world by making smart infrastructure investment decisions.

Tough decisions will need to be made: Do you fund healthcare for the boomers and mobility for the millennials? Should you prioritize better transport to help those with jobs or social infrastructure to also help those without? Do you invest into ports and airports to encourage globalization or do you build walls and barriers to hold it at bay? What is clear is that making sound decisions in this environment will require better data, more sophisticated analytics and much more reliable projections.

In the West, the coming year will see infrastructure planners and policy makers struggle with distractions. Many worthy projects may stall under the weight of political conflict and social indecision. Some of the bigger multi-national projects may disappear entirely as the world order shifts. And there will be projects and imperatives that will almost certainly get bogged down in the morass of local polity. In these markets, Infrastructure planners will need to break out of the political cycle and focus on developing the assets needed in the long-term.

The East, on the other hand, is going in a different direction; Asia is opening up. Massive cross-border projects (such as Kuala Lumpur–Singapore high-speed rail (MyHSR), Thailand's Eastern Economic Corridor, the China-Thailand high-speed railway via Laos, and the China–Pakistan Economic Corridor) are rapidly moving forward and, in doing so, helping to create better interconnectivity across the region.

At least in the East, many politicians are recognizing that greater regional and international connectivity can be a path to faster growth, more stable economic development and improved living standards. And they are increasingly willing to put aside political, cultural and historical differences in order to achieve that.

Despite the challenges there is room for hope and optimism. Those markets with strong and independent infrastructure authorities should find the strength to act on their longer-term visions. Those with visionary leaders and institutions should find ways to rise above the din of divisiveness. Those with clear purpose should be able to find a way to strike compromise between the competing forces.

There are roots of these virtues in all markets — they just need to be prioritized and strengthened. Those that are able to achieve this will be markets to watch over the coming year.

Trend 2

Infrastructure planners start to think about flexibility

We are living in an era of rapid and fundamental change. Consider this — just 10 years ago, the first iPhone was introduced; there were no 'app' stores; no real-time way-finders or smart maps; Twitter was in its infancy and Facebook was a toddler. Yet today, the smartphone and its applications have become indispensable in most people's lives.

It's not just technology that is rapidly and fundamentally changing. So, too, are social norms, demographic trends, economic truths, the boundaries between our public and private lives, environmental realities and customer expectations. In many ways, the world we lived in 10 years ago seems quaintly archaic; the world of 10 years from now, excitingly innovative.

The problem is that infrastructure is not keeping pace with the changes we are experiencing around us. We continue to develop assets with 50 to 100-year lifespan expectations. We build for the needs of today, not tomorrow. We assume fixed technology sets will remain for the foreseeable future. We spend years in planning and consultations, ignoring the risk that the completed asset will be out of date before it comes into operation. More often than not, we simply do what we have always done.

This year, we hope to see infrastructure planners and developers design and contract infrastructure projects that could support a range of possible futures. When building a new high-speed rail line, for example, proponents should be thinking about how other technologies — such as hyperloops or drones — might utilize the same space and provide more flexible solutions. When building a new electricity grid, we should be thinking about how the introduction of electric vehicles might influence and alter the nature of demand. When looking at transport investments, and spatial planning generally, planners need to consider that autonomous vehicles (AVs) could radically change the way people travel and indeed how they live and how they work. AVs will also create opportunities for businesses to change the way they operate including how they import materials and distribute their products. When building hospitals and signing long-term concession agreements, we ought to be thinking about how those buildings and services could change if (or when) healthcare goes mobile and 'robotic'.

To be sure, the design and development of more 'flexible' infrastructure will come at a higher upfront capital cost. Not knowing exactly what the future may bring, planners and designers will need to consider multiple different scenarios, identify the most likely and then build accordingly. That may mean adding more capacity than is immediately needed, choosing a different route that offers greater future flexibility or spending more to avoid a potentially obsolete design. It will certainly require planners and owners to take more risks.

For inspiration, planners may want to look to Joseph Bazalgette, a Victorian-era engineer who put so much capacity into London's sewers that the system he completed in 1875 lasted well into the 2000's. Or former US President Dwight D. Eisenhower who launched the National Interstate and Defense Highways Act in 1956, thereby fueling decades of economic growth and domestic trade. Or, more recently, the planners of China's Medium- to Long-Term Railway Network Development Plan who, by building the world's largest HSR network, drove domestic mobility, created social wealth and birthed a new generation globally-competitive Chinese rail companies.

To future-proof infrastructure, achieve greater resilience (and maybe help overcome the natural reluctance to spend more) planners and designers will need to consider the long-run value of flexibility and build those assumptions into the business case. Simply put, flexibility must become a key design and contracting principle with the costs weighed against the longer-term benefits and an evaluation methodology to match.

While the future may be uncertain, we have the opportunity to give younger generations the flexibility to shape it. If we do not, new customer demands will go unfulfilled, new technological opportunities will be missed and, as a result, society will suffer. Better to build flexibility in today than miss the potential of tomorrow.

Planning for the autonomous vehicle

KPMG International recently launched the Autonomous Vehicles Readiness Index (AVRI) which provides an understanding of various countries' preparedness and openness to AV technology.

The Netherlands ranked as the 'clear leader' in the Index. The intensively-used Dutch roads are very well developed and maintained and other indicators like telecoms infrastructure are also very strong.

In addition, the Dutch government Ministry of Infrastructure has opened public roads to large scale tests with self-driving passenger cars; in fact, out of the countries surveyed, The Netherlands has by far the highest percentage usage of electric vehicles.

For more information please visit kpmg.com/AVRI

Trend 3
Sustainability — in all its forms — rises up the agenda

If we want our infrastructure assets to create long-term value and enhance social harmony, we need to think much more about sustainability.

Unfortunately, today's view of sustainability is far too narrow. Raise the issue and most people instinctively think about the environment. But the reality is that 'sustainability' is a much wider concept. And addressing it will mean going beyond the pure engineering and costing aspects of a project to also consider long-term viability and resilience.

That is why infrastructure planners, owners and designers are now beginning to take a broader view of sustainability that includes a wider range of additional requirements such as:

— financial sustainability (ensuring that financial structures are relevant and appropriate);

— operational sustainability (whether assets have the right technologies and efficiencies to optimize performance);

— funding sustainability (whether future cash flows are durable);

— technological sustainability (considering the viability and potential obsolescence of the base technology);

— social sustainability (ensuring that benefits are cascaded to all levels of society).

Given the competing forces now at work around the world (see Trend 1), the need for sustainability in all its forms is more critical than ever — not only for users and planners, but also for investors and owners. Responses must be thoughtful and rapid.

As we noted in last year's edition of *Emerging Trends*, investors are increasingly sensitive to social and environmental impacts — not just financial returns. And a growing number of today's investors are looking for assets that have taken a much more sophisticated view of sustainability as a way to safeguard their investments and retain their value.

For infrastructure planners and designers, this requires a more holistic approach to asset design and development. Authorities are obliged to create more flexible space for innovation — in contracting, in funding and financing models, in technological adoption and adaptation, in construction approaches and materials, and in design and usage.

At the same time, new skills will be required as more time is spent scenario planning (as noted in Trend 2). And those responsible for our infrastructure will need to improve the way they measure and assess their development and construction metrics.

This year, we expect to see infrastructure planners, owners and developers start to take a much more robust approach to assessing and improving the sustainability of their projects and — in doing so — create much more value from their investments.

Trend 4
The pace of development comes under the microscope

Depending on where you live, infrastructure development is either fast and furious or slow and methodical. Both come with unique challenges and risks.

In the mature markets, infrastructure can take years to move from idea to output. Much-needed upgrades and replacements are slow to emerge from the pipeline (as evidenced by Heathrow's 'third runway' debate or the continued lack of momentum on the Brent Spence Bridge Corridor in the US) while other valuable investments are held up in multiple layers of planning, approvals and consultations. This is the price of democracy; when major decisions are consultative, progress is often slow.

Given the rapid pace of change now at play around the world, it is vital that decision-makers find renewed urgency in their approach. Many of the greatest risks in delivering infrastructure are related to time; reducing the amount of time therefore also reduces the risk of the project (assuming quality standards are maintained).

In contrast, in some developing markets, particularly where current services are inadequate, infrastructure is being built at astounding speeds (think China's development of high-speed rail and what's been happening in the Middle East.) New projects — from transport and power through to hospitals and schools — are being delivered almost overnight as governments focus on rapidly responding to the fast-changing needs of their economies and societies. But putting the assets into the ground is often the easy part. Knowing which assets should be built at which time to deliver the most value is much more difficult.

The risk in building infrastructure too quickly is the threat of building 'white elephants' that do not match the current and future needs of the population they intend to serve. Slow-moving projects, on the other hand, run the risk that they will become more expensive — or even obsolete — as they languish on the planning table (or, worse, during construction).

Over the coming year, we hope to see markets rethink the pace of their infrastructure planning and delivery. In the developing markets, this may mean slowing down to think more clearly about project prioritization, suitability, resilience and sustainability (see Trend 3). In the mature markets, it must mean speeding up the rate of delivery by allowing planning, prioritization, approval and delivery processes to become more streamlined. In some situations, this may mean balancing democratic process against efficacy.

Ultimately, governments will need to take a more holistic view of the wider benefits they are trying to achieve from their investments. As a result, we expect to see a narrowing of the gap in the pace of development of new infrastructure recognizing that there needs to be more speeding up than slowing down. This will enable investors, planners and owners to reduce the risk of building infrastructure that is sub optimal before it even comes into operation.

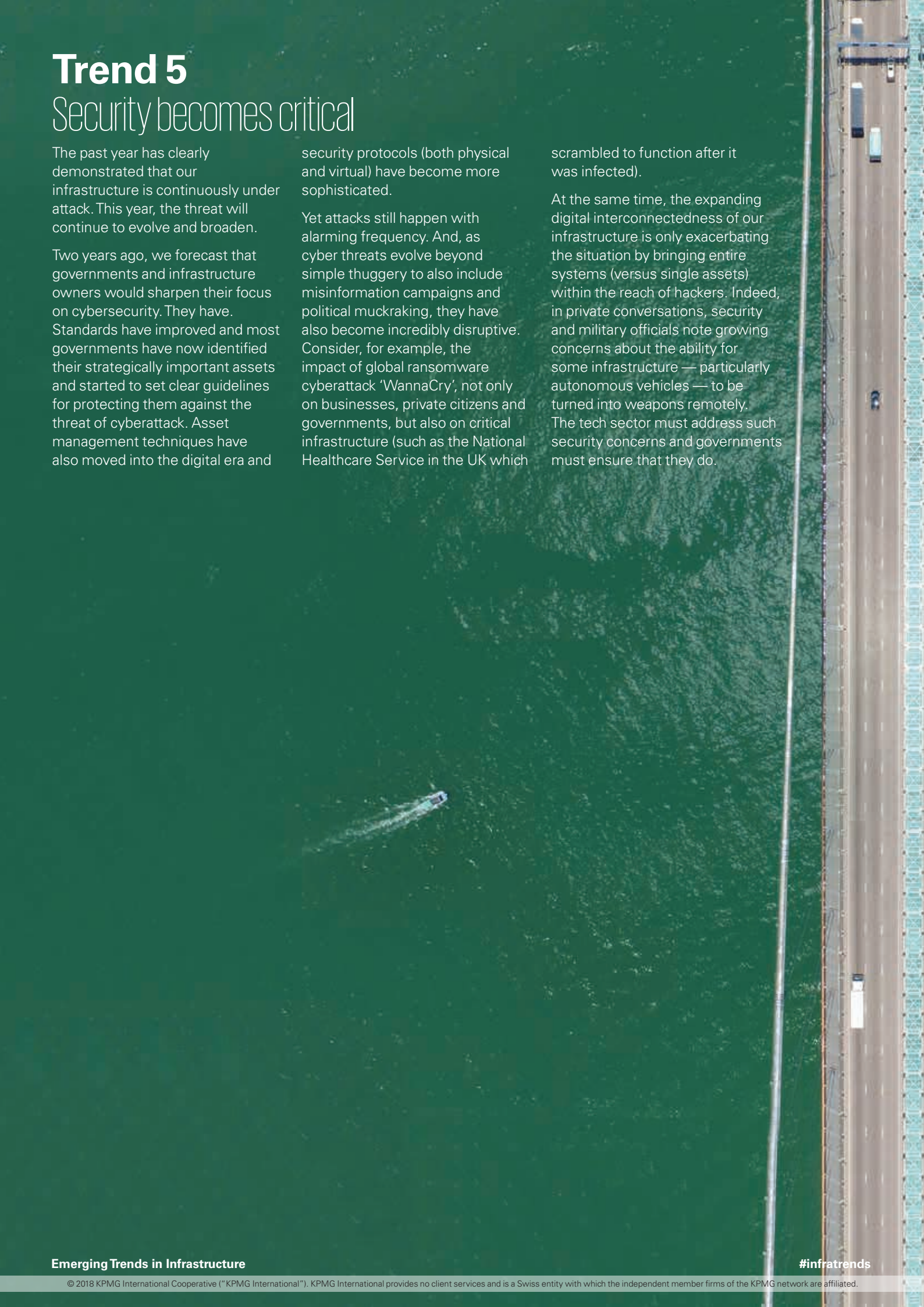
Trend 5
Security becomes critical

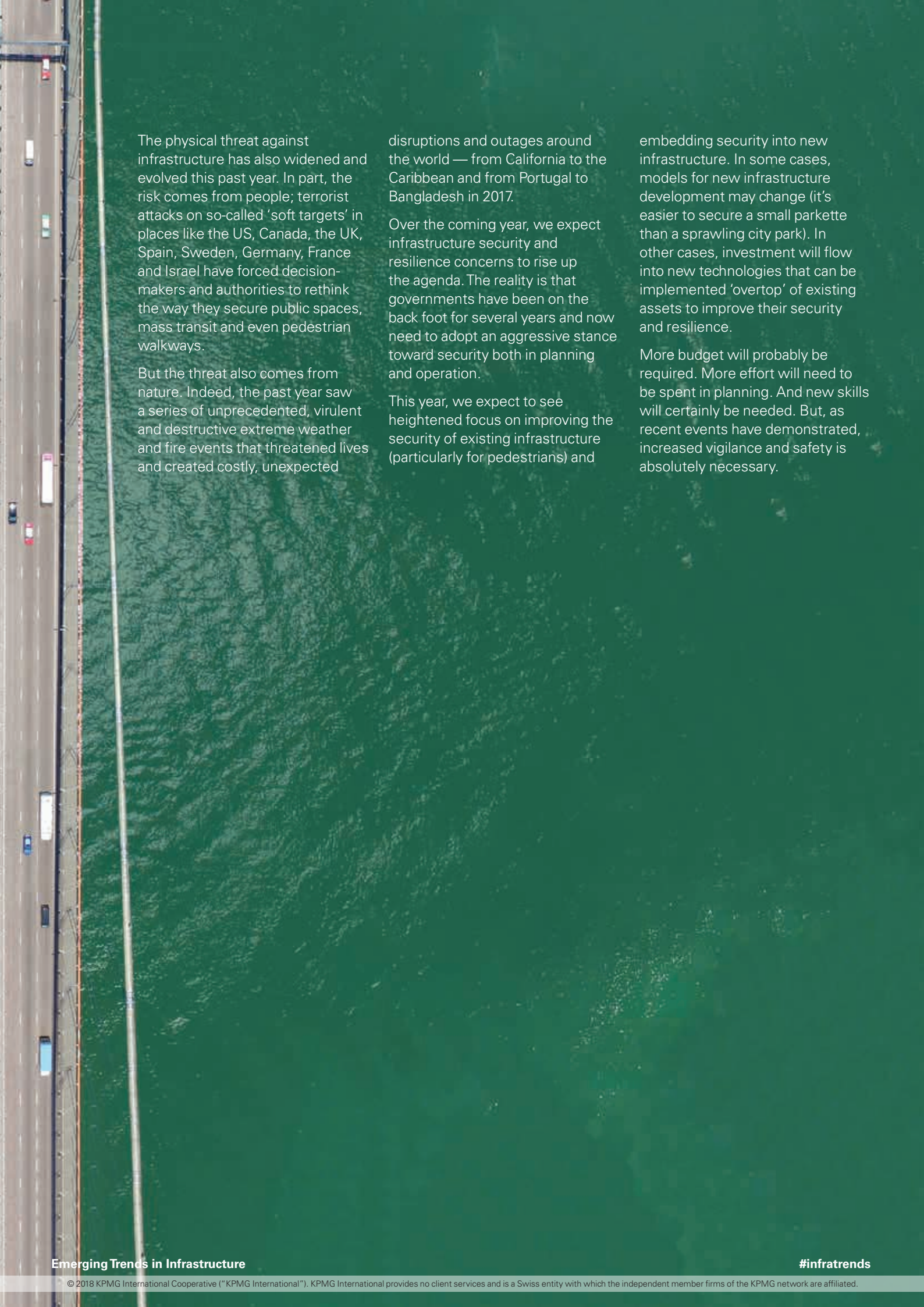
The past year has clearly demonstrated that our infrastructure is continuously under attack. This year, the threat will continue to evolve and broaden.

Two years ago, we forecast that governments and infrastructure owners would sharpen their focus on cybersecurity. They have. Standards have improved and most governments have now identified their strategically important assets and started to set clear guidelines for protecting them against the threat of cyberattack. Asset management techniques have also moved into the digital era and security protocols (both physical and virtual) have become more sophisticated.

Yet attacks still happen with alarming frequency. And, as cyber threats evolve beyond simple thuggery to also include misinformation campaigns and political muckraking, they have also become incredibly disruptive. Consider, for example, the impact of global ransomware cyberattack 'WannaCry', not only on businesses, private citizens and governments, but also on critical infrastructure (such as the National Healthcare Service in the UK which scrambled to function after it was infected).

At the same time, the expanding digital interconnectedness of our infrastructure is only exacerbating the situation by bringing entire systems (versus single assets) within the reach of hackers. Indeed, in private conversations, security and military officials note growing concerns about the ability for some infrastructure — particularly autonomous vehicles — to be turned into weapons remotely. The tech sector must address such security concerns and governments must ensure that they do.





The physical threat against infrastructure has also widened and evolved this past year. In part, the risk comes from people; terrorist attacks on so-called 'soft targets' in places like the US, Canada, the UK, Spain, Sweden, Germany, France and Israel have forced decision-makers and authorities to rethink the way they secure public spaces, mass transit and even pedestrian walkways.

But the threat also comes from nature. Indeed, the past year saw a series of unprecedented, virulent and destructive extreme weather and fire events that threatened lives and created costly, unexpected disruptions and outages around the world — from California to the Caribbean and from Portugal to Bangladesh in 2017.

Over the coming year, we expect infrastructure security and resilience concerns to rise up the agenda. The reality is that governments have been on the back foot for several years and now need to adopt an aggressive stance toward security both in planning and operation.

This year, we expect to see heightened focus on improving the security of existing infrastructure (particularly for pedestrians) and embedding security into new infrastructure. In some cases, models for new infrastructure development may change (it's easier to secure a small parkette than a sprawling city park). In other cases, investment will flow into new technologies that can be implemented 'overtop' of existing assets to improve their security and resilience.

More budget will probably be required. More effort will need to be spent in planning. And new skills will certainly be needed. But, as recent events have demonstrated, increased vigilance and safety is absolutely necessary.

Trend 6

Creating alignment between payers, financiers and beneficiaries

Citizens are often willing to pay for infrastructure — as long as they see the benefit. But things get much more difficult when the payers of infrastructure do not see themselves as the end beneficiaries.

In some markets, infrastructure is funded out of central budgets. So a taxpayer in one city may end up footing the bill for a new rural highway they may never use, even though they get some important indirect benefits from it (such as efficient transportation for food products resulting in lower costs at the supermarket). Multi-jurisdictional projects face similar problems as governments create cooperative funding models without first evaluating the full benefits to everyone.

The phenomenon is not new. For years, city tax-payers have riled against the imbalance in transit funding: transit is often funded (in part, at least) through city tax budgets. But the direct benefits tend to flow to either the developers that own the property around new stations (for example), or to those residents that live outside of the city limits but use transit to get to work.

Interestingly, there has been very little public discussion about the misalignment between payers and beneficiaries. More often than not, governments tend to revert to opaque funding equations, hard-nosed negotiations and capacity calculations when making these types of funding decisions. Rarely are end-payers or beneficiaries ever consulted.

This year, we expect to see governments and infrastructure funders think more critically about the balance between who pays and who benefits from infrastructure development. Those in markets where devolution is disrupting centralized funding models will perhaps have the toughest discussions. But the rising public awareness of the social value of infrastructure suggests that all governments will be talking about this issue over the coming year.

On the plus side, governments around the world have been working hard to identify new approaches that could solve the funding paradigm (a trend we have noted in previous editions of Emerging Trends). This work will need to be harnessed (and newer funding models will need to be expanded) that bring the costs closer to the beneficiaries. The fact that the equation will likely never result in a one-to-one alignment between payers and beneficiaries will require governments to think carefully about how they create a balance between all stakeholders.

This, in turn, will require governments to become much more forensic about measuring where the benefits are materializing, how they are being shared and who is paying the final bill. And that will require governments to achieve a much clearer understanding of the full value of the infrastructure they are creating (moving beyond simple economic value calculations). New technologies and analytics approaches will undoubtedly help decision-makers find the balance between promoting broader economic benefits and improving upward social mobility.

Politicians will need to engage the public in sober discussions about who pays for infrastructure (always a politically charged debate). In some cases, the need to serve the overall 'public good' may lead to some continued misalignment as the 'haves' carry some of the costs for the 'have nots'.

The good news is that, over the coming year, we expect this debate to gain momentum, maturity and engagement from governments, citizens and funders.

Trend 7
Pricing models mature

Companies have been using variable pricing for decades. But in the past, approaches to variable pricing were fairly crude — largely based on time of day availability (peak versus off-peak) and scarcity. Energy is cheaper at night when fewer customers are using it, rail travel is cheaper outside rush hours, and so on.

For infrastructure owners and operators, variable pricing helps manage demand and ration capacity. In the energy sector, this has helped authorities to better manage peaks. In transport, it has encouraged commuters to shift their travel times.

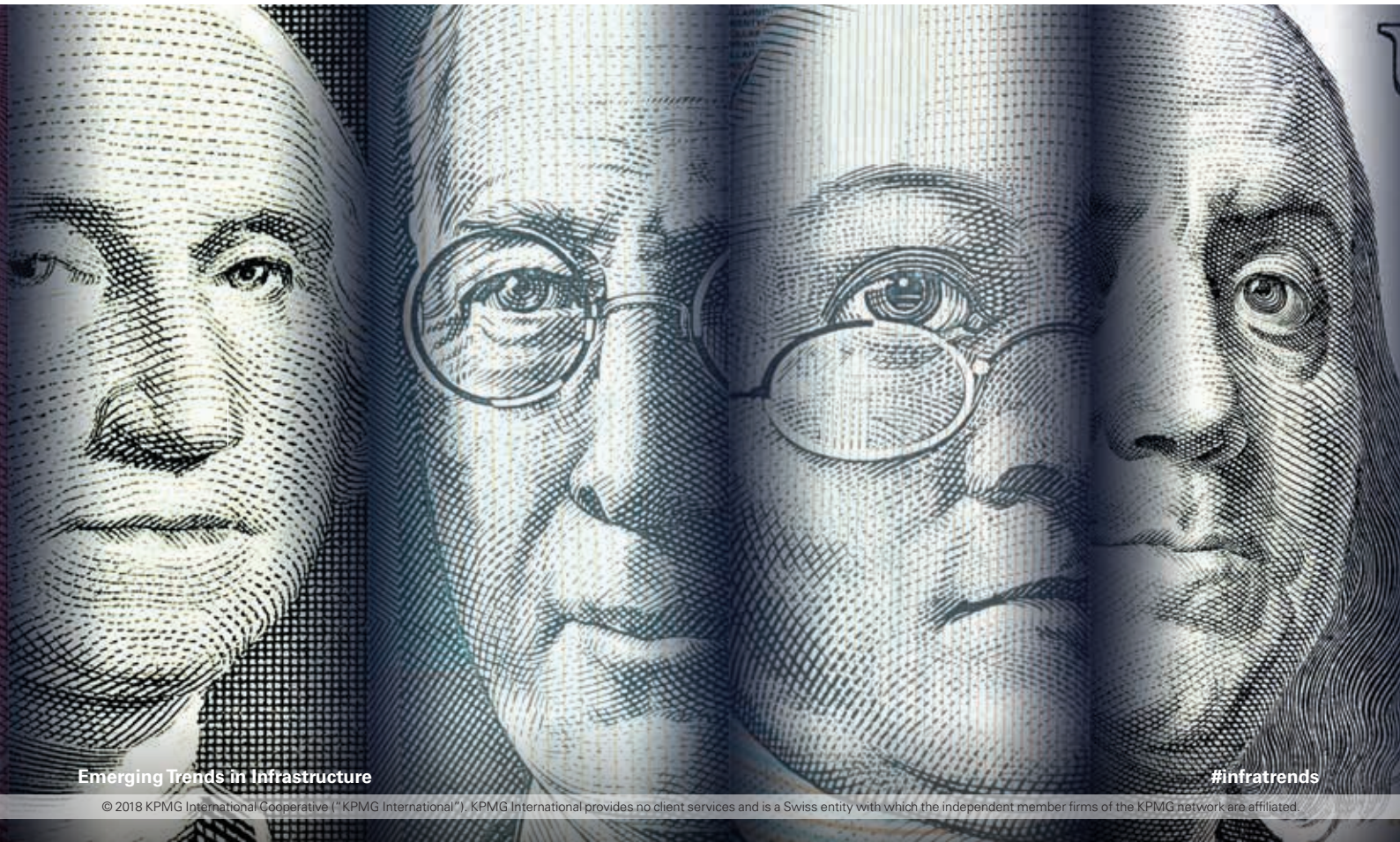
In recent years, we have seen the emergence of dynamic pricing: charges adjusting in real-time to reflect actual capacity, supply and demand. Some of the first adopters were low-cost airlines. They were soon followed by railway companies and app-based taxi companies such as Uber and Grab. Governments are also getting in on the action; some managed lanes in the US require operators to adjust their tolls in real-time to achieve a certain traffic speed.

We believe that the trend to use more dynamic pricing is only going one way. The availability of real-time data, computing power and more sophisticated algorithms now means that companies can calibrate their prices much more carefully, knowing exactly the shape of the demand curve and the true costs associated with delivering a service.

As technology becomes more complex, we expect infrastructure owners to move towards a form of dynamic pricing, allowing them to hone rates to the individual, in real-time, based on a variety of variables including their ability to pay, the value they place on a service and the urgency of their use. And in many cases, this shift will mean much closer alignment between those who pay for infrastructure and those who benefit (see Trend 6).

Yet there is also a social dilemma to dynamic pricing; it can reduce access for those unable or unwilling to pay a premium for the infrastructure they need. For example, making roads more expensive during peak hours impacts workers, many of whom have no ability to change their hours in order to reduce their costs. Higher pricing for air travel during holiday periods leaves poorer travelers at home. Raising energy prices at 5pm hurts young parents and the unemployed more than it hurts office workers. Choice and the presence of alternative services is key. Airlines have addressed this issue by charging lower prices for those willing to buy long in advance of consumption. There will be winners and losers and dynamic pricing is incredibly complex.

Over the coming year, we expect infrastructure owners to start placing more emphasis on understanding the need, value and ethics of dynamic pricing. We expect to see regulators think more clearly about how fairness can be achieved in certain dynamic pricing models. And we expect to see new dynamic pricing models being applied across a wider variety of infrastructure services.



Trend 8

The benefits of sharing data become more evident

Data is rapidly becoming the backbone of the infrastructure sector. As noted in a number of our trends, data has the power to transform the way governments, planners, developers, owners and operators manage infrastructure and can lead to a dramatically improved user experience.

However, we are currently in a 'mixed economy' of data ownership — no one party owns all of the data required for smart decision-making. Some data is proprietary (like company data or census data). Some is open and freely available (such as a transport authority's traffic pattern data). Some is owned by private companies, and some is publicly available but fractured across different public entities. And then there is the private data of individuals themselves (including what is managed by the services they use).

At the same time, many governments are now seeking to encourage greater private participation in infrastructure which, in turn, requires owners and operators to gain access to government-procured and owned data. Indeed, opening up this data has already proven to be a key catalyst to innovation and the development of new ideas.

In some cases, governments have created a 'permissive' governance framework where individuals are given access to data on a case-by-case basis. Similarly, private organizations and individuals can request access to certain data sets but only when the use case and the controls are understood and verified. Others have gone further by making their data sets widely available; open data from Transport for London is now being used by more than 600 different apps.

While there are a number of bodies looking into the issue (the UK's National Infrastructure Commission recently released its report recommending a presumption of sharing of non-personal data[1]), nobody yet knows how the concept of ownership will evolve. What we do know is that the benefits of sharing are obvious but constrained by mixed views on who owns what data and how it can be used.

This year, we expect governments to get a better handle on managing, sharing and using data across departments and jurisdictions — and between the various players involved in the delivery of government services (particularly when it comes to social services). Some of the more progressive governments will likely start to create more open frameworks for data sharing and collaboration.

Over the longer-term, we expect to see a global transition in the way people value and share data. And, as a result, the ownership of data will become less important. The challenge will then become how to share data across multiple platforms — in an open and transparent way — while protecting the privacy of individuals. Once that data is freely shared, however, the benefits of analysis should unlock dramatically new models for how infrastructure is planned and operated.

As technology starts to play a greater role in the delivery of infrastructure, access to data will come one of the essential building blocks. Governments that are able to start thinking critically about their data policies — particularly those that are able to create robust, flexible frameworks and broad social agreements on data usage — should be well positioned to take advantage of the new technologies now emerging. High quality data curation will be key to creating value potential. Managed haphazardly however, it could lead to greater inefficiency in infrastructure development and operations.

1. *Data for the public good*, National Infrastructure Commission, 2017

Trend 9
Alternative asset classes re-converge

Over the past two years, we have highlighted ongoing changes in infrastructure investments. Two years ago, we suggested that — in search of higher-returns — more aggressive investors would be moving to less developed markets, taking greenfield risk and broadening the definition of infrastructure. Last year, we noted that the search for higher-yields and expansion into new markets would lead to a higher level of sophistication within investment firms.

This year, we expect the lines between various asset classes to continue to blur an expansion in the pools of equity that will target the infrastructure sector. For example, the line between real estate investors and infrastructure investors is not just blurring — it is starting to disappear entirely. Real estate is, after all, one of the key components of any infrastructure project, but more recently we have seen traditional real estate private equity firms developing significant infrastructure funds and capabilities.

Interestingly, these sectors used to be much closer. Thirty years ago, most of the private investors who participated in infrastructure did so to capture the underlying real estate value. But over the past three decades, investors became much more specialized. Now, however, the pendulum is swinging once again.

In the developed markets, this trend is being driven by the search for new investable long-term opportunities. But in the developing markets, the ultimate goal seems to be to capitalize on rising levels of industrialization. The rationale is fairly obvious: better infrastructure leads to higher rates of industrialization which, in turn, creates economic growth and prosperity. By investing in infrastructure today, these investors are banking on greater profits tomorrow.

There are clear pros and cons to this trend. On the one hand, the move of private equity into infrastructure (particularly in the developing world) will do much to help close the massive funding gap that exists in many markets. It will also enable infrastructure investors to become even more sophisticated about assessing where the value of their investments lies.

The introduction of private equity-style approaches to infrastructure investment may also bring unwanted risks in the markets. On one hand, there will be a greater focus on actively managing assets, including embracing new technologies, in order to optimize performance rather than simply viewing infrastructure as a more passive 'yield' play. On the other hand, assets may be over-leveraged, and investment plans may unexpectedly shift. Ownership may also repeatedly change which would only lead to greater uncertainty in the affected markets.

Over the coming year, we expect to see private equity move into a wider range of assets across a wider variety of markets — largely focused on those that offer the greatest potential for rapid industrialization. We also expect to see the competition between these new players and the traditional infrastructure and real estate investors heighten as more parties start to fight for fewer investable opportunities.

Bookshelf

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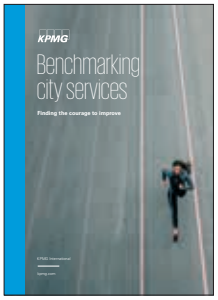
Insight No. 9: Globalization

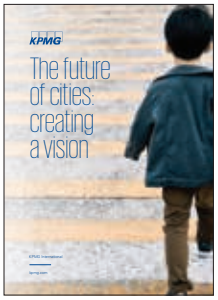
This issue discusses the globalization of the infrastructure and construction industry including: taking global infrastructure to local markets, putting stakeholders and communications at the heart of major infrastructure projects and breaking the cycle of new construction.

KPMG Global Infrastructure publications and reports



Benchmarking city services: Finding the courage to improve

KPMG's Global Cities Center of Excellence benchmarked 35 cities from around the world on how the provide, track and measure 12 different services. The results will astound you!



The future of cities

This article series addresses the challenges and opportunities facing cities as urbanization changes the dynamics of our world, and how we can work together to create better, more sustainable places to live and work.

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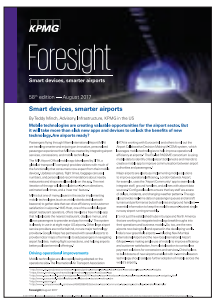
Foresight — A global infrastructure perspective

Brazil's latest privatization drive should prove attractive to investors

Brazil's government has announced a sweeping privatization drive that potential investors will no doubt be turning their attention to.



Smart devices, smarter airports

Mobile technologies are creating valuable opportunities for the airport sector. But it will take more than slick new apps and devices to unlock the benefits of new technology.

KPMG's Global Infrastructure practice

Integrated services | **Impartial advice** | **Industry experience**

Nobody knows infrastructure like KPMG. Every day, our network of more than 2,500 highly-experienced professionals work shoulder-to-shoulder with infrastructure leaders across more than 150 countries to share industry best practices and develop effective local strategies.

Our clients see a difference. They recognize that we won't just apply traditional methodologies to new problems because infrastructure projects are unique and often require tailored solutions. We challenge infrastructure to be better, integrating innovative approaches and deep expertise to help clients succeed transparently, sustainably, ethically and commercially. Member firm clients are confident KPMG's Global Infrastructure professionals will provide trusted insight, actionable advice and market-leading services across advisory, tax, audit, accounting and regulatory compliance.

We inspire confidence and empower change in government organizations, infrastructure contractors, operators and investors. Our member firms help clients ask the right questions that reflect the challenges they are facing at every stage in the lifecycle of infrastructure assets and programs. From planning, strategy, finance and construction through to operations, divestment and decommissioning, Global Infrastructure professionals apply passion and purpose to help clients solve some of the most significant challenges of the 21st century.

By combining valuable global insight with hands-on local experience, we understand the unique challenges facing different clients in different regions. By bringing together numerous disciplines — economics, engineering, project finance, project management, strategic consulting, tax and accounting — KPMG's Global Infrastructure professionals provide integrated advice that can help achieve effective results and help clients succeed.

For further information, please visit us online at **kpmg.com/infrastructure** or contact:

Richard Threlfall
Global Head of Infrastructure
KPMG International
E: richard.threlfall@kpmg.co.uk
@RThrelfall_KPMG

Stephen Beatty
Non-Executive Chair,
Global Infrastructure
KPMG International
E: sbeatty@kpmg.ca
@stephencbeatty

Julian Vella
Asia Pacific Head of
Infrastructure
KPMG International
E: julian.vella@kpmg.com
@jp_vella

Contact us

Emily Dann
Senior Marketing Manager
Global Infrastructure
KPMG International
T: +1 647 777 5346
E: edann@kpmg.ca

Eli Ranguelova
Marketing Manager
Global Infrastructure
KPMG International
T: +1 416 777 3047
E: eranguelova@kpmg.ca

kpmg.com

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